Third Amendment to the Proponent's Environmental Assessment for Southern California Edison Company's Alberhill System Project

Volume 2

June 2023 (Amended PEA submittal date)

Construction of Alberhill Substation, construction of two new 500 kilovolt (kV) transmission line segments to connect the new substation to Southern California Edison Company's (SCE's) existing Serrano-Valley 500 kV transmission line, construction of a new 115 kV subtransmission line and modifications to four existing 115 kV subtransmission lines to transfer five existing 115/12 kV substations to the new Alberhill 500/115 kV Substation, installation of telecommunications improvements to connect the new facilities to SCE's telecommunications network.

The Alberhill System Project would be located in the unincorporated Riverside County and the cities of Lake Elsinore, Wildomar, and Menifee.

Application A.09-09-022 to the California Public Utilities Commission

Prepared by Insignia Environmental
545 Middlefield Road, Suite 210
Menlo Park, California 94025
Robert Curley, Chief Technical Officer
(650) 321-6787
rcurley@insigniaenv.com

Prepared for Southern California Edison Company
2 Innovation Way, 3rd Floor
Pomona, California 91768
Michael Bass, Senior Project Manager
(909) 274-3061
michael.bass@sce.com

This page intentionally left blank

VOLUME 2
TABLE OF CONTENTS

LIST OF APPENDICES

This page intentionally left blank

APPENDIX O: REVISED ENVIRONMENTAL IMPACT ANALYSIS

This page intentionally left blank

TABLE OF CONTENTS

This page intentionally left blank

INTRODUCTION

This appendix evaluates the potential environmental impacts associated with the Alberhill System Project (Proposed Project or ASP) with the incorporation of the design modification and additional engineering refinements described in Appendix M: Updated Project Description. This process involved reviewing the changes to the Proposed Project and comparing them to the baseline conditions identified in the Final Environmental Impact Report (FEIR). The Revised Environmental Impact Analysis section was developed by taking the impact discussions from the FEIR and modifying them as follows:

- any language associated with the Valley-Ivyglen Project[1] has been marked with ~~blue double strikeout~~ due to the Valley-Ivyglen Project being constructed and made operational in 2022,
- edits made by the California Public Utilities Commission to the FEIR have been retained and are represented in purple text with additions underlined and deletions ~~struck through~~, and
- any necessary changes by SCE to the FEIR language to incorporate the changes to the Proposed Project have been made with additions in green underline and deletions in ~~red strikeout~~.

Table 1: Impact Comparison Summary provides a comparison between the impact determinations from the FEIR and the results of this revised environmental analysis. As noted in the Revised Environmental Impact Analysis section, the incorporation of the design modification and additional engineering refinements did result in changes to the impacts that were originally identified in the FEIR as follows:

- **Air Quality:** The potential simultaneous use of both conventional and helicopter methods for 500 kV transmission line construction and the inclusion of underground 115 kV subtransmission line construction techniques and additional substation modifications resulted in an increase in helicopter, heavy equipment, and on-road vehicle use, which resulted in increases in criteria air pollutant emissions. These increases were offset for most pollutants due to refining the exhaust emissions factors for heavy equipment and on-road vehicles from the 2016 fleet mix in the FEIR to the latest 2025 values from the South Coast Air Quality Management District (SCAQMD). As shown in Section 2.3 Air Quality, on-site nitrous oxide emissions associated with the 500 kV transmission line no longer exceed SCAQMD localized significance thresholds. As a result, Impact AQ-4 (ASP) has been reduced from significant with mitigation to less than significant.

- **Cultural Resources:** Approximately 11 acres of temporary construction areas associated with the Proposed Project have not been covered by previous cultural resource studies. These areas include:

  - four staging areas,
  - six structure work areas,
  - one temporary disturbance area, and
  - an extension of one underground trench.

  The four staging areas are all located within undeveloped but heavily disturbed plots. Of the six structure work areas, all are located in the vicinity of existing structures with three located in developed land and the remaining three located in mountainous terrain. The temporary disturbance area is located on a plot of land that has been disturbed by grading. Lastly, the extended underground trench disturbance area is located on commercially developed land. Due to the lack of survey coverage of these areas, the potential to impact known or previously known historical resources or archaeological resources could not be determined at this time. Cultural

[1] Valley-Ivyglen 115 Subtransmission Line Project (A.07-01-031 and A.07-04-028)

resource surveys for these additional temporary construction areas are currently underway. SCE will provide the results of the surveys as well as a revised assessment of the potential impacts in these locations once the surveys are complete. As a result, no significance determination can be made for these locations for Impact CR-1 (ASP).

- **Greenhouse Gasses:** As described previously, the potential simultaneous use of two 500 kV transmission line construction methods and the additional underground 115 kV subtransmission line construction techniques resulted in an increase in helicopter, heavy equipment, and on-road vehicle use. This additional use resulted in an approximate 17-percent increase in greenhouse gas (GHG) emissions during the construction phase of the Proposed Project. These increases were more than offset by the changing the 500 kV switchrack from a gas-insulated to air-insulated design. This change removed approximately 35,000 pounds of sulfur hexafluoride (SF_6) gas from the substation and reduced annual operational GHG emissions by approximately 75 percent. Impact GHG-1 (ASP) would remain less than significant.

- **Noise:** The inclusion of Staging Area ASP14 would increase the number of noise-sensitive receptors that would be exposed to temporary ambient noise levels in excess of 75 decibels. Because other Proposed Project activities would also expose sensitive-noise receptors to similar levels, work at these additional locations would not change the significance of Impact NV-4 (ASP) and this impact would remain significant and unavoidable.

- **Population and Housing:** The proposed 500 kV transmission line right-of-way would overlap with one existing residence located approximately 650 feet southwest of Tower VA3. SCE intends to acquire the necessary land rights from the landowner to construct the 500 kV transmission line. While this would displace one residence, it would not necessitate the construction of replacement housing and would not change the significance of Impact PH-2 (ASP).

Table 1: Impact Comparison Summary

FEIR Impact	FEIR Impact Determination	Revised Impact Determination for the Proposed Project[1]
Aesthetics		
Impact AES-1 (ASP): Substantial adverse effect on a scenic vista.	*Less Than Significant*	*Less Than Significant*
Impact AES-2 (ASP): Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway.	*Significant And Unavoidable*	*Significant And Unavoidable*
Impact AES-3 (ASP): Substantially degrade the existing visual character or quality of the site and its surroundings.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact AES-4 (ASP): Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Agriculture and Forestry Resources		
Impact AG-1 (ASP): Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to non-agricultural use.	*Less Than Significant*	*Less Than Significant*
Impact AG-2 (ASP): Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of Forest Land to non-forest use.	*Less Than Significant*	*Less Than Significant*
Air Quality		
Impact AQ-1 (ASP): Conflict with or obstruct implementation of the applicable air quality plan.	*No Impact*	*No Impact*
Impact AQ-2 (ASP): Violate any air quality standard or contribute substantially to an existing or projected air quality violation.	*Significant With Mitigation*	*Significant With Mitigation*
Impact AQ-3 (ASP): Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).	*Significant With Mitigation*	*Significant With Mitigation*
Impact AQ-4 (ASP): Expose sensitive receptors to substantial pollutant concentrations.	*Significant With Mitigation*	*Less Than Significant*
Impact AQ-5 (ASP): Create objectionable odors affecting a substantial number of people.	*Less Than Significant*	*Less Than Significant*

FEIR Impact	FEIR Impact Determination	Revised Impact Determination for the Proposed Project[1]
Biological Resources		
Impact BR-1 (ASP): 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 the CDFW or USFWS.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact BR-2 (ASP): Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact BR-3 (ASP): Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact BR-4 (ASP): Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	*Less Than Significant*	*Less Than Significant*
Impact BR-5 (ASP): Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	*Less Than Significant*	*Less Than Significant*
Impact BR-6 (ASP): Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Cultural Resources		
Impact CR-1 (ASP): Substantial adverse change in the significance of an historical resource or an archaeological resource.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation/No Determination*
Impact CR-2 (ASP): Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact CR-3 (ASP): Disturb any human remains, including those interred outside of formal cemeteries.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Geology, Soils, and Mineral Resources		
Impact GE-1 (ASP): Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42); strong seismic ground shaking; seismic-related ground failure including liquefaction; or landslides.	*Less Than Significant*	*Less Than Significant*

FEIR Impact	FEIR Impact Determination	Revised Impact Determination for the Proposed Project[1]
Impact GE-2 (ASP): Result in substantial soil erosion or the loss of topsoil.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact GE-3 (ASP): Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction or collapse.	*Less Than Significant*	*Less Than Significant*
Impact GE-4 (ASP): Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.	*Less Than Significant*	*Less Than Significant*
Impact GE-5 (ASP): Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.	*Less Than Significant*	*Less Than Significant*
Impact GE-6 (ASP): Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.	*Less Than Significant*	*Less Than Significant*
Impact GE-7 (ASP): Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.	*Less Than Significant*	*Less Than Significant*
Greenhouse Gases		
Impact GHG-1 (ASP): Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.	*Less Than Significant*	*Less Than Significant*
Impact GHG-2 (ASP): Conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emission of GHGs.	*No Impact*	*No Impact*
Hazards and Hazardous Materials		
Impact HZ-1 (ASP): Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact HZ-2 (ASP): Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact HZ-3 (ASP): Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact HZ-4 (ASP): Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*

FEIR Impact	FEIR Impact Determination	Revised Impact Determination for the Proposed Project[1]
Impact HZ-5 (ASP): For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area.	*No Impact*	*No Impact*
Impact HZ-6 (ASP): For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area.	*Less Than Significant*	*Less Than Significant*
Impact HZ-7 (ASP): Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	*Less Than Significant*	*Less Than Significant*
Impact HZ-8 (ASP): Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact HZ-9 (ASP): Result in substantial safety risks to hang gliders.	*No Impact*	*No Impact*
Hydrology and Water Quality		
Impact WQ-1 (ASP): Violate any water quality standards or waste discharge requirements.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact WQ-2 (ASP): Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).	*Less Than Significant*	*Less Than Significant*
Impact WQ-3 (ASP): Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact WQ-4 (ASP): Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact WQ-5 (ASP): 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.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact WQ-6 (ASP): Otherwise substantially degrade water quality.	*Less Than Significant*	*Less Than Significant*
Impact WQ-7 (ASP): Place within a 100-year flood hazard area structures which would impede or redirect flood flows.	*Less Than Significant*	*Less Than Significant*

FEIR Impact	FEIR Impact Determination	Revised Impact Determination for the Proposed Project[1]
Impact WQ-8 (ASP): Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact WQ-9 (ASP): Expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow.	*Less Than Significant*	*Less Than Significant*
Land Use and Planning		
Impact LU-1 (ASP): Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.	*No Impact*	*No Impact*
Impact LU-2 (ASP): Conflict with any applicable habitat conservation plan or natural community conservation plan.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Noise and Vibration		
Impact NV-1 (ASP): Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact NV-2 (ASP): Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.	*Less Than Significant*	*Less Than Significant*
Impact NV-3 (ASP): Substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.	*Less Than Significant*	*Less Than Significant*
Impact NV-4 (ASP): Substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	*Significant And Unavoidable*	*Significant And Unavoidable*
Impact NV-5 (ASP): Exposure of people residing or working in the project area to excessive noise levels within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport.	*Less Than Significant*	*Less Than Significant*
Impact NV-6 (ASP): Exposure of people residing or working in the project area to excessive noise levels within the vicinity of a private airstrip.	*Less Than Significant*	*Less Than Significant*
Population and Housing		
Impact PH-1 (ASP): Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).	*Less Than Significant*	*Less Than Significant*

FEIR Impact	FEIR Impact Determination	Revised Impact Determination for the Proposed Project[1]
Impact PH-2 (ASP): Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.	*No Impact*	*No Impact*
Public Services and Utilities		
Impact PS-1 (ASP): Result in substantial adverse physical impacts on governmental facilities or from the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following: (1) fire protection, (2) police 7 protection, (3) schools, (4) parks, or (5) other public facilities.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact PS-2 (ASP): Require or result in the construction of new water treatment facilities or expansion of existing facilities.	*Less Than Significant*	*Less Than Significant*
Impact PS-3 (ASP): Require or result in the construction of new storm water drainage facilities or expansion of existing facilities.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact PS-4 (ASP): Insufficient water supplies available to serve the project from existing entitlements and resources or new or expanded entitlements required.	*Less Than Significant*	*Less Than Significant*
Impact PS-5 (ASP): Served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs.	*Less Than Significant*	*Less Than Significant*
Impact PS-6 (ASP): Noncompliance with federal, state, or local statutes and regulations related to solid waste.	*Less Than Significant*	*Less Than Significant*
Recreation		
Impact RE-1 (ASP): Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.	Less Than Significant	Less Than Significant
Transportation and Traffic		
Impact TT-1 (ASP): Conflict with an applicable plan, ordinance or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact TT-2 (ASP): Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*

FEIR Impact	FEIR Impact Determination	Revised Impact Determination for the Proposed Project[1]
Impact TT-3 (ASP): Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact TT-4 (ASP): Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact TT-5 (ASP): Result in inadequate emergency access.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact TT-6 (ASP): Conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decrease the performance or safety of such facilities.	*Less Than Significant With Mitigation*	*Less Than Significant With Mitigation*
Impact TT-7 (ASP): Result in inadequate parking that would result in a significant impact on the environment.	*Less Than Significant*	*Less Than Significant*

Note:
[1] Cells have been shaded in grey if the design modification and additional engineering refinements would change the significance determination from an impact identified in the FEIR.

REVISED ENVIRONMENTAL IMPACT ANALYSIS

AESTHETICS

Section 4.1.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As demonstrated by the revisions to the FEIR analysis that follows, no new impacts were identified and the severity of previously identified impacts have not increased.

4.1.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

4.1.5.1 Project Commitments (Alberhill Project)

The applicant has committed to the following as part of the design of the proposed project. See Section 2.6, "Project Commitments," for a complete description of each project commitment.

- **Project Commitment A: Landscaping and Irrigation Plan:** For the Alberhill Project, the applicant would develop a Landscaping and Irrigation Plan for Alberhill Substation road frontage only along Temescal Canyon Road, Concordia Ranch Road and Love Lane that is consistent with surrounding community standards, substation security and safety requirements. The applicant would consult with Riverside County about the plan and incorporate applicable County recommendations to the extent possible. Landscaping would be designed to filter views from the surrounding community and other potential sensitive receptors near the proposed substation and be consistent with the surrounding community. The landscape plan would include a plant species list and installation and construction requirements. The applicant would contract a landscape architect to complete the landscaping plan during final engineering for the Alberhill Project. Irrigation and landscaping installation would occur after construction of the substation perimeter wall, subtransmission and transmission poles/towers erected, underground utility lines/cable ducts installed, and water service has been established. During operations, the applicant would maintain the substation site pursuant to the Landscaping and Irrigation Plan and be responsible for upkeep as long as the applicant owns the property.

- **Project Commitment D: Habitat Restoration and Revegetation Plan:** With input from the appropriate resource agencies, the applicant would develop and implement a Habitat Restoration and Revegetation Plan to restore temporarily impacted areas where construction of the projects would be unable to avoid impacts on native vegetation and sensitive resources, such as wetlands, wetland buffer areas, riparian habitat, and other sensitive natural communities. The applicant would restore all temporarily impacted areas disturbed during construction of the projects, including staging areas and pull, tension, and splicing sites, to as close to pre-construction conditions as possible, or to the conditions agreed upon between the applicant and landowner. Replanting and reseeding would be conducted under the direction the applicant or contract biologists. If revegetation would occur on private property, revegetation conditions would be part of the agreement between the applicant and the landowner.

4.1.5.2 Impacts Analysis (Alberhill Project)

Impact AES -1 (ASP): Substantial adverse effect on a scenic vista.
LESS THAN SIGNIFICANT

The only designated scenic vista in the proposed project area that would be visible or noticeable is City of Lake Elsinore General Plan Vantage Point 1. Part of 115-kV Segment ASP4 would be visible from

Vantage Point 1. Due to distance and intervening terrain and structures, the proposed project would not be noticeable from Vantage Point 2. As previously described in Section 4.1.1.4, none of the other Vantage Points are oriented toward components of the Alberhill Project.

Construction

The City of Lake Elsinore General Plan Vantage Point 1 (shown in Figure 4.1-2d, context photo 24), on northbound I-15 just west of Railroad Canyon Road, affords motorists a view of Lake Elsinore in the middleground and rugged mountains in the background. Construction activities on 115-kV Segment ASP4 would occur approximately 600 feet west of I-15 along Casino Drive and would be visible to motorists at Vantage Point 1. Construction activities related to removal of three poles and addition of three poles would be visible in the foreground in this area. Visual changes would include additional bare ground and presence of construction equipment. The Lake Elsinore General Plan recognizes that viewers on I-15 see the lake area for a short amount of time and are focused on driving rather than aesthetic quality of the area (City of Lake Elsinore 2011). Though out of view of the context photo, the foreground of Vantage Point 1 also contains several elements that break up the continuity of the natural lake and mountains in the background, including a billboard, a large parking lot, a road, existing transmission lines, and buildings. Construction activities would incrementally add to the non-natural elements present at Vantage Point 1 for a short period (up to three weeks). However, motorists traveling at freeway speeds would see this area for several seconds, and construction activities would be short term. Further, there are abundant more visually intrusive elements already present in the foreground of Vantage Point 1. Visual impacts on Vantage Point 1 would be less than significant.

Operation and Maintenance

Once constructed, upgraded poles on 115-kV Segment ASP4 would be located approximately 600 feet west of I-15 along Casino Drive/Auto Center Drive and would be visible to motorists at Vantage Point 1. Modifications to 115-kV Segment ASP4 would replace the existing single-circuit structures with TSPs capable of supporting a second circuit. The new TSPs would be constructed of steel and would be 70 to 115 feet tall. The existing poles are constructed of wood and range in height from 65 to 90 feet. Up to three of the proposed TSPs would be visible from City of Lake Elsinore General Plan Vantage Point 1 shown in context photo 24 (Figure 4.1-2d). The TSPs would be larger and more industrial in appearance than the existing wooden poles. The Lake Elsinore General Plan recognizes that viewers on I-15 see the lake area for a short amount of time and are focused on driving rather than aesthetic quality of the area (City of Lake Elsinore 2011). The foreground of Vantage Point 1 also contains several elements that break up the continuity of the natural lake and mountains in the background, including a billboard, a large parking lot, a road, transmission lines, and buildings. The three TSPs would only incrementally add to the non-natural elements already present in the foreground of the view. Traveling at freeway speeds, motorists on I-15 would see the area for several seconds and are unlikely to notice the incremental change given the other non-natural elements and the brevity of the view. Further, there are abundantly more visually intrusive elements already present in the foreground of Vantage Point 1. Visual impacts on Vantage Point 1 would be less than significant.

Impact AES-2 (ASP): Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway.
SIGNIFICANT AND UNAVOIDABLE ~~WITH MITIGATION~~

For the purpose of this document, all Eligible State Scenic Highways are treated the same as Designated State Scenic Highways, in order to preserve their eligibility for official designation, as indicated in section 4.1.2.2. 115-kV Segments ASP6 through ASP8, the microwave dish antennas installed at the Santiago Peak Communication site, and the applicant's Serrano Substation would not be visible from I-15; there would be no visual impacts related to scenic highways for these proposed project components.

Construction

Construction activities would be visible from SR-74 and from I-15 in certain locations. Construction activities visible from SR-74 and I-15 are detailed in Table 4.1-8. Project components are shown in Figures 2-2a through 2-2i in Chapter 2, "Project Description."

Table 4.1-8 Construction Activities Visible from Eligible Scenic Highways

Activity Type	Visible Elements		Visible Activity
	SF-74	I-15	
115-kV Subtransmission construction	N/A	ASP1, ASP1.5, ASP3, ASP4, ASP5	Removal of existing poles, installation of new poles, temporary construction site fencing and signage, soil and vegetation removal, vehicles and equipment used for excavation and grading activities, transporting and lifting, watering to control dust, worker transport, spraying of embankment slopes with an erosion control mixture, line stringing, and other construction activities.
115-kV Subtransmission construction	ASP2	ASP2	Line stringing, addition of crossarms, anchors, and insulators to existing poles.
Materials staging	N/A	Staging Areas ASP1, ASP2, ASP3, ASP11, ASP12	Storage of materials, vehicle parking, and stockpiling of spoils from excavation.
Substation construction	N/A	Substation area	Construction of substation, temporary construction site fencing and signage, soil and vegetation removal, vehicles and equipment used for excavation and grading activities, transporting and lifting, watering to control dust, worker transport, spraying of embankment slopes with an erosion control mixture, and other construction activities.
500-kV Transmission Construction	N/A	500 kV transmission line	Temporary construction site fencing and signage; soil and vegetation removal; vehicles and equipment used for excavation and grading activities; transporting and lifting, helicopter operations; (~~more helicopter use would occur if helicopter construction is implemented than if the conventional method is implemented for 500-kV construction;~~ helicopter platforms/pads ~~used under the helicopter construction option~~ would not be visible to sensitive receptors); watering to control dust; worker transport; spraying of embankment slopes with an erosion control mixture; line stringing; LST assembly and installation; and other construction activities.

Key:
I-15 = Interstate 15
kV = kilovolt
LST = lattice steel tower
N/A = not applicable
SR-74 = State Route 74

I-15

Construction activities would be visible to motorists in views from I-15, including Key Viewpoints 3, 4, 5a, 3 and 5b. Activities visible from these key viewpoints are described in Table 4.1-8.

Construction of the 500-kV transmission lines and the 115-kV subtransmission lines, as described in Table 4.1-8, would detract from the existing views for motorists on I-15 by adding non-natural elements to the middleground and foreground that would contrast with the natural elements in the background. Vividness would be temporarily reduced, as construction equipment and activities would detract from the moderate level of distinctive visual patterns as seen in the background from I-15. Construction activities would add more encroaching elements to the landscape and would temporarily reduce the intactness and unity of the views. Due to the intermittent and temporary (i.e., less than about one week) nature of construction activities at any one location, visual impacts related to construction activities would be less than significant. Further, 115-kV Segments ASP3 and ASP5 would cross I-15 such that construction activities would only be visible for several seconds to motorists traveling at freeway speeds. The areas of disturbance created by construction, if untreated, may be present for a long period of time and therefore seen by a substantial number of viewers from I-15 who are of moderately high visual sensitivity. This would be a significant impact on views from I-15. Project Commitment D would ensure that temporarily disturbed areas would be revegetated, which would shorten the duration that disturbed areas would be viewed by motorists. While construction would be visible to viewers with moderately high visual sensitivity, the temporary and short construction duration as well as the application of Project Commitment D, would reduce this impact to less than significant.

Construction activities in the Alberhill substation area, which is shown in Key Viewpoint 3 and Key Viewpoint 4, would last ~~21~~24 months. A substantial number of viewers with moderately high visual sensitivity would be exposed to the degraded visual quality during construction at the substation site. Even though the impact would be temporary, it would be significant given the extent of site disturbance and large number of viewers with moderately high visual sensitivity who would see this in foreground views. Impacts would be even greater should the applicant obtain soil from on site (Import Soil Option 1) by excavating from a 5.2-acre area. Project Commitment D would ensure that disturbed areas would be revegetated, which would shorten the duration that disturbed areas would be viewed by motorists. Project Commitment D would not reduce construction impacts at the substation to less than significant because of the scale and extent of disturbance and the duration of construction. Even with implementation of Project Commitment D~~MM AES-6 would limit grading to only that necessary to construct the proposed project, thus limiting the amount of grading necessary. Extensive construction activities would still be visible, however, and some level of grading would be required. Even with implementation of MM AES-6~~, visual impacts at the substation site would remain significant.

Construction activities at the staging areas would be visible over the long term. Staging areas would be used for up to 30~~28~~ months (the duration of construction). This long-term impact would expose a substantial number of viewers to the degraded visual quality of the staging area. This would be a significant impact. Project Commitment D would ensure that disturbed areas would be revegetated, which would shorten the duration that they would be viewed by motorists. Given that the staging area would be in use for the entire duration of construction, Project Commitment D would not reduce impacts to less than significant. MM AES-1 would require that the staging areas be screened with material that is visually consistent with the surrounding area. With implementation of MM AES-1, visual impacts at the staging areas would be reduced to less than significant.

SR-74

The 115-kV Segment ASP 2 alignment runs parallel to SR-74 for about 500 feet. This area, which is partially flanked by dense trees and has a rural feel, is comparable to Key Viewpoint 7 and has moderate vividness, intactness, and unity. Activities along 115-kV Segment ASP2 would involve only line stringing and adding crossarms, anchors, and insulators to existing poles. At a stringing rate of 0.35 miles per day, stringing activities along SR-74 would take less than one day. Given the very short temporary nature of the activity, visual impacts on SR-74 during construction would be less than significant.

Operations and Maintenance

I-15

The Alberhill Substation, portions of the 500-kV transmission lines, and portions of 115-kV Segments ASP1 through ASP5 would be visible from I-15. Table 4.1-9 summarizes the changes to the aesthetic qualities of representative key viewpoints for I-15 due to project operation and maintenance activities, prior to implementation of any mitigation.

Table 4.1-9 Key Viewpoint Impact Summary – Scenic Highways (Visual Character and Quality)

Key Viewpoint	Visual Sensitivity	Vividness		Intactness		Unity	
		Existing	With Project	Existing	With Project	Existing	With Project
Key Viewpoint 3	MH	M	**L**	H	**ML**	MH	**L**
Key Viewpoint 4	MH	M	**L**	H	**ML**	MH	**L**
Key Viewpoint 5a	MH	M	**L**	MH	**ML**	M	**L**
Key Viewpoint 5b	MH	M	**L**	MH	**ML**	M	**L**

Key
Bold Underlined= Results in Significant Impact
L = Low
M = Moderate
MH = Moderately High
ML = Moderately Low

At Key Viewpoints 3 and 4, the proposed new Alberhill Substation, 500-kV transmission lines, and 115-kV Segments ASP1 and ASP1.5 would be permanently visible to motorists on I-15 within a viewshed with natural and rural visual character, moderate vividness, high intactness, and moderately high unity. Visual sensitivity in this area is considered moderately high. Simulated views of the proposed substation are shown for Key Viewpoints 3 and 4 (Figures 4.1-4c and 4.1-4d). Components of the proposed Alberhill Substation, 500-kV transmission lines, and 115-kV subtransmission lines that would be visible from I-15 in these locations include:

- Alberhill Substation
  - Control building (20 feet tall, ~~7,040~~10,500 square feet)
  - Concrete or concrete block substation perimeter wall (8 to 14 feet tall)
  - Microwave antenna tower (120 feet tall)
  - 500-kV ~~gas~~air-insulated switchrack (~~49~~ 65 feet tall)
  - 115-kV switchrack and dead-end structures (60 feet tall)
  - 500/115-kV transformers (37 feet tall)
  - Parking area and driveways (7,600 square feet)
  - Import Soil Source Area (5.2 acres) if Import Soil Option 1 is selected (refer to Chapter 2, "Project Description")
  - Buffer area maintained around the substation's perimeter wall to be brushed of vegetation and structures during operations (10 feet wide)

Existing Conditions

Simulated View

Import Soil Source Area

1002453.0006.02.f.ai 01/27/2016

Figure 4.1-4c

Key Viewpoint 3 Proposed Alberhill Project Visual SImulation: Northbound I-15 Looking Toward Alberhill Substation, View North

(500-kV Towers SA1 and VA1 Shown)

This page intentionally left blank

Existing Conditions

Simulated View

EE-002929-0012-04-00TTO.b.ai (Alberhill 2012 Archives) 01/27/2016

Figure 4.1-4d

Key Viewpoint 4 (Proposed Alberhill Project Visual Simulation):
Northbound I-15 Looking Toward Alberhill Substation, View Northwest
(500-kV Towers SA1 and VA1 Shown)

This page intentionally left blank

- 500-kV transmission line
  - 500-kV LSTs (95 to 190 feet tall)
  - 500-kV transmission conductor cables
  - Sections of the new access roads to the proposed 500-kV transmission towers
- 115-kV substransmission lines
  - 115-kV structures (70 to 115 feet tall)
  - 115-kV subtransmission conductor cables

As shown in the simulated views for Key Viewpoints 3 and 4 (Figures 4.1-4c and 4.1-4d), and summarized in Table 4.1-9, components of the proposed Alberhill Project would substantially degrade the vividness, intactness, and unity of these views. Vividness would be reduced from moderate to low because the size and scale of the components of the proposed Alberhill Project would draw the viewers' attention from the undeveloped hills in the middleground. Intactness would be reduced from high to moderately low, and unity would be reduced from moderately high to low due to the introduction of new, large, human-made, industrial structures into foreground views in an area where there are currently few human-made elements. Components of the proposed Alberhill Project would introduce substantial contrast in form, line, color, and texture to views, thus substantially damaging scenic resources within the scenic highway corridor. Viewers in this area are of moderately high visual sensitivity. Visual impacts in the area of the proposed substation would therefore be significant.

Under Project Commitment A, the applicant would develop and implement a Landscaping and Irrigation Plan for the substation site and, pursuant to this plan, maintain the substation site and be responsible for its upkeep as long as the applicant owns the property. This may reduce aesthetic impacts by softening the contrast of the substation with the surrounding natural environment. However, landscaping is unlikely to substantially screen views or reduce the contrast of the substation in views from I-15 given the massive scale of the substation structures and given that viewers from I-15 are elevated above the substation. Furthermore, a majority of the substation, transmission structures, and distribution structures would be visible. Therefore, there would still be a substantial decrease in vividness, intactness, and unity and impacts on views from I-15 in this area would remain significant even after implementation of Project Commitment A. Mitigation ~~Several mitigation~~ measures would be implemented. ~~MM AES-6 would require limiting cut and fill to that necessary to reduce the amount of visual change in topography.~~ MM AES-7 would require the applicant to utilize colors and finishes for the aboveground structures at the Alberhill Substation to reduce its visual impact. Even after mitigation, a majority of the substation, transmission structures, and distribution structures would remain visible, and there would still be a marked decrease in vividness, intactness, and unity. Even with implementation of ~~AES-6 and~~ AES-7, visual impacts in the Alberhill Substation area would remain significant.

Key Viewpoints 5a (with marker balls) and 5b (without marker balls) depict the 500-kV transmission lines as they would appear in views from I-15 if the proposed Alberhill Project is constructed (Figure 4.1-4e and 4f). The 500-kV transmission lines would reduce the vividness of the view by introducing development to an undeveloped hillside. Vividness would be reduced from moderate to low. The 500-kV transmission lines would detract from the intactness and unity of the view by introducing large, industrial structures to an existing view characterized by natural and rural visual elements. Intactness and unity would be reduced from moderately high to moderately low and from moderate to low, respectively. Further, the large scale of the transmission line structures silhouetted against the sky, the natural background, and their location parallel to I-15 would also encroach on the natural appearance of the middleground and background. Viewers are of moderately high visual sensitivity. This impact would therefore be significant. Due to the size of the structures and location of the proposed substation, screening would not reduce impacts, and rerouting to reduce visual impacts would not be feasible. MM AES-8 would require treatment of the structures closest to I-15 to be colored so as to blend with the natural surroundings. ~~with a dark finish.~~ This would help reduce impacts, but the structures would still be silhouetted against the sky above the ridgeline and introduce a new industrial element in a relatively non-industrial area. Even with implementation of AES-8, visual impacts would remain significant.

115-kV Segment ASP3 and ASP5 would perpendicularly cross I-15. 115-kV Segments ASP3 and ASP5 would involve replacing existing wood poles with new, taller LWS poles and TSPs. The LWS poles and TSPs would increase the visual dominance of human infrastructure in the viewsheds at their I-15 crossings because the poles and conductor would further obstruct views of the natural hillside in the background. Additionally, the contrast in color, vertical poles, and conductor silhouetted against the sky and vegetation on hillsides would cause the transmission infrastructure to stand out in the views. Vividness would decrease because the roadway and human elements would become more dominant compared to the natural elements. Intactness and unity would be reduced because the additional poles would encroach upon the natural background. The crossing locations already have existing signs of development, including housing, transmission infrastructure, and/or billboards. The proposed project would therefore not substantially decrease vividness, intactness, or unity. These segments would be visible for a very short amount of time to motorists traveling at high speed, making the increase in height not very noticeable to viewers of moderately high visual sensitivity. Visual impacts of 115-kV Segments ASP3 and ASP5 for views from I-15 would be less than significant.

115-kV Segment ASP4 would run parallel to I-15 and would be visible along approximately 0.75 miles of I-15. 115-kV Segment ASP4 would involve replacing existing wood poles with new, taller TSPs and LWS poles. The new subtransmission line would not obstruct any elements in the background, but the LWS poles, TSPs, and conductor would encroach on the skyline and would also contrast with the skyline in color and line. The area where ASP4 is visible contains existing transmission infrastructure that already encroaches on the skyline. The proposed infrastructure is similar in line and form to the existing infrastructure, although somewhat more noticeable and dominant. However, the roadway and disturbed shoulder currently dominate the viewshed in the area; with the proposed project, the roadway and disturbed shoulder would continue to dominate the viewshed. Vividness would remain the same, as the pattern of the transmission poles would remain similar after project implementation. Intactness and unity would be somewhat reduced because the taller poles would be more noticeable and dominant. Viewers would be of moderately high visual sensitivity. Visual impacts of 115-kV Segment ASP4 for views from I-15 would therefore be less than significant.

115-kV Segment ASP2 would be visible from some locations on I-15. ASP2 would involve placing conductor, crossarms, anchors, and insulators on existing poles that ~~would be~~ were installed as part of the Valley–Ivyglen Project. Addition of these components to existing poles would result in a negligible visual change to viewers traveling at high speeds on I-15. Visual impacts of 115-kV Segment ASP2 for views from I-15 would be less than significant.

SR-74

115-kV Segment ASP2 would cross and run parallel to SR-74 for about 500 feet. ASP2 would involve placing conductor, crossarms, anchors, and insulators on existing poles that were installed as part of the Valley–Ivyglen Project. Additional conductors and support structures placed on existing poles are unlikely to be noticeable to viewers traveling at high speeds on SR-74 and would result in a negligible visual change. Visual impacts of 115-kV Segment ASP2 on views from SR-74 would be less than significant.

Mitigation Measures

MM AES-1: Staging Area Screening.

~~**MM AES-6: Hillside and Natural Slope Preservation.** The applicant will limit grading, cut, and fill to the minimum necessary to provide stable areas for drainage, structural foundations, parking facilities, access roads, poles, and other intended uses.~~

MM AES-7: Alberhill Substation Visual Treatments. The applicant will prepare ~~consult with~~ a surface treatment plan for the ~~professional landscape architect licensed to work in California to determine what colors to use for the control building and perimeter wall and other~~ aboveground non-steel structural elements ~~infrastructure~~ associated with the Alberhill Substation. Colors will be selected according to their ability to reduce the aesthetic impact of the substation and ancillary infrastructure. The applicant will ~~also~~ consult with the ~~landscape architect regarding visual treatments, in addition to color, that would reduce aesthetic impacts. The applicant will obtain approval of the selected colors and visual treatments from the~~ California Public Utilities Commission prior to start of construction, and the CPUC will approve the plan. All color finishes will be flat and non-reflective. ~~Structural steel associated TSPs, LWS poles, and LSTs within the SCE substation parcel must have color finishes that are dark in color or otherwise colored to help blend the structures with the Substation will not be dulled. Their surroundings. An acceptable treatment is a long-lasting darkening agent that bonds with metal or other surfaces to create a darkened finish.~~

MM AES-8: Treatment of 500-kV Transmission Towers. 500-kV Towers SA2/R4, VA2/R5, SA3/R7, VA3/R8, SA4/R12, and VA4/R11 will have color finishes that ~~are dark in color or otherwise colored to~~ help blend the structures with their natural surroundings. The CPUC will approve the final color choices. ~~An acceptable treatment is a long-lasting darkening agent that bonds with metal or other surfaces to create a darkened finish~~.

Impact AES -3 (ASP): Substantially degrade the existing visual character or quality of the site and its surroundings.
LESS THAN SIGNIFICANT WITH MITIGATION

Impacts on aesthetic resources within a State Scenic Highway along Eligible State Scenic Highways I-15 and SR-74 from construction and operation of the Alberhill Project are discussed under Impact AES -2 (ASP). The construction-related aesthetic impacts on I-15 would be significant, and the aesthetic impacts on SR-74 would be less than significant, as previously described. The operational impacts would be significant on I-15 and less than significant on SR-74, as previously described. This section discusses impacts on aesthetic resources other than those along I-15 and SR-74.

Construction

Construction activities would be visible in public viewsheds along the proposed project alignment, including the viewsheds shown in Key Viewpoints 13, 14, and 15. Activities visible from these Key Viewpoints and other locations along the project alignment could include those listed in Table 4.1-8 for 115-kV subtransmission line construction. Staging areas would also be visible in public viewsheds. Activities at staging areas could include materials storage, vehicle parking, and stockpiling of spoils from excavation. Viewers of these activities would include motorists, pedestrians, and recreationists, many of whom are likely to be local residents.

Construction would detract from the existing views. Construction activities in these key viewsheds would involve pole removal and replacement. Construction activities would somewhat reduce the vividness and intactness of views by adding more noticeable and encroaching elements to the landscape. Construction activities would also decrease the unity of the key viewsheds by adding more non-natural elements to the middleground and background. Impacts from construction activities, however, would be temporary and short term (i.e., less than one week) at any one location, reducing exposure of viewers to visual impacts. Accordingly, visual impacts would be less than significant.

~~Use of~~ Staging Areas ~~ASP3 through ASP7,~~ as shown in Figure~~s~~ 2.2~~c through 2.2h~~ (Chapter 2, "Project Description") would occur for the 30~~28~~~~27~~-month construction period. A substantial number of viewers would be exposed to the degraded visual quality at staging areas caused by presence of materials, equipment, and construction-related activities for an extended period of time. This visual impact would be significant. Project Commitment D would ensure that disturbed areas would be revegetated, which would shorten the duration that disturbed areas would be viewed after use of staging areas is over, but would not shorten the use of the staging areas. Given that the staging area would be in use for the entire duration of construction, Project Commitment D would not reduce impacts to less than significant. MM AES-1 would require that the staging area be screened with material that is visually consistent with the surrounding area. With implementation of Project Commitment D and AES-1, visual impacts at the staging areas would be reduced to less than significant.

Operation and Maintenance

The proposed Alberhill Project has the potential to affect visual resources at Key Viewpoints 13, 14, and 15 and several other locations. Table 4.1-10 summarizes the changes to the aesthetic qualities of these representative Key Viewpoints due to project operation and maintenance activities, prior to implementation of any mitigation.

Table 4.1-10 Key Viewpoint Impact Summary (Visual Character and Quality)

Key Viewpoint	Visual Sensitivity	Vividness		Intactness		Unity	
		Existing	With Project	Existing	With Project	Existing	With Project
Key Viewpoint 13	ML	L	L	L	L	L	L
Key Viewpoint 14	MH	L	L	M	**L**	M	**L**
Key Viewpoint 15	ML	L	L	L	L	L	L

Key
Bold Underlined= Results in Significant Impact
L = Low
M = Moderate
MH = Moderately High
ML = Moderately Low

Some segments of the Alberhill Project would span areas with existing electric infrastructure and an urbanized visual character, as represented in Key Viewpoints 13 and 15, which show 115-kV Segments ASP3 and ASP6, respectively. Some parts of the Alberhill Project would be located in more rural and suburban areas, as represented by Key Viewpoint 14.

At Key Viewpoint 13, as shown in the visual simulation (Figure 4.1-4n), ASP3 would involve removal of existing wood poles that carry one 115-kV circuit and distribution conductor and replacement with larger TSPs to hold a second 115-kV circuit. The TSPs would be larger and more industrial in appearance than the existing wooden poles. While the poles would be larger and additional conductor would be installed, these incremental changes would not result in a substantial effect on the existing low vividness, intactness, or unity of the view. Visual impacts would therefore be less than significant.

At Key Viewpoint 14, as shown in the visual simulation (Figure 4.1-4o), a new, single-circuit 115-kV subtransmission line would be installed on new LWS poles ~~TSPs~~ where there currently are no LWS poles

~~TSPs~~. Wood poles in the background in the left of the viewpoint would be replaced with LWS poles ~~TSPs~~ to accommodate the second 115-kV circuit. The proposed LWS poles ~~TSPs~~ in the left of the view would be comparable in line. The LWS poles ~~TSPs~~ would differ in form due to their taller heights. They would also be a different color from existing wood poles. Galvanized steel poles would contrast more with the darker colors in the landscape than the current wood poles. The character of the galvanized steel poles would also not comport with the somewhat rural visual character of the area. No changes to vividness would result because there would be no change to distinctive visual elements or striking visual patterns due to a replacement of wood poles with LWS poles ~~TSPs~~ in a similar linear pattern. Intactness would be reduced from moderate to low because the galvanized steel would contrast greatly with the vegetation and darker colored elements low to the ground. Unity would also decrease from moderate to low due to this greater contrast and reduction in compositional harmony. Viewers in the area are of moderately high visual sensitivity. The following project components would result in a significant impact due to location in an area where the setting is more rural and there is no or limited existing galvanized steel infrastructure and fewer modifications to natural elements:

- 115-kV Segment ASP5
  - From the intersection of Murrieta Road and Scott Road/Bundy Canyon Road to 520 feet northeast of the intersection of Citrus Grove and Lemon Street.
  - From the intersection of Almond Street and Lemon Street to the intersection of Waite Street and Jo Ann Court.
- 115-kV Segment ASP~~4~~6
  - From the intersection of Murrieta Road and La Piedra Road to the intersection of Murrieta Road and Craig Avenue.
  - From the intersection of Murrieta Road and Beth Avenue to the intersection of Murrieta Road and Scott Road/Bundy Canyon Road.
- ~~115-kV Segment ASP5~~
  - ~~From the intersection of Murrieta Road and Scott Road/Bundy Canyon Road to 520 feet northeast of the intersection of Citrus Grove and Lemon Street.~~
  - ~~From the intersection of Almond Street and Lemon Street to the intersection of Waite Street and Jo Ann Court.~~

MM AES-9 would require utilizing poles in these areas that are made of wood, self-weathering, or galvanized steel (with appropriate colors, finishes, or textures), which would result in less contrast with vegetation and development and would result in less of a visual change in quality and character from current wood poles. With implementation of MM AES-9, visual impacts would be less than significant.

As shown in the visual simulation for Key Viewpoint 14, the installation of the LWS poles ~~TSPs~~ where there currently are none in front of the Calder Ranch development would somewhat reduce the vividness; however, this reduction would not be substantial because the vividness of views in this area have been identified as generally low. Intactness and unity of the view would also be reduced from moderate to low due to the additional linear elements being placed in an area that does not feature many strong linear patterns. Given the moderately high visual sensitivity of viewers in this area, these impacts would be significant. MM AES-10 would require undergrounding of the alignment in the area where there are no aboveground utility structures along Murrieta Road. With implementation of MM AES-10, visual impacts would be less than significant with mitigation.

At Key Viewpoint 15, as shown in the visual simulation (Figure 4.1-4p), a new, single-circuit 115-kV subtransmission line would be installed on new TSPs, replacing the existing wooden poles that support distribution lines. The TSPs would be larger and more industrial in appearance than the existing wooden poles. These poles would not affect the intactness and unity of the existing view, both of which are currently low, and the poles would only slightly diminish the vividness of the view; vividness would remain low. The size and scale of the poles would somewhat detract from the less developed area visible in background views and would draw attention from the geologic features visible in Figure 4.1-4n. Visual impacts would therefore be less than significant.

No key viewpoints were developed for the microwave dish antennas to be installed at the applicant's Serrano Substation and the Santiago Peak Communications Site. The antennas would be installed on existing structures. Viewer groups at the Santiago Peak Communications Site would primarily include United States Forest Service staff and occasional recreational users. The new antennas would be consistent with the existing character of the proposed sites, given the existing communications infrastructure at these locations. Impacts from the installation of the new microwave dish antennas would be less than significant.

Mitigation Measures

MM AES-1: Staging Area Screening.

MM AES-9. Use wood, self-weathering steel, or galvanized steel poles. Wood or self ~~Self~~-weathering or galvanized steel poles with surface coatings with appropriate colors, finishes and textures to most effectively blend the structures with the visible backdrop landscape ~~steel poles~~ shall be used on all of 115-kV Segment ASP6 (except where undergrounding is required per MM AES-10) and 115-kV Segments ASP5 ~~ASP4~~ and ASP6 ~~ASP5~~ in the following locations:

- 115-kV Segment ASP5 ~~ASP4~~
  - From the intersection of Murrieta Road and Scott Road/Bundy Canyon Road to 520 feet northeast of the intersection of Citrus Grove and Lemon Street.
  - From the intersection of Almond Street and Lemon Street to the intersection of Waite Street and Jo Ann Court.
- 115-kV Segment ASP6
  - From the intersection of Murrieta Road and La Piedra Road to the intersection of Murrieta Road and Craig Avenue.
  - From the intersection of Murrieta Road and Beth Avenue to the intersection of Murrieta Road and Scott Road/Bundy Canyon Road.
- ~~115-kV Segment ASP5~~
  - ~~From the intersection of Murrieta Road and Scott Road/Bundy Canyon Road to 520 feet northeast of the intersection of Citrus Grove and Lemon Street.~~
  - ~~From the intersection of Almond Street and Lemon Street to the intersection of Waite Street and Jo Ann Court.~~

MM AES-10. Undergrounding on Murrieta Road: 115-kV Segment ASP6 shall be undergrounded between Craig Avenue and Beth Drive along Murrieta Road.

Impact AES -4 (ASP): Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction

Construction of the proposed project would usually occur during daylight hours. There is a possibility that some construction activities would occur at night, requiring temporary lighting. For example, the California Independent System Operator or California Department of Transportation may require that conductor stringing over highways occurs at night. Night lighting could adversely affect night time views in the area, which would be a significant impact. MM AES-5 would reduce effects of night time lighting. With mitigation, impacts would be less than significant. Safety and security lighting at staging areas and other areas established for long-duration construction activities, such as laydown areas, may introduce new sources of substantial nighttime lighting, which would adversely affect nighttime views in their vicinity. In locations where this lighting would be visible to sensitive viewers, this impact would be significant. MM AES-5 would reduce effects of night time lighting for safety and security at staging areas and other areas established for long-duration construction activities. With mitigation, impacts would be less than significant.

Operation and Maintenance

New sources of nighttime lighting would be introduced at the proposed Alberhill Substation. The applicant would use low-pressure sodium lighting at the proposed Alberhill Substation. Lighting installed at the proposed substation would conform to Riverside County Ordinance 655, which regulates and specifies criteria for light pollution. Access lighting at the proposed Alberhill Substation would be controlled by a photo sensor. Each entrance gate would have a beacon light installed for safety and security purposes. The beacon lights would be illuminated only while the gates are open or in motion. The applicant typically uses double-flash strobe lights as beacon lights on substation gates. Maintenance lights would be controlled by a manual switch that would normally be in the "off" position. Maintenance lights would be directed downward and shielded. Maintenance lights would be used only when required for maintenance or emergency repairs that occur at night. Impacts related to night lighting at the Substation would be less than significant.

The proposed Alberhill Project could introduce new sources of glare because of the installation of components with reflective surfaces. The applicant has stated that non-specular 500-kV conductor cables would be installed. Other elements of the project include metallic LWS poles, TSPs, the Alberhill Substation, and conductor. These elements would create substantial glare if their surfaces are reflective. Given the height of the elements aboveground, this would adversely affect daytime views in the project area. MM AES-3 would require that these elements have a flat, galvanized steel finish that will weather to be dull and non-reflective. MM AES-7 would require that all color finishes at the Alberhill Substation will be flat and non-reflective. MM AES-7 and MM AES-8 would require that certain utility structures on the 500-kV transmission line and in and near the substation have a ~~darker color and~~ ~~dull~~ flat and non-reflective finish, which would reduce the potential for glare and that color would be used to help blend with the surrounding environment. MM AES-9 would require steel poles to be self-weathering or galvanized steel (with appropriate colors, finishes, and textures) on portions of 115-kV Segments ASP4, ASP5, and ASP6, reducing the potential of glare. With implementation of MMs AES-3, AES-7, AES-8, and AES-9, visual impacts from the proposed Alberhill Project on daytime views due to increased glare and lighting would be reduced to less than significant.

Mitigation Measures

MM AES-3: Glare Reduction.

MM AES-5: Night Lighting during Construction

MM AES-7: Alberhill Substation Visual Treatments.

MM AES-8: Treatment of 500-kV Transmission Towers.

MM AES-9. Use wood, self-weathering, or galvanized steel poles.

AGRICULTURE AND FORESTRY RESOURCES

Section 4.2.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As demonstrated by the revisions to the FEIR analysis that follows, no new impacts were identified and the severity of previously identified impacts have not increased.

4.2.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

4.2.5.1 Project Commitments (Alberhill Project)

The applicant has committed to the following as part of the design of the proposed projects. See Section 2.6, "Project Commitments," for a complete description of each project commitment.

- **Project Commitment I: Agricultural Uses:** Existing agricultural and grazing uses within the existing and proposed ROW areas shall be allowed to continue during operation of the proposed projects. In addition, the applicant shall coordinate construction and maintenance activities with agricultural landowners to avoid interference with grazing and agricultural activities unless such coordination is not possible due to emergency circumstances.

4.2.5.2 Impacts Analysis (Alberhill Project)

Impact AG-1 (ASP): **Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to non-agricultural use.** *LESS THAN SIGNIFICANT*

Construction

Construction activities would temporarily impact about ~~0.69~~ 1.49 acres of Farmland from the preparation and use of structure work areas and installation of a new underground duct bank and vault associated with 115-kV Segment ASP8, as shown in Figure 4.2-1 and detailed in Table 4.2-2. ~~The~~ This temporary disturbance of Farmland would not occur all at once, would not occur during the entire construction period, and would not result in permanent conversion of Farmland to non-agricultural use. Impacts would be less than significant. Additionally, as detailed in Project Commitment I, the applicant would coordinate construction with agricultural landowners to avoid interference with grazing and agricultural activities, which would further reduce impacts. Therefore, impacts from construction of the proposed Alberhill Project would remain less than significant.

Operation and Maintenance

The ~~One proposed~~ Alberhill Project ~~structure~~ would permanently disturb a combined total of about ~~0.05~~0.04 acres of Farmland (Figure 4.2-1 and Table 4.2-2). This small area would be negligible (0.0000003 percent) compared to the total amount of Farmland in Riverside County (196,568 acres). Impacts under this criterion would be less than significant. Additionally, the applicant would allow existing agricultural uses to continue during operation of the proposed Alberhill Project and coordinate maintenance with agricultural landowners (Project Commitment I). Impacts under this criterion during operation and maintenance would remain less than significant.

Table 4.2-2 Estimated Alberhill Project Farmland Disturbance

Farmland Type	New 115-kV Structures/ Temporary Construction Areas	Temporary Alberhill Project Disturbance Area[1]	Permanent ~~Area Disturbance by New Structures~~Alberhill Project Disturbance Area[2]
Prime Farmland	Install 1 structure and remove 1 structure	0.71 acres	0.04 acres
Farmland of Statewide Importance	~~1 structure~~ Modify 3 structures	~~0.69~~0.78 acres	~~0.05~~0.00 acres
Total	**~~1 structure~~5 structures**	**~~0.69~~1.49 acres**	**~~0.05~~0.04 acres**

Sources: CDC 2012b~~; SCE 2013, 2014~~

Notes:

1 Temporary disturbance area was estimated based on the Alberhill System Project Disturbance Area (refer to disturbance areas in Table 2-~~5~~6). GIS software was used to compute where this would overlap with Farmland as specified by Riverside County FMMP data (CDC 2012b)~~; the permanent area disturbed by new structures within the Valley–Ivyglen 115-kV General Disturbance Area was excluded from this acreage~~.

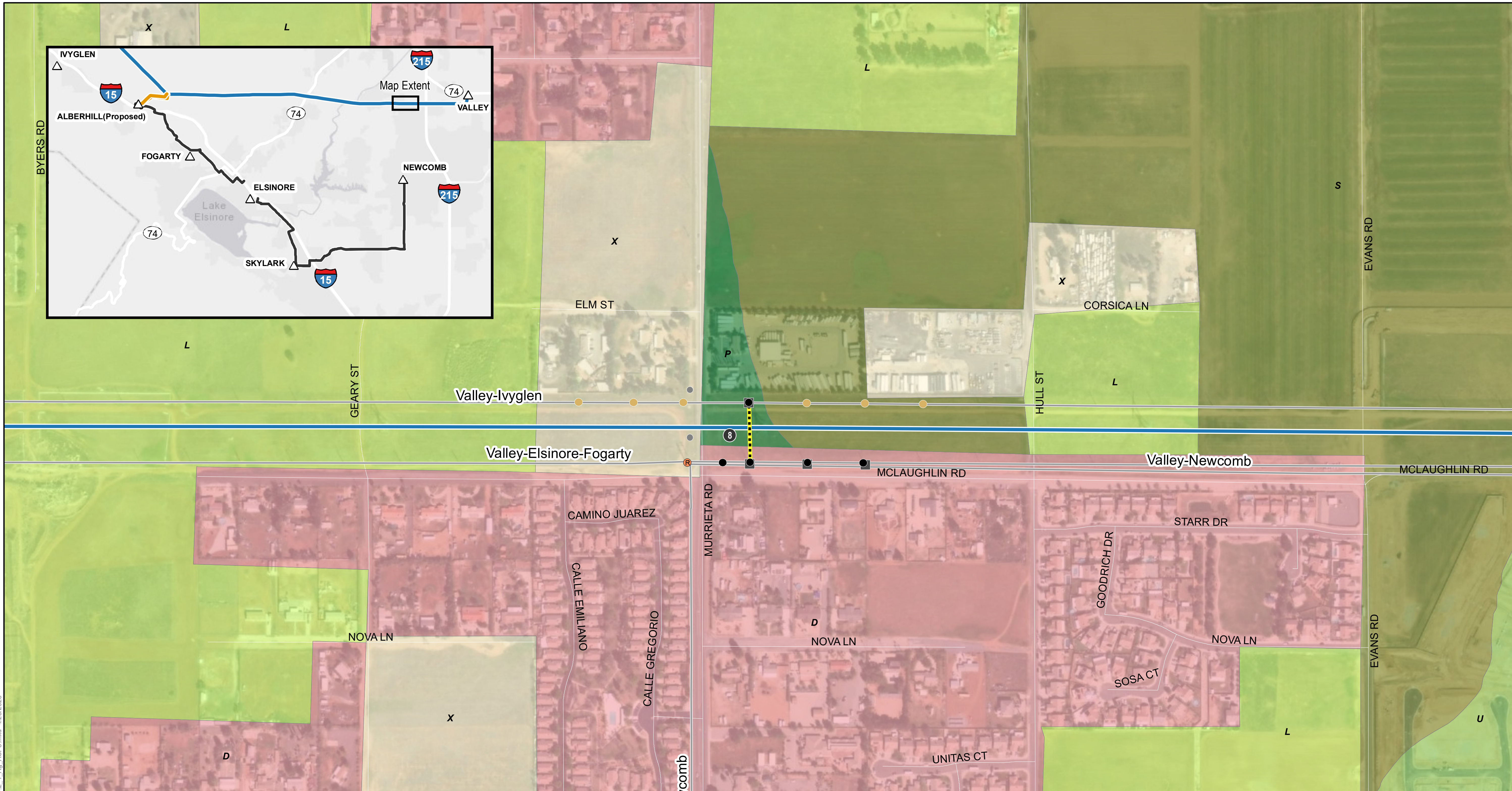
2 Permanent disturbance area was estimated based on the permanent disturbance areas described in the Project Description (Table 2-~~5~~6). ~~To be conservative, it was assumed the poles would be a TSP and that its entire permanent disturbance area would be located within Farmland. It is likely that impacts would be less than that listed in this table.~~ GIS software was used to compute where the proposed 115-kV structures would overlap with Farmland as specified by Riverside County FMMP data (CDC 2012b).

Impact AG-2 (ASP): Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of Forest Land to non-forest use.
LESS THAN SIGNIFICANT

Removal of the ability to access or irrigate crops and orchards could effectively render formerly productive farmland unusable, resulting in the conversion of farmland to a non-agricultural use. An agricultural water pipeline, owned and operated by the Elsinore Valley Municipal Water District, crosses the proposed Alberhill Substation site. Currently, the water line is not in use. If needed, it is available for local agricultural and industrial uses. The pipeline would be relocated to the perimeter of the proposed substation site prior to construction of the substation. The Elsinore Valley Municipal Water District anticipates that the line would be out of service for one workday, approximately eight hours, and no more than two days (Baiyasi 2011). Even if the line is in use during its relocation, a temporary two-day interruption of service would not result in the conversion of farmland to non-agricultural use. There are no other planned long-term restrictions to land access planned during construction or operation. There would be no impact.

As stated above, there is no overlap between the proposed project area and land defined as Forest Land.

This page intentionally left blank



8 ASP8

Existing 500 kV Serrano-Valley Transmission Line

New 115 kV Cable in New Duct Bank

Existing 115 kV Subtransmission Line

New 115 kV Pole/Structure

Modify 115 kV Pole/Structure

Existing 115 kV Pole/Structure

Replace Pole/Structure

Remove 115 kV Pole/Structure

Farmland Mapping and Monitoring Program (FMMP)

Urban and Built-up Land (D)

Farmland of Local Importance (L)

Prime Farmland (P)

Farmland of Statewide Importance (S)

Unique Farmland (U)

Other Land (X)

Figure 4.2-1
Farmland Impacted by the Proposed Project

Alberhill System Project

Feet
0 250 500

Z:\Projects\SCE_Alberhill\Amended_PEA\MXD\Figures\Fig_4_2_1_Ag_ASP8.mxd 4/28/2023

This page intentionally left blank

AIR QUALITY

Section 4.3.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As demonstrated by the revisions to the FEIR analysis that follows, no new impacts were identified, the severity of one previously identified impact would be reduced, and the severity of the remaining previously identified impacts have not increased. The FEIR's original air quality analysis (Appendix B) has been revised to account for the changes in the Proposed Project and is presented as Appendix P: Revised Air Quality and GHG Emissions.

4.3.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

4.3.5.1 Project Commitments (Alberhill Project)

The applicant has committed to implementing the following as part of the design of the proposed Alberhill Project. See Section 2.6, "Project Commitments," for a complete description of each project commitment.

- **Project Commitment J: Air Emissions Controls.** The applicant would implement the following fugitive dust control measures for the Alberhill System Project:
  - Water three times per day or as needed during excavation, bulldozing, scraping, and grading activities, in order to ensure compliance with SCAQMD Rule 403, Fugitive Dust.
  - Limit vehicle speed limits on unpaved roads to 15 mph, per SCAQMD's Table XI-A, Mitigation Measure Examples; Fugitive Dust from Construction and Demolition (Rev. 4/2007).
  - Water storage piles twice a day, resulting in a 50% fugitive dust control efficiency.

4.3.5.2 Impacts Analysis (Alberhill Project)

Impact AQ-1 (ASP): Conflict with or obstruct implementation of the applicable air quality plan.
NO IMPACT

Construction

The South Coast AQMP outlines the SCAQMD long-term strategies designed to reach attainment status for the federal 24-hour $PM_{2.5}$ standard and the federal 8-hour ozone standard. Most control measures relate either to control of stationary sources or to actions the SCAQMD or other agencies will take to incentivize emissions reductions. Three VOC-reducing policies could relate to construction of the proposed Alberhill Project, since the project could involve architectural coatings, adhesives, solvents, and vacuum trucks (for fuel transport). Any of the three relevant AQMD control measures (CTS-01, CTS-02, or FUG-01) would be developed into SCAQMD rules or regulations. SCE would be required to comply with all relevant SCAQMD rules and regulations as they become enforceable. Construction of the proposed Alberhill Project would not conflict with or obstruct implementation of the AQMP and therefore would have no impact in this area.

Operation and Maintenance

Operation and maintenance of the Alberhill Project would not create permanent full-time or part-time employment positions during construction that would result in an increase in population or require new housing that would result in a new emissions source. Emissions from vehicles used during operation and maintenance would be within AQMP projections. Operation and maintenance of the proposed Alberhill

Project would not conflict with or obstruct implementation of the AQMP and therefore would have no impact in this area.

Impact AQ-2 (ASP): Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
SIGNIFICANT WITH MITIGATION

Methodology

The SCAQMD (2015b) has developed air quality significance thresholds to assist CEQA analyses. SCAQMD regional air quality significance thresholds are summarized in Table 4.3-3, above.

Construction

~~Criteria air pollutants would be generated during construction activities that use heavy equipment, helicopters, on-road vehicles, and off-road vehicles~~ Construction activities that require the use of heavy equipment, such as helicopters, on-road vehicles, and off-road vehicles, may generate criteria pollutants. Such activities include:

- Grading
- Vegetation clearing
- Excavating
- Substation Construction
- Worker transport
- Equipment and material deliveries
- Pole and tower installation

Estimates of maximum daily criteria air pollutant emissions that would result from project construction without emission control measures (uncontrolled emissions) and with Project Commitment J (controlled emissions) are summarized in Table~~s~~ 4.3-8 ~~and 4.3-9~~. Estimated maximum daily emissions are intended to represent peak values based on the combination of overlapping construction activities that yield the highest emissions. Emissions represent the two import soil options ~~suite of scenarios~~ that may occur for construction of the Alberhill Substation ~~proposed project~~ (refer to Section 2.4.6.2, “Fill, grading, Drainage, and Surface Materials,” for a discussion of soil source options) and the combined use of conventional and helicopter construction methods for the 500-kV transmission line (refer ~~and~~ to Section 2.4.5.5, “500-kV Tower Construction (Alberhill Project),” ~~for discussion of helicopter and conventional construction methods for the 500-kV transmission line~~). Detailed calculations and assumptions for all construction activities and operational sources are presented in Appendix ~~C~~P.

~~Conventional Method~~

~~Uncontrolled maximum daily project emissions would exceed significance thresholds under the conventional scenario and both import soil options for VOC, NO_X, PM_{10}, and $PM_{2.5}$, as shown in Table 4.3-8. The applicant’s Project Commitment J would reduce PM_{10} and $PM_{2.5}$ emissions, as shown in Table 4.3-8, but PM_{10} and $PM_{2.5}$ emissions would still be above the SCAQMD thresholds. Impacts would still be significant. To further reduce criteria pollutant emissions, the applicant would implement MM AQ-1, MM AQ-2, and MM AQ-3.~~

~~Table 4.3-8 Maximum Daily Criteria Air Pollutant Construction Emissions (Alberhill Project, Conventional Method Scenario)~~

~~Item~~	~~Peak Daily Air Pollutant Emissions (lbs/day)~~[1,2]					
	~~VOC~~	~~CO~~	~~NO_X~~	~~SO_X~~	~~PM_{10}~~	~~$PM_{2.5}$~~
~~Import Soil Option 1: 5.2-Acre Source Area (On-Site Borrow Site)~~						
~~Uncontrolled Maximum Daily Project Emissions~~[3]	~~94~~	~~338~~	~~1,090~~	~~38~~	~~878~~	~~120~~
~~Controlled Maximum Daily Project Emissions~~[3]	~~94~~	~~338~~	~~1,090~~	~~38~~	~~445~~	~~76~~
~~Import Soil Option 1 Exceeds Regional Thresholds (Yes/No)~~[4]	~~Yes~~	~~No~~	~~Yes~~	~~No~~	~~Yes~~	~~Yes~~
~~Import Soil Option 2: Local Quarry~~						
~~Uncontrolled Maximum Daily Project Emissions~~[3]	~~91~~	~~324~~	~~1,074~~	~~38~~	~~896~~	~~115~~
~~Controlled Maximum Daily Project Emissions~~[3]	~~91~~	~~324~~	~~1,074~~	~~38~~	~~434~~	~~69~~
~~Import Soil Option 2 Exceeds Regional Thresholds (Yes/No)~~[4]	~~Yes~~	~~No~~	~~Yes~~	~~No~~	~~Yes~~	~~Yes~~

~~Source: SCE 2011~~
~~Notes:~~
~~(1) Emission values have been rounded for reporting purposes.~~
~~(2) The emissions considered in this analysis include the emissions generated by demolition activities conducted by the applicant at the proposed Alberhill Substation site in September and December 2011 to comply with County of Riverside code enforcement.~~
~~(3) Peak daily emissions estimates indicate the sum of emissions generated from the concurrent construction of the proposed substation, 500-kV transmission lines, 115-kV subtransmission lines, and telecommunications lines.~~
~~(4) SCAQMD Regional Air Quality Significance Thresholds are listed in Table 4.3-3.~~
~~CO carbon monoxide~~
~~kV kilovolt~~
~~lbs pounds~~
~~NO_X oxides of nitrogen~~
~~PM_{10} particulate matter with diameters less than or equal to 10 microns~~
~~$PM_{2.5}$ particulate matter with diameters less than or equal to 2.5 microns~~
~~SO_X oxides of sulfur~~
~~VOC volatile organic compound~~

~~MM AQ-1 would reduce NOX emissions, and MM AQ-2 would offset any remaining NOX emissions. NOX emissions would be less than significant with implementation of these measures.~~

~~MM AQ-1 would reduce PM10 and PM2.5 emissions from combustion engines. It is uncertain how much of a reduction in exhaust emission PM10 and PM2.5 would be obtained through MM AQ-1, since the number of Tier 4 engines that would be used is not known. MM AQ-3 would reduce some emissions of fugitive PM10 and PM2.5, but these reductions would not reduce PM10 and PM2.5 emissions to levels below the regional thresholds of significance for these pollutants. The SCAQMD does offer emission reduction credits for PM10 emissions; however, these emissions reductions credits are prohibitively expensive (see SCAQMD 2014). PM10 and PM2.5 emissions would therefore remain significant after mitigation.~~

~~MM AQ-1 would reduce VOC emissions, and MM AQ-5 would offset any remaining VOC emissions. VOC emissions would be less than significant with implementation of these measures.~~

~~*Helicopter Construction*~~

Uncontrolled maximum daily project emissions would exceed significance thresholds ~~under the helicopter use scenario and~~ for both import soil options for VOC, NO_X, PM_{10}, and $PM_{2.5}$, as shown in Table 4.3-~~9~~8. The applicant's Project Commitment J would reduce PM_{10} and $PM_{2.5}$ emissions, as shown in Table 4.3-~~9~~8, but PM_{10} and $PM_{2.5}$ emissions would still be above the SCAQMD thresholds. To further reduce criteria pollutant emissions, the applicant would implement MM AQ-1, MM AQ-2, and MM AQ-3.

Fugitive dust dispersion from helicopter use occurs on a localized basis. Dispersion depends on factors such as the helicopter flying speed, wind direction, and type of surface (e.g., pavement vs. desert soils). Only those sensitive receptors located in the proximity of the helicopter landing/take-off sites would be exposed to dust dispersion from helicopter use during construction, and minor amounts of dust would be dispersed throughout the adjacent residential neighborhoods.

Given that helicopter landing and takeoff activities would be short-term and occur on paved areas, and given the low number of Valley Fever cases reported in this area, sensitive receptors are unlikely to contract the disease from dust generated by helicopters. Implementation of dust control measures (Project Commitment J) during construction would reduce potential fugitive dust dispersion from helicopters or other methods of construction to a less than significant level. Implementation of MM AQ-3 would further reduce this already less than significant impact.

MM AQ-1 would reduce actual NO_X emissions, and MM AQ-2 would offset any remaining NO_X emissions. NO_X emissions would be less than significant with implementation of these measures.

MM AQ-1 would reduce PM_{10} and $PM_{2.5}$ emissions from combustion engines. It is uncertain how much of a reduction in exhaust emission PM_{10} and $PM_{2.5}$ would be obtained through MM AQ-1, since the number of Tier 4 engines that would be used is not known. MM AQ-3 would reduce some emissions of fugitive PM_{10} and $PM_{2.5}$, but these reductions would not reduce PM_{10} and $PM_{2.5}$ emissions to levels below the regional thresholds of significance for these pollutants. The SCAQMD does offer emission reduction credits for PM_{10} emissions; however, these emissions reductions credits are prohibitively expensive (see SCAQMD 2014). PM_{10} and $PM_{2.5}$ emissions would therefore remain significant after mitigation. MM AQ-1 would reduce VOC emissions and MM AQ-5 would offset any remaining VOC emissions. VOC emissions would be less than significant with implementation of MM these measures.

Operation and Maintenance

Criteria air pollutants would be generated during operation of the proposed Alberhill Project. The proposed Alberhill Substation would be unstaffed and remotely monitored by an automated system. It is assumed that maintenance personnel would visit the proposed substation site once per week. Substation operations would not require personnel in addition to the applicant's existing staff in the region, and no permanent vehicles would be stationed at the proposed substation. The applicant would inspect the proposed 500-kV transmission and 115-kV subtransmission lines at least once per year by driving and/or flying the line routes. Similarly, the telecommunications components would require routine maintenance once per year. Routine substation maintenance would include equipment testing, equipment monitoring, and repair. An emergency generator at the proposed substation would be run at regular intervals for routine maintenance purposes. Combustion exhaust emissions would be generated from vehicles used during routine inspection and maintenance activities.

A summary of estimated maximum unmitigated daily operational emissions of criteria air pollutants is presented in Table 4.3-10. The applicant has not proposed control measures for operational emissions. Detailed calculations and assumptions for all operational sources are presented in Appendix ~~C~~P.

Table 4.3-~~9~~8 Maximum Daily Criteria Air Pollutant Construction Emissions (Alberhill Project~~, Helicopter Use Scenario~~)(1)

Item	Peak Daily Air Pollutant Emissions (lbs/day)(2)					
	VOC	CO	NO_X	SO_X	PM_{10}	$PM_{2.5}$
Import Soil Option 1: 5.2-Acre Source Area (On-Site Borrow Site)						
Uncontrolled Maximum Daily Project Emissions(3)	92~~131~~	373~~452~~	790~~1,090~~	33~~38~~	911~~966~~	112~~132~~
Controlled Maximum Daily Project Emissions(3)	92~~131~~	373~~452~~	790~~1,090~~	33~~38~~	443~~476~~	64~~79~~
Regional Thresholds	75	550	100	150	150	55
Import Soil Option 1 Exceeds Regional Thresholds (Yes/No)(4)	**Yes**	No	**Yes**	No	**Yes**	**Yes**
Import Soil Option 2: Local Quarry						
Uncontrolled Maximum Daily Project Emissions(3)	89~~128~~	359~~438~~	786~~1,076~~	33~~38~~	911~~964~~	107~~125~~
Controlled Maximum Daily Project Emissions(3)	89~~128~~	359~~438~~	786~~1,076~~	33~~38~~	433~~475~~	59~~75~~
Regional Thresholds	75	550	100	150	150	55
Import Soil Option 2 Exceeds Regional Thresholds (Yes/No)(4)	**Yes**	No	**Yes**	No	**Yes**	**Yes**

~~Source: SCE 2011~~

Notes:

(1) Emissions estimates assumes the use of ~~additional heavy- and medium-duty~~ helicopters for 500-kV transmission line construction at three tower sites and conventional construction methods at nine tower sites. Emission values have been rounded for reporting purposes.

(2) The emissions considered in this analysis include the emissions generated by demolition activities conducted by the applicant at the proposed Alberhill Substation site in September and December 2011 to comply with County of Riverside code enforcement.

(3) Peak daily emissions estimates indicate the sum of emissions generated from the concurrent construction of the proposed substation, 500-kV transmission lines, 115-kV subtransmission lines, and telecommunications lines.

(4) SCAQMD Regional Air Quality Significance Thresholds are also listed in Table 4.3-3.

Key:

CO	carbon monoxide
kV	kilovolt
lbs	pounds
NO_X	oxides of nitrogen
PM_{10}	particulate matter with diameters less than or equal to 10 microns
$PM_{2.5}$	particulate matter with diameters less than or equal to 2.5 microns
SCAQMD	South Coast Air Quality Management District
SO_X	oxides of sulfur
VOC	volatile organic compound

Table 4.3-10 Maximum Daily Criteria Air Pollutant Operational Emissions

Emission Source	VOC (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	SO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Maximum Daily Emissions(1)	0.17~~0.26~~	1.22~~1.72~~	0.62~~1.83~~	0.01~~0.01~~	5.24~~2.49~~	0.52~~0.24~~
SCAQMD Regional Thresholds	**55**	**550**	**55**	**150**	**150**	**55**
Exceeds Regional Thresholds (Yes/No)	No	No	No	No	No	No

~~Source: SCE 2011~~

Note:

(1) 500-kV transmission, 115-kV subtransmission, and telecommunication line inspections would occur on the same day as visits to the proposed substation site. Daily emissions from these activities were included in the daily operational emissions estimates.

Key:

CO carbon monoxide
lbs pounds
NO_X oxides of nitrogen
PM_{10} particulate matter with diameters less than or equal to 10 microns
$PM_{2.5}$ particulate matter with diameters less than or equal to 2.5 microns
SO_2 sulfur dioxide
SCAQMD South Coast Air Quality Management Plan
VOCs volatile organic compounds

Mitigation Measures

MM AQ-1: Minimize NO_X and PM emissions from off-road diesel powered construction equipment.

MM AQ-2: Oxides of Nitrogen (NO_x) Credits.

MM AQ-3: ~~Additional Fugitive Dust Controls~~Dust Control Plan.

MM AQ-5: Volatile Organic Compounds Credits. The remaining emissions of VOC/reactive organic gas (ROG) resulting from construction of the proposed Alberhill Project shall be mitigated through the purchase of Emissions Reduction ~~Trading~~ Credits (ERCs)/Short-Term Emission Reduction Credits (STERCs), Mobile Source Emission Reduction Credits (MSERCs), or a combination of ERCs/STERCs and MSERCs~~ETCs~~) for every pound of VOC/ROG in excess of the SCAQMD regional significance threshold of 75~~100~~ pounds per day, as measured. The total amount of VOC/ROG ERCs/STERCs and /MSERCs~~ETCs~~ to be purchased shall be calculated once the construction schedule is finalized. The applicant shall purchase and submit documentation of purchase of the required ERCs/STERCs and /MSERCs~~ETCs~~ to the SCAQMD prior to the start of construction. The applicant shall also track actual daily emissions during construction according to a monitoring plan, which shall require keeping records of equipment and vehicle usage for the project.

Impact AQ-3 (ASP): Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).
SIGNIFICANT WITH MITIGATION

The project area is in nonattainment for O_3, PM_{10}, and $PM_{2.5}$. The proposed Alberhill Project would result in a cumulatively considerable net increase of these pollutants if it would conflict with an air quality management plan or exceed regional significance thresholds. Air quality management plans and regional significance thresholds are appropriate for analysis of cumulative impacts because they take into consideration the entire air basin and other projects and activities occurring in the basin.

Construction

As discussed in Impact AQ-1 (ASP), construction of the proposed Alberhill Project would not conflict with the SCAQMD AQMP. As discussed in Impact AQ-2 (ASP), construction emissions would exceed significance thresholds for NO_X and VOC (ozone precursors), PM_{10}, and $PM_{2.5}$ for all possible combinations of construction approaches. Implementation of Project Commitment J would not reduce emissions for any of these criteria pollutants to below significance thresholds.

MM AQ-1 and MM AQ-2 would reduce NO_X emissions to less than significant. MM AQ-1 and MM AQ-5 would reduce VOC levels to less than significant.

MM AQ-1 and MM AQ-3 would reduce $PM_{2.5}$ and PM_{10} emissions, but not to less than significant levels. Thus, construction of the proposed project would result in a cumulatively considerable net increase of PM_{10} and $PM_{2.5}$. PM_{10} and $PM_{2.5}$ construction emissions would remain cumulatively significant after mitigation.

Operation and Maintenance

As discussed in Impact AQ-1 (ASP), operation of the proposed project would not conflict with the SCAQMD AQMP. As discussed in Impact AQ-2 (ASP), operation and maintenance emissions would not exceed SCAQMD significance thresholds for NO_X, VOC, PM_{10}, or $PM_{2.5}$. Operation and maintenance of the proposed project would not result in a cumulatively considerable net increase of a criteria pollutant for which the area is in nonattainment. Therefore, these impacts would be less than significant.

Mitigation Measures

MM AQ-1: Minimize NO_X and PM emissions from off-road diesel powered construction equipment.

MM AQ-2: Oxides of Nitrogen (NO_X) Credits.

MM AQ-3: ~~Additional Fugitive Dust Controls~~Dust Control Plan.

MM AQ-5: Volatile Organic Compounds (VOC) Credits.

Impact AQ-4 (ASP): Expose sensitive receptors to substantial pollutant concentrations
LESS THAN SIGNIFICANT ~~WITH MITIGATION~~

Methodology

The SCAQMD has developed an LST methodology to analyze localized impacts on ambient air quality. LST analyses were conducted using LST mass rate look-up tables provided in SCAQMD guidance. The LST methodology determines significance levels by modeling hypothetical 1-, 2-, and 5-acre sites. This methodology applies to on-site emissions and impacts from NO_X, CO, PM_{10}, and $PM_{2.5}$ concentrations; it does not apply to emissions from on-road vehicles. The determination made from the LST methodology provides a means of conducting a screening analysis to assess whether a significant impact could result from project construction activities.

Since construction activities would occur at different locations spread out over different areas, LST analyses were performed using the maximum on-site emission rate for a specific construction activity that occurs at a single location for each project component. For construction activities, the equipment exhaust and fugitive dust emissions include in the LST analysis were limited to those generated on site (i.e., emissions from off-site travel were not included as they occur at a different location). Thus, the emission rates used in the LST analysis are different than the maximum daily emission rates for all concurrent construction activities. Air pollutants would be emitted from on-site construction equipment (e.g., excavators, cranes, backhoes, scrapers, and dozers), and PM_{10}/$PM_{2.5}$ emissions would also be generated as fugitive dust during on-site vehicle use and traffic on project access roads.

The size of the emission source for each project component was estimated based on the construction activities that would occur concurrently at the single location and the equipment associated with these activities. For construction of the substation, including the communications tower, a 5-acre emissions source area was assumed given that all construction activities would overlap in the same area. A 1-acre emission source area was assumed for the subtransmission and transmission line construction based on the estimated daily land disturbance for removal of existing poles and H-frames, installation of new structures, and areas for wire stringing.

Distances to the closest sensitive receptors (as required for the LST analyses) were evaluated based on aerial images and the latest information about components of the proposed Alberhill Project. Although distances to sensitive receptors change depending on the project component location, the 25-meter distance to nearest receptor is the most conservative option allowed by the LST methodology and therefore, was used for all of the LST analyses. The proposed Alberhill Project would be located in the Lake Elsinore Source Area (Zone 25). The LSTs used for the proposed project's impact analysis are shown in Table 4.3-11.

SCAQMD's significance threshold for TACs, including carcinogens and noncarcinogens, is as follows:

- Maximum Incremental Cancer Risk ≥ 10 in 1 million;
- Cancer Burden > 0.5 excess cancer cases (in areas ≥ 1 in 1 million); or
- Hazard Index ≥ 1.0 (project increment)

Table 4.3-11 Localized Significance Thresholds for the Alberhill Project

Distance to Nearest Receptor, meters	Pollutant (pounds per day)					
	NO_X	CO	PM_{10} - Construction	PM_{10} - Operation	$PM_{2.5}$ - Construction	$PM_{2.5}$ - Operation
1 acre (Lake Elsinore Source Area)						
25	162	750	4	1	3	1
5 acre (Lake Elsinore Source Area)						
25	375	1,965	13	4	8	2

Source: SCAQMD 2009

Key:

CO	carbon monoxide	PM_{10}	Particulate matter less than or equal to 10 microns in diameter
NO_X	oxides of nitrogen	$PM_{2.5}$	Particulate matter less than or equal to 2.5 microns in diameter

Construction

Criteria air pollutants would be generated during construction activities that use heavy equipment, on-road vehicles, and off-road vehicles. Such activities include:

- Grading
- Vegetation clearing
- Excavating
- Substation construction
- Worker transport
- Equipment and material deliveries
- Pole installation

Emissions generated from construction activities are anticipated to cause temporary increases in ambient air pollutant concentrations in the vicinity of the proposed Alberhill Project construction sites and along the access and spur roads used by project vehicles. The results of the LST analyses are presented in Table 4.3-13. A detailed summary of the calculations used to estimate emissions from TSP foundation excavation is provided in Attachment C4.

As shown in Table 4.3-13, uncontrolled emission from the following activities would exceed SCAQMD LSTs, resulting in a significant impact:

- Alberhill Substation and Telecommunications (Import Soil Option 1): PM_{10}
- Alberhill Substation and Telecommunications (Import Soil Option 2): PM_{10}
- ~~500-kV Transmission Lines (Conventional Method): NO_X, $PM_{2.5}$~~
- 500-kV Transmission Lines ~~(Helicopter Construction)~~: PM_{10}~~, $PM_{2.5}$~~
- 115-kV Subtransmission Lines: PM_{10}

The applicant's Project Commitment J would reduce the following impacts to below the SCAQMD LSTs, which would result in less than significant impacts:

- Alberhill Substation and Telecommunications (Import Soil Option 1): PM_{10}
- Alberhill Substation and Telecommunications (Import Soil Option 2): PM_{10}
- 500-kV Transmission Lines ~~(Helicopter Construction)~~: PM_{10} and $PM_{2.5}$
- 115-kV Subtransmission Lines: PM_{10}

~~Emissions of the following pollutants would remain above the LSTs after implementation of Project Commitment J:~~

- ~~500-kV Transmission Lines (Conventional Method): NO_X, $PM_{2.5}$~~
- ~~500-kV Transmission Lines (Helicopter Construction): PM_{10}~~

~~These impacts would still be significant after implementation of Project Commitment J.~~

As a result, emissions of all pollutants would be below the LSTs after implementation of Project Commitment J. MM AQ-1 would further reduce NO_X emissions; however, ~~. NO_X emissions after Project Commitment J are more than double the LST. It~~ it is uncertain how much NO_X emission would be avoided through MM AQ-1 since the degree of implementation of Tier 4 engines is dependent on availability. ~~Thus, the NO_X impact during 500-kV transmission line construction using the conventional method would remain significant after mitigation.~~ As a result, impacts would be less than significant.

Table 4.3-12 Localized Significance Threshold Analysis for Unmitigated Construction Activities

Construction Activities[2]	Maximum Daily Onsite Emissions (lbs/day)[1, 8]			
	CO	NO_X	PM_{10}	$PM_{2.5}$
Agricultural Water Pipeline Relocation				
SCAQMD Localized Significance Thresholds[3]	8,628	562	148	68
Uncontrolled emissions	5	~~6~~3	~~40~~39	4
Exceeds Thresholds (Yes/No)	No	No	No	No
Controlled emissions	5	~~6~~3	18	2
Exceeds Thresholds (Yes/No)	No	No	No	No
Alberhill Substation and Telecommunications (Import Soil Option 1)				
SCAQMD Localized Significance Thresholds[4]	11,795	765	177	85
Uncontrolled emissions	~~65~~55	~~110~~46	~~299~~315	~~38~~37
Exceeds Thresholds (Yes/No)	No	No	**Yes**	No
Controlled emissions	~~65~~55	~~110~~46	~~141~~154	20
Exceeds Thresholds (Yes/No)	No	No	No	No
Alberhill Substation and Telecommunications (Import Soil Option 2)				
SCAQMD Localized Significance Thresholds[5]	11,795	765	177	85
Uncontrolled emissions	~~38~~34	~~58~~25	~~280~~313	~~30~~32
Exceeds Thresholds (Yes/No)	No	No	**Yes**	No
Controlled emissions	~~38~~34	~~58~~25	~~128~~141	15
Exceeds Thresholds (Yes/No)	No	No	No	No
~~***500-kV Transmission Lines (Conventional Method)***~~				
~~SCAQMD Localized Significance Thresholds[6]~~	~~1,786~~	~~280~~	~~27~~	~~7~~
~~Uncontrolled emissions~~	~~37~~	~~579~~	~~23~~	~~12~~
~~Exceeds Thresholds (Yes/No)~~	~~No~~	~~Yes~~	~~No~~	~~Yes~~
~~Controlled emissions~~	~~37~~	~~579~~	~~12~~	~~12~~
~~Exceeds Thresholds (Yes/No)~~	~~No~~	~~Yes~~	~~No~~	~~Yes~~
500-kV Transmission Lines ~~(Helicopter Construction)~~				
SCAQMD Localized Significance Thresholds[6]	1,786	280	27	7
Uncontrolled emissions	~~46~~32	~~106~~29	~~77~~31	~~8~~3
Exceeds Thresholds (Yes/No)	No	No	**Yes**	~~**Yes**~~No
Controlled emissions	~~46~~32	~~106~~29	~~38~~14	~~4~~2
Exceeds Thresholds (Yes/No)	No	No	~~**Yes**~~No	No

Construction Activities(2)	Maximum Daily Onsite Emissions (lbs/day)(1, 8)			
	CO	NO_X	PM_{10}	$PM_{2.5}$
115-kV Subtransmission				
SCAQMD Localized Significance Thresholds(7)	661	162	13	3
Uncontrolled emissions	~~27~~24	~~67~~22	23	2
Exceeds Thresholds (Yes/No)	No	No	**Yes**	No
Controlled emissions	~~27~~24	~~67~~22	~~11~~10	~~2~~1
Exceeds Thresholds (Yes/No)	No	No	No	No

~~Sources: SCE 2011~~

Key: CO = carbon monoxide, PM_{10} = particulate matter with diameters less than or equal to 10 microns, $PM_{2.5}$ = particulate matter with diameters less than or equal to 2.5 microns, NO_x = oxides of nitrogen, SCAQMD = South Coast Air Quality Management District, lbs = pounds

Notes:

1 Only on-site emissions were considered for this analysis. Offsite delivery vehicle emissions were not included in these calculations.

2 Demolition activities took place at the horse ranch in September and December 2011 per permits issued by the County of Riverside Transportation and Land Management Agency to comply with County code enforcement. The applicant has updated maximum daily emissions estimates based on the daily project journals provided by the contractor.

3 Based on a 5-acre emission source area with the closest receptors located 270 meters and 420 meters (885 feet and 1,400 feet) from the substation property line. Maximum on-site emissions include those that would be generated by the microwave tower foundation and construction. These activities would occur within the Alberhill Substation property line.

4 Based on a 1-acre emission source area with the closest receptors located 885 feet and 1,400 feet from the substation property line. Maximum on-site emissions include those that would be generated by the microwave tower foundation and construction. These activities would occur within the Alberhill Substation property line.

5 Based on a 5-acre emission source area with the closest receptors located 885 feet and 1,400 feet from the substation property line. Closest receptor for the Import Soil Option 1 is located 885 feet from the proposed onsite soil source area.

6 Based on a 1-acre emission source area with the closest receptor located 175 meters (570 feet) from the closest tower location (two residences located in proximity to towers VA2 and VA3).

7 Based on a 1-acre emission source area with the closest receptor located 25 meters (82 feet) from the construction area.

8 Due to the typically short duration that a helicopter would be located at a specific workspace, all helicopter emissions were considered to be off-site and not contribute to the emissions considered in the LST analysis.

MM AQ-1 would reduce $PM_{2.5}$ and PM_{10} emissions~~, respectively,~~ from combustion engines during construction of 500-kV transmission lines~~ using the conventional method of construction and during construction of 500-kV transmission lines using helicopter construction~~. It is uncertain how much of a reduction in exhaust emission PM_{10} and $PM_{2.5}$ would be obtained through MM AQ-1, since the amount of Tier 4 engines that would be used is not known.

MM AQ-3 would reduce some emissions of fugitive PM_{10} and $PM_{2.5}$, but these reductions would not reduce emissions to levels below localized significance thresholds. Emissions ~~of $PM_{2.5}$ from combustion engines during construction of 500-kV transmission lines using the conventional method of construction and emissions~~ of PM_{10} during construction of 500-kV transmission lines ~~using helicopter construction~~ therefore would remain significant after mitigation.

Sensitive receptors near construction site would be exposed to TACs. Construction in any one area would occur for a minimal amount of time, since construction would be spread throughout a linear alignment. Construction in any one location would be temporary and would further reduce the exposure to TACs caused by the proposed project. The proposed project would not result in chronic exposure to a new source of TACs. The increased cancer risk from exposure to construction activities would therefore be far below the SCAQMD significance threshold. Impacts would be less than significant.

Operation and Maintenance

Criteria air pollutants would be generated during operation of the proposed Alberhill Project. The proposed Alberhill Substation would be unstaffed and remotely monitored by an automated system. It is assumed that maintenance personnel would visit the proposed substation site once per week. Substation operations would not require personnel in addition to the applicant's existing staff in the region, and no permanent vehicles would be stationed at the proposed substation. The applicant would inspect the proposed 500-kV transmission and 115-kV subtransmission lines at least once per year by driving and/or flying the line routes. Similarly, the telecommunications components would require routine maintenance once per year.

Routine substation maintenance would include equipment testing, equipment monitoring, and repair. An emergency generator at the proposed substation would be run at regular intervals for routine maintenance purposes. Combustion exhaust emissions would be generated from vehicles used during these routine inspection and maintenance activities.

Emissions of criteria pollutants and TACs during operation and maintenance would be substantially lower than the emissions for project construction, as shown for regional thresholds in Impact AQ-2 (ASP), due to the greatly reduced level of activities. Construction air quality impacts are less than significant; therefore, operation and maintenance impacts related to exposure to substantial pollutant concentrations would also be less than significant.

Mitigation Measures

MM AQ-1: Minimize NO_x and PM emissions from off-road diesel powered construction equipment.

MM AQ-3: ~~Additional Fugitive Dust Controls~~Dust Control Plan.

Impact AQ-5 (ASP): Create objectionable odors affecting a substantial number of people.
LESS THAN SIGNIFICANT

Methodology

The SCAQMD significance threshold for odor impacts is whether the project creates an odor nuisance pursuant to SCAQMD Rule 402. Rule 402 prohibits "discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property."

Construction

Exhaust from construction vehicles and equipment would ~~temporarily~~ create temporary odors due to the combustion of diesel fuel and gasoline. ~~Only t~~Two residences ~~would be~~are located within 100 feet of the proposed 500-kV transmission line construction, while all receptors located in the vicinity of the Alberhill Substation site are located over 1,000 feet from the proposed work areas. Sensitive receptors are as close as 20 feet from potential work areas along the 115-kV subtransmission line. Sensitive receptors are as close as 70 feet from a staging area. Perception of diesel exhaust emission averaged about 29 feet for an idling bus and about 36 feet for an accelerating bus (Colucci and Barnes 1970). Engines in buses would be comparable to engines in heavy equipment. Odors from newer equipment are likely to travel an even lower distance due to improvement in technologies since the time of this study. There are not a substantial number of receptors within 29 feet of pole work areas, and work at pole sites would last for less than 1 week. There are no sensitive receptors within 36 feet of the 500-kV transmission line, Alberhill Substation site, or staging yards. Impacts would be less than significant.

Operation and Maintenance

Equipment used at the proposed Alberhill Substation site would not create objectionable odors during operations. Operation and maintenance of the proposed 115-kV subtransmission line, 500-kV transmission line, and telecommunications line routes would require only a few vehicles for relatively short time periods. Vehicles would generate intermittent and infrequent odors, typically from gasoline rather than diesel. Activities would take place in small areas, often far from sensitive receptors. Operation and maintenance would not subject a substantial number of receptors to objectionable odors and impacts would be less than significant.

BIOLOGICAL RESOURCES

Section 4.4.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As demonstrated by the revisions to the FEIR analysis that follows, no new impacts were identified and the severity of previously identified impacts have not increased.

4.4.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

4.4.5.1 Project Commitments (Alberhill Project)

The applicant has committed to undertaking impact reduction measures as part of the design of the proposed Alberhill Project. These measures, referred to in this document as Project Commitments~~, are the same for the proposed Alberhill and Valley–Ivyglen Projects~~ (see Section 4.4.4.1).

4.4.5.2 Impacts Analysis (Alberhill Project)

Impact BR-1 (ASP): **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 the CDFW or USFWS.**
LESS THAN SIGNIFICANT WITH MITIGATION

Direct, indirect, temporary, and permanent impacts on special status species, migratory bird species, and vegetation communities are discussed below. The discussion is organized according to impacts associated with all components of the proposed Alberhill Project, the proposed substation site, the proposed 500-kV transmission line routes, and the proposed 115-kV subtransmission line routes.

Impacts would be most severe during construction, and would diminish during operations. Mitigation measures are intended to reduce potentially significant impacts during construction. No impacts would remain potentially significant during operations if mitigation measures are properly implemented to address the impact during construction.

Impacts on all special status species in all project areas within MSHCP boundaries are covered under the MSHCP, with the exception of impacts on SKR, which are covered under the SKR HCP. Therefore, the MSHCP would dictate the type and extent of avoidance, mitigation, and compensation measures for each covered species, unless otherwise specified in project-specific mitigation measures. In addition to these measures, the mitigation measures outlined below would be implemented to reduce potentially significant impacts on special status species to less than significant. The applicant ~~is obtaining~~ would obtain Participating Special Entity (PSE) status through issuance of a Certificate of Inclusion (COI) from ~~entering into an agreement with~~ the RCA, with USFWS and CDFW concurrence, to allow for MSHCP coverage for~~of~~ the entire alignment of ~~both~~ the ~~proposed~~ ~~Valley–Ivyglen and Alberhill~~ Proposed Project~~s~~.~~projects under the MSHCP on Castle and Cooke property, which is outside MSHCP boundaries.~~ SCE obtained PSE status prior to the construction of the Valley-Ivyglen Project. Should the COI~~this agreement~~ not be finalized, MM BR-14 outlines options for take coverage or avoidance of impacts to special status species ~~on Castle and Cooke property~~.

Direct, permanent impacts on special status species or their habitat are associated with the installation of permanent components of the proposed Alberhill Project (e.g., proposed substation, 500-kV tower and 115-kV pole footings, and new access roads) and the potential direct incidental take caused by construction of the proposed Alberhill Project. Permanent components would require the complete removal of vegetation within their footprint. Overall, the project would permanently impact ~~87.9~~58.1 acres of land~~, using the conventional method for constructing the 500-kV Line and 68.8 acres if using the helicopter method for constructing the 500-kV Line~~ (see Tables 2-6 and 2-7 in Chapter 2, "Project Description"). Temporary impacts on special status species would result from the temporary use of staging areas, conductor pulling, stringing, and tensioning areas, the improvement and use of existing access roads, and the removal of existing towers. In addition, construction activities would produce elevated levels of dust, night light, and noise within and adjacent to the components of the proposed Alberhill Project. The proposed Alberhill Project would temporarily disturb ~~269.4~~259.0 acres ~~using the conventional method for constructing the 500-kV Line and 245 acres if using the helicopter method for constructing the 500-kV Line~~ of land (Table 2-6 and 2-7).

Overall, construction and operation of the proposed Alberhill Project could negatively impact individuals of the following special status wildlife species and their habitats: Quino checkerspot butterfly, vernal pool fairy shrimp, Riverside fairy shrimp, Belding's orange-throated whiptail, western spadefoot, coastal California gnatcatcher, least Bell's vireo, southwestern willow flycatcher, western burrowing owl, golden eagle, San Bernardino kangaroo rat, and SKR (Table 4.4-4). Dulzura kangaroo rat, a species protected under the MSHCP, may also be impacted. Construction and operation of the proposed Alberhill Project could also result in adverse impacts on the following special status plants: long-spined spineflower, Munz's onion, paniculate tarplant, Coulter's matilija poppy, Parry's spineflower, Robinson's pepper grass, San Diego ambrosia, and smooth tarplant (Table 4.4-1). Table 4.4-4 details the presence of these species within the Alberhill Project area by project component. These species were analyzed in this document because of their moderate to high potential to occur within the proposed Alberhill Project area, their elevated conservation status (i.e., listed as threatened or endangered), or the necessity to obtain a permit or provide compensation for impacts on the species or its habitat. Construction and operation of the proposed Alberhill Project could also result in adverse impacts on migratory bird species and special status vegetation communities.

Critical Habitat for Coastal California Gnatcatcher~~, Munz's Onion,~~ and San Diego Ambrosia

Portions of the proposed Alberhill substation site~~, 500-kV transmission lines, and 115-kV subtransmission lines~~ occur within USFWS-designated critical habitat for coastal California gnatcatcher~~, Munz's onion,~~ and portions of the 115-kV subtransmsission line occur within USFWS-designated critical habitat for San Diego ambrosia (Figure 4.4-2).~~ Each of these project components cross critical habitat for coastal California gnatcatcher~~. ~~This species~~ California gnatcatcher was confirmed to be present adjacent to 115-kV Segment ASP5 in 2011. Critical habitat for ~~Munz's onion and~~ San Diego ambrosia and a known population of San Diego ambrosia occur adjacent to 115-kV Segment ASP2. Impacts on the critical habitat for these species are presented in Table 4.4-5.

Temporary impacts on critical habitat are related to project construction. Construction activities would temporarily disturb or remove vegetation and produce elevated levels of noise, dust, and light within and adjacent to the project area. These impacts are associated with construction staging areas, wire stringing sites, the removal of existing towers, and the use and improvement of existing access roads. ~~The impacts along the 500-kV Line Route to Coastal California gnatcatcher habitat would be less than those presented in Table 4.4-5 if helicopters are used in conjunction with the conventional method.~~

Permanent impacts on the critical habitat for these three species are associated with permanent project features (e.g., substation, new towers, access roads) that would remain throughout the life of the project, as well as the potential for direct, incidental take of individuals during project construction. The project would require the permanent removal of these species' critical habitat for the construction of the proposed substation, pole and tower footings, and access roads.

Table 4.4-4 Sensitive Plant and Wildlife Species and Critical Habitat Presence by Alberhill Project Component

Species	Proposed Substation Site	Proposed 500-kV Lines	Proposed Alberhill 115-kV Subtransmission Line Segments								
			1	1.5	2	3	4	5	6	7	8
Plants											
Long-spined spineflower	---	P	---	---	---	---	---	P	---	---	---
Paniculate tarplant	---	P	---	---	P	---	P	Pt	---	---	---
Coulter's matilija poppy	---	P	---	---	---	---	---	---	---	---	---
Parry's spineflower	---	P	---	---	---	---	---	P	---	---	---
Robinson's pepper grass	P	P	P	---	P	---	---	---	---	---	---
Munz's onion	---	~~CHP~~---	---	---	P~~;~~ ~~CHP~~	---	---	---	---	---	---
San Diego ambrosia	---	---	---	---	P; CHP	---	---	---	---	---	---
Smooth tarplant	---	---	---	---	P	---	P	---	P	---	P
Chaparral sand verbena	---	---	---	---	---	---	---	---	---	---	---
Palmer's grapplinghook	---	---	---	---	---	---	---	P	---	---	---
Coast live oak	P	P	P	P	P	---	P	P	P	---	---
Coulter's goldfields	---	---	---	---	P	---	---	---	---	---	---
San Jacinto Valley crownscale	---	---	---	---	P	---	---	---	---	---	---
Small-flowered microseris	---	---	---	---	P	---	---	---	---	---	---
Small-flowered morning glory	---	---	---	---	P	---	---	---	---	---	---
Wildlife											
Quino checkerspot butterfly	HPP	---	---	---	---	---	---	---	---	---	---
Vernal pool fairy shrimp	---	---	---	---	---	---	PHP	PHP	---	---	---
Western spadefoot	---	---	---	---	---	---	PHP	PHP	---	---	---
Belding's orange~~Orange~~ throated whiptail	PHP	---	---	---	P	---	---	---	---	---	---
Coastal California gnatcatcher	P; CHP	~~Present~~P; CHP	---	---	CHP	---	---	P; CHP	---	---	---
Least Bell's vireo	P	---	---	P	P	---	---	---	---	---	---
Southern California rufous-crowned sparrow	P	P	P	P	P	P	P	P	P	P	---
Western burrowing owl	PHP	---	---	---	---	---	---	---	P	---	---

Species	Proposed Substation Site	Proposed 500-kV Lines	Proposed Alberhill 115-kV Subtransmission Line Segments								
			1	1.5	2	3	4	5	6	7	8
Golden eagle	P	P	---	---	---	---	---	---	---	---	---
White-tailed kite	P	---	---	---	P	---	---	---	---	---	---
Southwestern Willow Flycatcher	---	---	---	---	P	---	P	---	---	---	---
Yellow Warbler	---	---	---	---	---	---	P	---	---	---	---
Peregrine Falcon	---	---	---	---	P	---	---	---	---	---	---
Stephens' kangaroo rat	P	PHP	PHP	P	---	---	P	P	P	---	---
Dulzura kangaroo rat	P	P	---	---	---	---	---	---	---	---	---
San Diego woodrat	---	---	---	---	---	---	---	P	---	---	---
Black-tailed jackrabbit	---	---	---	---	P	---	---	---	P	---	---

Sources: AECOM 2009a, 2009b, 2009c, 2009d, 2010a, 2010b, 2010c, 2010d, 2011a, 2011b, 2011c, 2011d, 2011e, 2011f, 2011g, 2012b, 2012c, 2014; AMEC 2006a, 2006b, 2009a, 2009b, 2011, 2012; Bloom Biological 2011; CNDDB 2015; Kidd 2013, 2014; Read 2010; Read and Forde 2010; Faulkner 2009; SJM Biological Consultants 2010a, 2010b, 2011; USWFS. 2023. ECOS: USFWS Threatened & Endangered Species Active Critical Habitat Report. Available online. https://ecos.fws.gov/ecp/report/table/critical-habitat.html. Site accessed April 21, 2023.

Key:
CHP = Critical Habitat Present
HPP = Host Plant Present
P= Present
PHP = Potential Habitat Present

Table 4.4-5 California Gnatcatcher and~~,~~ San Diego Ambrosia~~, and Munz's Onion~~ Critical Habitat Acreages by Project Component

Species	Alberhill Project Components[1]		
	Proposed Alberhill Substation Site	Proposed Alberhill 500-kV Transmission Line Routes	Proposed Alberhill 115-kV Subtransmission Line Routes[2]
Coastal California gnatcatcher	~~42.94 acres~~---	~~51.49~~ < 0.01 acre~~s~~	~~134.81 acres~~---
~~Munz's onion~~	~~---~~	~~---~~	~~0.25 acres~~
San Diego ambrosia	---	---	~~8.80~~ 9.0 acres

Source: ~~USFWS 2011, SCE 2013b~~USWFS. 2023. ECOS: USFWS Threatened & Endangered Species Active Critical Habitat Report. Available online. https://ecos.fws.gov/ecp/report/table/critical-habitat.html. Site accessed April 21, 2023.

Notes:

1 Acreages include temporary and permanent impacts.

2 Acreages include all defined workspaces, the entirety of the 115-kV general disturbance area, and all staging yards except ASP1.

USFWS acknowledged that the MSHCP and the Implementation Agreement (IA) provide a comprehensive, habitat-based approach to the protection of covered species by focusing~~Impacts~~ on the lands essential for the long-term conservation of the covered species and appropriate management for those lands. The MSHCP and the IA provide for the protection of the covered species in a manner consistent with USFWS regulations concerning the designation of Critical Habitat. Although critical habitat is absorbed into the regional planning effort of the MSHCP and no additional mitigation is specifically required for critical habitat, potential impacts to ~~for~~ these species would be minimized through~~reduced with~~ the standard implementation of Project Commitments B and D.~~, which require a worker environmental awareness program and a habitat restoration and revegetation plan; however, impacts would still be significant.~~ MMs BR-1 through BR-4 ~~and MM BR-7 through MM BR-9~~ would be implemented which restrict construction to certain work areas, require worker environmental training~~preconstruction surveys, require biological monitoring~~, limit the amount of native vegetation that is disturbed during construction, restrict disturbance near active gnatcatcher nests, help reduce the spread of invasive species, and require development of a Habitat Restoration and Revegetation Plan. Through~~, required avoidance of special status plant species, and help reduce the spread of invasive species. Within MSHCP boundaries,~~ these and other~~impacts would be reduced to less than significant through~~ MSHCP-specific ~~mitigation measures and~~ BMPs (Appendix H) impacts would remain at less than significant levels.~~).~~

Special Status Plants

Construction-related activities such as site preparation, vegetation removal, installation of poles or towers and the use of construction equipment could cause permanent and temporary direct and indirect impacts through the loss of special status plants or their habitat, root or seed damage, or changes in soil chemistry or composition. Permanent direct impacts include result from new access roads, clearing of vegetation at tower footing locations, or the application of herbicides for fire prevention and weed control. Indirect impacts on special status plants may be caused by soil disturbance, sedimentation or runoff, and increased dust levels during construction.

Construction of the substation would require the removal of three valley oaks protected under the 1996 County of Riverside Open Space and Conservation Element. In addition, the establishment of the 5-acre Import Soil Source Area extending from the northeast corner of the substation may result in the permanent removal of approximately 12 oaks.

Pole footings would avoid populations of special status plant species where possible and impacts of project construction, operation, and maintenance to special status plants would be reduced by Project Commitments B and D, which require a worker environmental awareness program and a habitat restoration and revegetation plan; however, impacts would still be significant. MMs BR-1 through BR-4 and MM BR-6 through BR-9 would reduce the impacts to special status plant species to less than significant. In areas where the removal of special status plants cannot be avoided, MM BR-8 provides conditions for the restoration of and compensation for impacted special status plant species. MM BR-9 outlines measures to minimize the introduction and spread of invasive plant species. MM BR-4 limits the removal of native vegetation during construction activities, and MM BR-7 provides for the creation and implementation of a post-construction Habitat Restoration and Revegetation Plan for temporarily impacted native vegetation. The removal of oak trees would be avoided to the fullest extent practicable. However, should the removal of these oaks be unavoidable, MM BR-6 would reduce impacts to less than significant levels.

The applicant would become a PSE in the MSHCP. PSEs under the MSHCP are required to conduct site-specific focused surveys for Narrow Endemic Plant Species and provide compensation in the event that sensitive habitat is removed or adversely affected during project construction. The analysis determines that impacts on special status plants would be less than significant with the implementation of mitigation measures.

Western Burrowing Owl

Burrowing owls and burrows were observed at several locations along the Alberhill 115-kV subtransmission line while completing protocol-level surveys from 2011 to 2014 and have the potential to be impacted by project construction. Owls may be struck by vehicles and burrows may be crushed by construction equipment. Breeding pairs may be indirectly impacted through increased noise, dust, and human disturbance. Should burrowing owls nest in close proximity to construction, construction-related impacts would be significant. Trash left in work areas could attract owl predators such as common ravens and coyotes. The applicant shall implement Project Commitments B and H, which require a worker environmental awareness program and limit the noise from construction; however, impacts may still be significant. As a PSE in the MSHCP, the applicant would be required to conduct surveys for burrowing owl and provide compensation for impacted habitat. MM BR-12 requires preconstruction surveys for burrowing owls and avoidance of active nest burrows. MM BR-13 would require the applicant to keep work areas free of trash that may attract owl predators. Implementation of MM BR-12 and MM BR-13 would reduce impacts on burrowing owls to less than significant.

Stephens' Kangaroo Rat

Construction of the proposed Alberhill Project would cause adverse impacts on SKR and its habitat. All major project components cross or are adjacent to habitat known to be suitable for SKR. Table 4.4-4 describes where SKR are present. The impacts would be temporary and permanent, direct and indirect. SKR are present along the project alignment, and SKR that maintain territories in areas adjacent to work areas could be impacted by construction and operations. SKR maintain territories between 0.1 and 0.4 acres (USFWS 1997). In general, construction of the project, including clearing and grading and areas where matting or crushing of vegetation would occur, would result in temporary impacts. Permanent impacts on SKR would occur from loss of habitat (e.g., within the substation footprint and at tower sites) and would be localized.

SKR would be susceptible to death or injury from project vehicles and equipment during clearing and grading, or any activities where ground is disturbed or vegetation crushed. Project-related traffic on could also be harmed by inadvertent hazardous materials spills, including fuel and hydraulic fluid leaks. All crew activities, as well as trash and debris associated with construction of the project could attract predators of SKR, including coyotes and domestic dogs.

SKR habitat would be lost in project areas where permanent structures, access roads, or the proposed substation would be located. With a total area of approximately ~~42.9~~46.0 acres, the proposed substation site (which includes area that would be used for the installation of structures associated with 115-kV Segment ASP1 and ASP1.5) and adjacent Import Soil Source Area would result in the largest project-related loss of suitable SKR habitat in a single area. In all areas of the project where vegetation and soil would be disturbed, but especially in areas that would be cleared or graded, the quality of SKR habitat would be negatively affected. Introduced noxious and invasive plant species could out-compete existing annual vegetation that SKR forage within.

Project-related~~To reduce~~ impacts on SKR and associated burrows ~~, a number of avoidance and minimization measures are provided, including Project Commitments B, D, and H. The Project Commitments require worker environmental training, require development of a Habitat Restoration and Revegetation Plan, and require construction noise control. Even with the implementation of these Project Commitments, impacts to SKR~~ would ~~still~~ be authorized~~significant. MM BR-1~~ through the SKR HCP. In October 2012,~~MM BR-3 would limit construction to designated areas, and require preconstruction surveys and biological monitoring. MM BR-7 requires~~ the applicant finalized a ~~to develop a Habitat Restoration and Revegetation plan, including additional measures not described in Project Commitment D. MM BR-10 would prevent~~ ~~the entrapment of~~ SKR HCP ~~Implementation Agreement~~IA with the ~~RHCHA~~ RCHCA (SCE 2014b). This agreement provides a process through which the applicant may obtain take authorization of SKR through the SKR HCP for the ~~proposed Valley-Ivyglen Project~~ and Alberhill System Project. USFWS and CDFW provided a joint letter of concurrence with the agreement. MM BR-16 outlines~~pertains to~~ protective measures that would be implemented~~used~~ during construction access to the lake~~Lake~~ Mathews-Estelle Mountain Core Reserve. ~~Collectively, these measures would reduce the likelihood that SKR are injured or killed, or that their habitat is adversely modified during construction.~~ With implementation of these measures, impacts would be reduced to less than significant.

Migratory Birds

Construction activities, such as noise, human presence, and habitat alteration due to tree trimming or vegetation removal, can affect the nesting behavior of migratory bird species. Construction of the 500-kV Line and 115-kV ~~segment~~ Segment ASP-5 may require the use of helicopters. ~~Helicopters would be used for the 500-kV transmission line if the helicopter method is chosen in place of the conventional method for eight towers. The choice between methods is detailed in Section 2.4.5.2.~~ Impacts from the use of helicopters to migratory birds could include changes in nesting and foraging behavior in the vicinity of the 500-kV transmission line due to rotor wash and noise. Under certain conditions, impacts on bird species could be considered a take under the MBTA, ESA, CESA or CFGCs 3503 and 3503.5. In addition, some bird species may be at increased risk of colliding with new transmission structures and lines.

However, these impacts on sensitive and migratory bird populations would be minimized by adoption of Project Commitment C, MM BR-1, MM BR-2, MM BR-3, MM BR-5, and MM BR-11. Project Commitment C states that subtransmission line poles would be designed to be raptor-safe in accordance with APLIC standards. MM BR-2 requires preconstruction surveys to ensure that existing nests are located and protected before construction begins and MM BR-3 requires biological monitoring during construction. MM BR-5 outlines protection measures for coastal California gnatcatchers and MM BR-11 requires the development and implementation of a Nesting Bird Management Plan to protect birds during the breeding season. These measures collectively will reduce the likelihood that birds are injured or killed or their nests or habitat disturbed during construction. With implementation of these measures, impacts will be reduced to less than significant.

Special Status Birds

The construction of the proposed substation, 500-kV lines, and 115-kV lines may negatively impact special status birds, including least Bell's vireo, yellow warblers, coastal California gnatcatcher, golden eagles, white-tailed kites, and peregrine falcons. Table 4.4-4 details the project components where these species have been observed.

Yellow warblers, least Bell's vireos, white-tailed kites, and peregrine falcons have been observed during bird surveys at the proposed substation site or along the 115-kV subtransmission line (see Table 4.4-4). Construction may indirectly impact these species through increased human presence, noise (from helicopters, construction equipment, and increased traffic) and dust, and directly impact them through the removal of habitat and direct disturbance of nests during the breeding season. These impacts would be considered significant. Project Commitments B and D would reduce impacts to these species through implementing a worker environmental training program and habitat restoration plan; however, impacts would remain that are still significant. MMs BR-1 through BR-4 and MM BR-11 would reduce impacts to less than significant levels for these species. The mitigation measures require preconstruction surveys, biological monitoring, avoidance or restoration of or compensation for impacts on riparian habitat or native vegetation, and the development of a Nesting Bird Management Plan. Collectively, these measures reduce direct disturbance of habitat for these species, require restoration of disturbed habitat, and reduce the likelihood that nests would be disturbed or destroyed during construction.

Golden eagles can be attracted to transmission structures because they provide a perch for hunting, and on rare occasion, nesting. Eagles, falcons, and other birds may also collide with transmission lines, which can be difficult for birds to detect during inclement weather or at night. The 500-kV line is not preexisting like the 115-kV line, and may pose an increased risk to golden eagles and other birds because resident birds would not be acclimated to the presence of the new lines. However, with the implementation of Project Commitment C, avian-safe transmission structures would be incorporated into the design of the 115-kV and 500-kV lines. Such structures provide adequate clearances to accommodate a large bird between energized or grounded parts, as recommended by APLIC (APLIC 2006). Construction of the project may directly disturb or destroy nests of breeding raptors. Therefore, MM BR-11 requires the development and implementation of a Nesting Bird Management Plan for the protection of breeding birds. This measure would ensure that impacts on golden eagles and other raptors are reduced to less than significant levels. With implementation of this measure, the project is not anticipated to significantly impact golden eagles through risk of collision with the 500-kV line.

Quino Checkerspot Butterfly

Quino checkerspot butterfly habitat exists within the footprint of the proposed substation site and Import Soil Source Area (Table 4.4-4). Populations of foothill plantain, a critically important host plant for Quino checkerspot larvae, were recorded present in 2009 in the southeastern portion of the substation footprint and within the central portion of the Import Soil Source Area. While Quino checkerspot butterfly host plants would likely be removed during construction; no~~No~~ butterflies or larvae were identified during the 2009 Quino survey~~. Therefore, construction of the proposed project is not anticipated to impact Quino checkerspot butterflies~~.

SCE ~~is currently in the process of obtaining~~would obtain PSE status in the MSHCP, through a ~~Certificate of Inclusion~~COI, to allow for coverage of the entire ~~proposed project~~Proposed Project alignment. The COI will include incidental take authorization for covered species and require contribution of funds for land acquisition, management, and monitoring. In addition, SCE would implement MM BR-1 through

MM BR-4, requiring work to occur only within designated areas and avoid impacting more habitat than is absolutely necessary; preconstruction surveys for sensitive species in each discrete work area; and biological monitoring during avoidance of special status vegetation communities, where feasible. Therefore, construction of the proposed project would not have a significant impact to Quino checkerspot butterflies.

Special Status Reptiles and Amphibians

In 2013, a Belding's~~an~~ orange throated whiptail was observed within the disturbance area for the proposed substation. Western spadefoot has not been observed within the substation footprint. No arroyo toad adults, larvae, or eggs were observed during protocol-level surveys in 2010. Construction of the proposed project is not anticipated to significantly impact Belding's orange-throated whiptail, western spadefoot, or arroyo toad.

Riverside Fairy Shrimp and Vernal Pool Fairy Shrimp

Surveys were undertaken in 2009 and 2010 to identify vernal pools that may provide for vernal pool branchiopods, specifically Santa Rosa Plateau fairy shrimp, Riverside fairy shrimp, and vernal pool fairy shrimp. In 2012 and 2013, protocol-level vernal pool branchiopod surveys conducted for the Valley–Ivyglen project identified numerous vernal pools along Segments ASP1.5 and ASP2. Surveys determined that no listed vernal pool branchiopods were present in these pools. Therefore, construction of the proposed project is not anticipated to impact Riverside or vernal pool fairy shrimp.

In addition, to ensure that the applicant adheres to all Project Commitments, MM BR-18 would be required. MM BR-18 clarifies that the applicant's Project Commitments would be incorporated into the Mitigation Monitoring and Compliance Reporting Program. With the implementation of MM BR-18, in addition to the implementation of all measures listed above, impacts would be reduced to less than significant.

Mitigation Measures

MM BR-1: Limit Construction to Designated Areas and Avoid Riparian, Aquatic, and Wetland Areas.

MM BR-2: Preconstruction Surveys.

MM BR-3: Biological Monitoring During Construction.

MM BR-4: Limit Removal of Native Vegetation Communities and Trees.

MM BR-5: California gnatcatcher protection measures.

MM BR-6: Oak tree protection measures.

MM BR-7: Habitat Restoration and Revegetation Plan Requirements.

MM BR-8: Special Status Plant Avoidance and Mitigation Measures.

MM BR-9: Invasive Plant Control Measures.

MM BR-10: Prevent Wildlife Entrapment.

MM BR-11: Migratory Birds and Raptors Impact Reduction Measures.

MM BR-12: Burrowing Owl Impact Reduction Measures.

MM BR-13: Trash Abatement.

MM BR-14: Protection of Special Status Species on Castle and Cooke Land.

MM BR-16: Stephens' Kangaroo Rat Take Avoidance within Core Reserve. The applicant shall ensure that take of SKR within the Lake Mathews-Estelle Mountain Core Reserve does not occur during any project construction activity. To avoid take of SKR, the following measures shall be implemented:

Daylight Hours Only

- No vehicle or equipment use for any project construction activity shall occur within the Core Reserve or on its roadways within 30 minutes prior to sunset or 30 minutes after sunrise except during an emergency condition. If an emergency condition occurs and nighttime access or use is necessary, the CPUC shall be notified within 24 hours. To the extent feasible, biological monitors qualified to monitor for SKR shall be present during emergency access to the Core Reserve.

Monitoring

- No more than 14 days prior to conducting any project construction activity within the Core Reserve, biological monitors qualified to monitor for SKR shall complete preconstruction surveys and flag confirmed and potential SKR burrow complexes (including burrows that may be used by other kangaroo rat species) for avoidance. ~~Survey areas shall include Lake Street and all access roads to 500-kV tower sites evaluated in the EIR and approved by the CPUC for construction access, plus a 25-foot buffer area (except in areas inaccessible by foot) on each side of these roads.~~ Surveyed and flagged areas shall ~~also~~ include all 500-kV ROWs to be accessed within the Core Reserve plus a 25-foot buffer area (except in areas inaccessible by foot) on each side of these roads.

Vehicle Use

- Vehicle use and worker access within the Core Reserve shall be minimal. Vehicles shall not travel faster than 10 miles per hour within the Core Reserve. All construction vehicles and equipment shall remain on existing access and maintenance roads used to access the applicant's 500-kV towers within the Core Reserve.

- Biological monitors qualified to monitor for SKR shall accompany all workers to and from all work sites within the Core Reserve, and shall conduct daily clearance sweeps immediately prior to any project construction activity for all areas within the Core Reserve to be accessed that day.

- If activities at 500-kV tower sites adjacent to the Core Reserve require equipment to back up into the Core Reserve on areas that are not existing access roads, biological monitors qualified to monitor for SKR shall monitor the process of backing up and exiting the Core Reserve areas and all activities that occur in proximity to the equipment while it is located within the Core Reserve area. Equipment shall be carefully inspected by the monitors for SKR prior to backing up or exiting the Core Reserve area. If SKR are present, the equipment shall not be moved until all SKR have left the equipment and all areas within 20 feet of the equipment.

Signage

- Clearly marked and visible signs listing the required speed limit and reminding drivers to watch for and avoid kangaroo rats shall be posted at the entry point into the Core Reserve and at regular intervals thereafter (at minimum every 0.25 miles) along all roads to be accessed within the Core Reserve.

Other Requirements

- The applicant shall not access the 0.5-mile access road~~Hilltop Road~~ segment located within the Core Reserve between 500-kV Towers M13-T2~~-12~~ and M13-T1 other than by foot or helicopter. If accessed by foot or helicopter, no more than 14 days prior to access, preconstruction surveys shall be conducted along the 0.5-mile Hilltop Road segment to identify and flag potential kangaroo rat burrow complexes for avoidance.

No activities other than grounding and wire snubbing and vehicle use required for these activities shall occur at 500-kV tower sites located within the Core Reserve.

MM BR-18: Implementation of All Project Commitments.

Impact BR-2 (ASP): Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
LESS THAN SIGNIFICANT WITH MITIGATION

Riparian habitat and special status natural communities are present within the proposed Alberhill Project area. Impacts on riparian habitat and wetlands are further discussed in Impact BR-3 (ASP). Several natural communities designated as special status by the CDFW are present at the proposed substation site and along the proposed 500-kV transmission line and 115-kV subtransmission line routes, including chamise chaparral, coast live oak woodland, Riversidean sage scrub, Southern cottonwood-willow riparian woodland, and Southern sycamore-alder riparian woodland (Table 4.4-6). In addition, Riverside County's General Plan establishes policies to protect oak woodlands and the City of Lake Elsinore General Plan Policy 2.2 discourages development within high-quality riparian habitat or high concentrations (80 percent or more) of natural native habitat and native plant species.

Direct, permanent impacts on special status natural communities would result from the removal of vegetation for substation construction, pole and tower installation, helicopter platforms/pads~~ (if helicopter construction method is used for the 500-kV transmission lines)~~, and access road construction. Impacts may also result from the use of temporary staging yards and wire-stringing sites. In addition, trees or native vegetation may require trimming, crushing, or removal to accommodate construction of the proposed Alberhill Project. ~~The impacts along the 500-kV transmission line to Riversidean Sage Scrub and Southern Sycamore-Alder Riparian Woodland habitat would be less than those presented in Table 4.4-6 if helicopters are used in conjunction with the conventional method.~~

Impacts analyses for special status natural communities were completed by overlaying the applicant-provided GIS data for the vegetation communities over the general disturbance area for the proposed Alberhill Project (SCE 2013d). Special status natural communities may be disturbed or removed during construction. Project Commitment B would provide a worker environmental awareness program to ensure compliance with onsite biological resource protection measures. Project Commitment D would require development of a Habitat Restoration and Revegetation Plan. However, populations of special status

Table 4.4-6 Vegetation Types along Components of the Alberhill Project (in Acres)

Vegetation Community	Alberhill Substation	500-kV Transmission Lines	115-kV Subtransmission Segments[3]										Telecom	Staging Yards	Total[4]
			1	1.5	2	3	4	5	6	7	8	GDA			
Chamise Chaparral	---	---	---	---	---	---	---	~~1.66~~ 0.29	~~1.98~~ 0.76	---	---	2.91	---	---	~~3.64~~ 3.96
Coast Live Oak Woodland	---	---	---	---	~~1.64~~ 0.25	---	---	~~3.38~~ 0.54	---	---	---	3.20	---	---	~~5.02~~ 3.99
Riversidean Alluvial Fan Scrub	---	---	---	---	~~0.29~~ 0.09	---	---	---	---	---	---	0.19	---	---	~~0.29~~ 0.29
Riversidean Sage Scrub[2]	~~4.47~~ 7.44	~~30.17~~ 16.78	---	~~---~~ 0.11	~~15.06~~ 5.43	~~0.93~~ 0.29	~~1.62~~ 0.59	~~2.22~~ 0.22	~~0.86~~ 0.68	---	---	17.51	---	<0.01	~~55.33~~ 49.06
Southern Cottonwood-Willow Riparian Woodland	---	---	---	~~0.76~~ ---	~~1.38~~ 0.15	---	~~0.57~~ ---	---	---	---	---	2.48	---	---	~~2.71~~ 2.63
Southern Sycamore-Alder Riparian Woodland[1]	---	~~0.58~~ 0.20	---	---	---	---	---	---	---	---	---	---	---	---	~~0.58~~ 0.20
Southern Willow Scrub	~~0.80~~ 0.76	---	~~---~~ <0.01	~~3.19~~ 0.13	~~6.97~~ 0.14	---	---	~~0.69~~ 0.01	~~0.06~~ ---	---	---	10.14	0.07	---	~~11.71~~ 11.25

~~Source: SCE 2013a, 2014a~~

Notes:

1 CNDDB sensitive community is entitled "California sycamore woodland"

2 Riversidean sage scrub is a type of coastal sage scrub (Holland 1986), which is part of sensitive natural community alliances according to the CNDDB; coastal sage scrub is also a sensitive community under the MSHCP.

3 Impacts associated with a numbered ASP segment are associated with defined workspaces, all remaining areas within the 115-kV general disturbance area are accounted for in the GDA column. The 115-kV general disturbance area is described in Section 2.4.2.3.

4 Due to rounding, the final total may not equal the sum of the individual components.

Key:
CNDDB = California Natural Diversity Database
kV = kilovolt
MSHCP = Multiple Species Habitat Conservation Plan

plants could be disturbed or removed by construction. Impacts from the construction and operation of the proposed Alberhill Project would be significant.

MMs BR-1 through BR-4, MM BR-6, MM BR-7, and MM BR-9 would limit construction to designated areas, require preconstruction surveys and biological monitoring, and would limit the removal of native vegetation and oak trees. MMs BR-1 through BR-4 would limit construction to designated areas, require preconstruction surveys and biological monitoring, and would limit the removal of native vegetation. MM BR-6 would limit the removal of oak trees within the project area. MM BR-7 would require the inclusion of additional provisions in the Habitat Restoration and Revegetation Plan that will be developed pursuant to Project Commitment D. MM BR-9 would require implementation of an Invasive Plant Management Plan, which would help prevent the spread of invasive species in the project area. Implementation of these mitigation measures would reduce impacts to special status natural communities to less than significant, through avoidance and vegetation restoration measures. Therefore, impacts under this criterion would be less that significant with mitigation.

Mitigation Measures

MM BR-1: Limit Construction to Designated Areas and Avoid Riparian, Aquatic, and Wetland Areas.

MM BR-2: Preconstruction Surveys.

MM BR-3: Biological Monitoring During Construction.

MM BR-4: Limit Removal of Native Vegetation Communities and Trees.

MM BR-6: Oak tree protection measures.

MM BR-7: Habitat Restoration and Revegetation Plan Requirements.

MM BR-9: Invasive Plant Control Measures.

Impact BR-3 (ASP): Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
LESS THAN SIGNIFICANT WITH MITIGATION

Numerous wetlands, drainages, or riparian areas, including many known to be subject to federal jurisdiction, have been identified in proximity to components of the proposed Alberhill Project. Numerous vernal pools were also identified and surveyed as potential habitat for vernal pool branchiopods. Construction of new access roads; clearing vegetation, which exposes topsoil to weathering and erosion; and installing facilities within wetland or upland drainage areas would result in direct, permanent impacts on federally protected wetlands ~~(including upland areas and drainages)~~ as defined by Section 404 of the CWA. These vernal pools, along with Riverside fairy shrimp and vernal pool fairy shrimp, are discussed above under Impact BR-1 (ASP).

The applicant anticipates that approximately 0.3 acres of federally jurisdictional waters would be permanently impacted by construction (Appendix G, Table 4). Although not all of the features are considered to be federally protected wetland systems, several potentially support sensitive wildlife species, and may fall under the jurisdiction of the CDFW. Approximately 0.8 acres of waters under the jurisdiction of the CDFW may be permanently impacted. These features would generally be impacted only temporarily and would be restored following construction. These temporary impacts would total approximately ~~0.5~~1.3 acres under the jurisdiction of the USACE and ~~1.71~~3.7 acres under the jurisdiction of the CDFW (Appendix G, Table 4). However, permanent, direct impacts on wetlands may result from placing project elements within these features.

ASP-13, an artificial 0.84-acre stock pond that supports riparian vegetation, is located within the proposed Alberhill substation site (Figure 2-~~2i~~2a). The stock pond will be removed during construction of the proposed substation.

ASP-8 is an unvegetated channel that drains southward towards Staging Area ASP1 and eventually flows into a concrete channel (ASP-9) located along the staging area's eastern boundary and into a culvert beneath I-15. The feature is subject to state and federal jurisdiction. The northern portion of this feature west of Lake Street at 500-kV Tower R15X/SA6 would be directly and permanently impacted by the access road for Tower R13/SA5.

In addition to impacts on ASP-13 and ASP-8, ~~several other~~a small, unvegetated channel~~s~~ (~~ASP-10,~~ ASP-11~~, and ASP-12~~) would be impacted during construction of the 500-kV transmission line.

Construction of the project may directly impact wetlands through soil disturbance, crossing by vehicles, topographic changes that affect wetland hydrology, removal of wetland vegetation, and erosion, sedimentation, and input of pollutants. Potential impacts on wetlands would be reduced to less than significant by MMs BR-1, BR-2, and BR-3, which would limit construction to designated areas and protect aquatic resources, require site-specific surveys, and biological monitoring. MM BR-15 would control erosion, sedimentation, and input of pollutants. Collectively, these measures would reduce impacts under this criterion to less than significant.

Mitigation Measures

MM BR-1: Limit Construction to Designated Areas and Avoid Riparian, Aquatic, and Wetland Areas.

MM BR-2: Preconstruction Surveys.

MM BR-3: Biological Monitoring During Construction.

MM BR-15: Stormwater Pollution Prevention Plan (SWPPP) Best Management Practices (BMPs).

Impact BR-4 (ASP): Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
LESS THAN SIGNIFICANT

The MSHCP identifies blocks of contiguous habitat for covered species ("cores") and corridors for movement between cores ("linkages") (Riverside County 2003b; Figure 4.1-3). No component of the proposed Alberhill Project would be located in existing core or linkage areas identified by the MSHCP, although access into the Lake Mathews-Estelle Mountain Reserve (Core C), would be required (see discussion under Impact BR-6 [ASP]). However, the Alberhill substation; 500-kV transmission lines; and Segments ASP1, ASP 1.5, and ASP 2 would transect Proposed Core 1. Segment ASP4 would cross Proposed Linkage 2 and Proposed Extension to Existing Core 3 (Riverside County 2003b).

Construction of the proposed Alberhill Project would not significantly interfere with the movement of wildlife species because the proposed 500-kV transmission line and 115-kV subtransmission line structures would be sufficiently spaced to allow wildlife movement. Although the proposed substation would be surrounded by a perimeter wall, sufficient open space would surround the proposed substation to allow wildlife to move freely around the substation. There are no known native wildlife nursery sites within the project area. Therefore, construction and operation of the project is not anticipated to interfere with the movement of wildlife species or impede the use of nursery sites.

Feature ASP-8, discussed in Impact BR-3 (ASP) above, would be crossed by an access road to 500-kV Tower SA5. This feature is connected to Temescal Wash, which is a tributary of the Santa Ana River, and thus could potentially allow for the movement of fish and aquatic wildlife during peak flow periods. However, the installation of a crossing at this location is not expected to interfere with the movement of water within the drainage, and would therefore not have a significant impact on the movement of migratory fish.

Impact BR-5 (ASP): Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
LESS THAN SIGNIFICANT

The proposed Alberhill Project would comply with all applicable local ordinances and policies. Construction of the substation and other project components would require the removal of approximately 12 oak trees and the trimming of numerous more, and several local policies and ordinances govern the removal or trimming of such trees (e.g., Riverside County Roadside Tree Ordinance 12.08.050, Section 5.116 of the City of Lake Elsinore Municipal Code, Riverside County's General Plan, City of Lake Elsinore General Plan Policy 2.2). These ordinances require permits for the removal or trimming of certain types of trees. The applicant would obtain all necessary permits prior to the removal or trimming of these trees. For a further discussion about impacts on oak trees, native plants, and riparian environments, refer to Impacts BR-1 and BR-2.

Impact BR-6 (ASP): Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.
LESS THAN SIGNIFICANT WITH MITIGATION

With the exception of an approximately 2-mile-long section of 115-kV Segment ASP2, each component of the proposed Alberhill Project would be constructed within the plan areas of the MSHCP and SKR HCP (Figure 4.4-1); however, the entire project would be covered under the SKR HCP and SCE is entering into an agreement with the RCA to allow for coverage of this section of ASP2 under the MSHCP.~~).~~ The applicant consulted with the USFWS, CDFW, Western Riverside County RCA, and RCHCA and would continue consultation with these agencies prior to, during, and after construction of the proposed Alberhill Project to ensure that no violations of the ESA, CESA, MSHCP, or SKR HCP occur during construction or operation of the proposed Alberhill Project.

MSHCP and SKR HCP

The ~~majority of the~~ proposed project would be covered under~~located within~~ the SKR HCP.~~-area except for a section in the center of the proposed 115-kV Segment ASP2 route.~~ The HCP was implemented to protect the SKR and its habitat and to put forth conservation, mitigation, and monitoring measures for projects that impact the species within the plan area. The HCP area would be impacted through the direct removal of suitable SKR habitat during the construction of project components.

As of October 15, 2012, the applicant finalized an SKR HCP Implementation Agreement with the RCHCA, which provides a process through which the applicant may obtain take authorization of SKR pursuant to the SKR HCP (AMEC 2014a). ~~The Implementation Agreement also applies to work within MSHCP areas identified as Additional Reserve Land because SKR HCP core reserve requirements do not apply to Additional Reserve Land (Figure 4.4-1).~~ The Implementation Agreement also allows the applicant to obtain take for SKR on lands owned by Castle and Cooke. ~~As of June, 2015, the RCHCA is processing a COI to formalize this take agreement and identify the applicant as a participant in the SKR HCP for both the Valley–Ivyglen and Alberhill projects.~~ The applicant would obtain PSE status through the issuance of a COI to allow for take coverage for the entire alignment. The COI~~s~~ will be finalized prior to construction and will be included in the Notice to Proceed request for ~~each~~ the Proposed ~~project~~Project. A COI was finalized and included in the NTP request for the Valley–Ivyglen Project formalizing the take agreement and identifying the applicant as a participant in the SKR HCP.

The applicant would be a PSE under the MSHCP, which requires that the applicant prepare a MSHCP consistency report and Determination of Biologically Equivalent or Superior Preservation for approval by the RCA. In addition, under MM BR-7 the applicant would consult with the USFWS and CDFW prior to start of construction to develop a Habitat Restoration and Revegetation Plan for native vegetation and sensitive resources including wetlands, wetland buffer areas, riparian habitat, and natural communities. The applicant would also consult with the agencies after construction of the proposed Alberhill Project to ensure that areas are adequately restored or compensation is provided. Under MM BR-6, MM BR-8, MM BR-9, MM BR-11, and MM BR-12 the applicant would consult with the USFWS, CDFW, RCA, and RCHCA prior to, during, and after construction of the proposed Alberhill Project (as applicable) regarding oak trees, special status plants, nesting birds, burrowing owl impact avoidance and reduction. MSHCP protected species, the SKR HCP, and impacts on SKR are further discussed under Impact BR-1 (ASP).

Lake Mathews-Estelle Mountain Core Reserve

The RCHCA currently manages several core reserves that have been set aside for SKR conservation and habitat preservation, including the Lake Mathews-Estelle Mountain Core Reserve. The applicant would be able to obtain SKR take authorization for work within MSHCP and SKR HCP areas, but would not be able to obtain SKR take authorization for work within the Lake Mathews-Estelle Mountain Core Reserve. Although work within the reserve is allowed for the maintenance of existing infrastructure, including transmission facilities, it is not allowed for the construction of new infrastructure unless the new construction work is conducted by a public agency (SKR HCP Sections 5.c.1.s and 5.c.1.t, and Implementation Agreement Section III.A.1.a(4)).

The proposed 500-kV transmission line routes would be adjacent to the reserve but not enter its boundaries (Figure 4.4-1). The use of helicopters to construct ~~eight~~ three transmission structures along the 500-kV transmission line ~~(if the helicopter construction method is chosen for the eight towers instead of the conventional method)~~ would produce noise, especially if helicopters are used near the boundary of the reserve. Construction of the line would require entry into the reserve to access the applicant's existing 500kV tower sites. USFWS and CDFW have authorized the applicant's entry into the reserve for clipping and snubbing work related to construction of the 500-kV transmission line under the applicant's existing maintenance agreement with the RCHCA (USFWS and CDFW 2013a). The existing access roads would also be used by tensioning and pulling equipment for conductor stringing (Figure 2-~~2i~~2a). The applicant would drive on Lake Street to an existing access road and on Hilltop Road.

Construction of the proposed 500-kV transmission lines would also require minimal access to the reserve by construction crews for grounding and snubbing activities to ensure worker safety and may require limited access for wire stringing equipment positioning as described in Chapter 2, "Project Description," Section 2.3.2.1, “Lake Mathews-Estelle Mountain Reserve,” Section 2.4.5.3, “Grounding and Snubbing: Core Reserve Access,” and under the heading, “500-kV Transmission Line Wire Stringing,” in Section 2.4.5.5, “Wire Stringing.” USFWS, CDFW, and RCHCA reviewed the applicant’s description of these proposed activities within the reserve, the proposed locations for these activities, and SJM Biological Consultants’ 2012 live-trapping report for the locations (SJM Biological Consultants 2012).

USFWS, CDFW, and RCHCA concurred that the grounding and snubbing activities as described by the applicant could be accommodated at the locations specified within the reserve pursuant to the SKR HCP’s provisions for maintenance of existing facilities (SKR HCP Section 5.c.1.t). The agencies stated that the proposed activities within the Reserve are not expected to result in SKR take or have a long-term negative effect on the Reserve (RCHCA 2013; USFWS and CDFW 2013a, 2013b). In addition to the proposed activities within the Reserve specified in the wildlife agency letters, the applicant’s wire stinging equipment may need to be positioned such that it extends onto existing roadways within the Reserve or within areas at the perimeter of the reserve immediately adjacent to the proposed work areas at 500-kV Towers SA6 and VA6 and existing tower sites M13-T4, M13-T3, and M13-T2 (Figure 2-~~2i~~2a). Vegetation in these areas may be crushed as identified in the USFWS and CDFW letter (USFWS and CDFW 2013a).

While the applicant has secured concurrence from USFWS, CDFW, and the RCHCA that work within the Reserve would not likely result in take of SKR, this agreement does not permit the applicant to take SKR during these activities. Should the applicant injure or kill SKR within the core reserve, this action would violate the terms of the HCP and the ESA and CESA.

Measures would be put in place to avoid take of SKR within the Reserve and avoid disturbance of occupied SKR habitat to the maximum extent feasible (MM BR-2, MM BR-3, and MM BR-16). The proposed activities within the Reserve would not result in land disturbance and would be located on existing roadways and within the applicant’s exiting transmission line corridor ROW. While it is the position of the USFWS, CDFW, and RCHCA that the proposed activities can be accommodated by the SKR HCP (RCHCA 2013; USFWS and CDFW 2013a, 2013b), if take occurs a conflict would occur. SKR may be taken by vehicular traffic or equipment use at the existing 500-kV tower sites within the Reserve. Although 2011 and 2012 surveys and trapping results do not indicate the presence of SKR or suitable SKR habitat in areas where activities associated with construction of the proposed Alberhill Project would occur, the possibility of SKR take, however unlikely, still exists. MM BR-2, MM BR-3, and MM BR-16 would ensure that take of SKR would be avoided to the maximum extent feasible.

Mitigation Measures

MM BR-2: Preconstruction Surveys.

MM BR-3: Biological Monitoring During Construction.

MM BR-6: Oak tree protection measures.

MM BR-7: Habitat Restoration and Revegetation Plan Requirements.

MM BR-8: Special Status Plant Avoidance and Mitigation Measures.

MM BR-9: Invasive Plant Control Measures.

MM BR-11: Migratory Birds and Raptors Impact Reduction Measures.

MM BR-12: Burrowing Owl Impact Reduction Measures.

MM BR-16: Stephens' Kangaroo Rat Take Avoidance within Core Reserve.

CULTURAL RESOURCES

Section 4.5.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As noted in the revisions to the FEIR analysis that follows, additional cultural resource surveys are underway to address approximately 11 acres of temporary construction areas that have been added to the Proposed Project but not previously studied. SCE will provide the results of the surveys as well as a revised assessment of the potential impacts in these locations once the surveys are complete. As a result, a significance determination has not been made for these additional areas under Impact CR-1 (ASP). No new impacts were identified and the severity of Impact CR-2 (ASP) and CR-3 (ASP) have not increased.

4.5.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

4.5.5.1 Project Commitments (Alberhill Project)

The applicant has committed to the following as part of the design of the proposed Alberhill Project. See Section 2.6, "Project Commitments," for a complete description of each project commitment.

- **Project Commitment B: Worker Environmental Awareness Plan.** Prior to construction of the proposed projects, a Worker Environmental Awareness Plan would be developed based on final engineering designs, the results of preconstruction surveys, project commitments, and mitigation measures imposed by the California Public Utilities Commission. A presentation would be prepared by the applicant and shown to all site workers prior to their start of work. A record of all trained personnel would be kept with the construction foreman. In addition to the instruction for compliance with any site-specific biological or cultural resource protective measures and project mitigation measures, all construction personnel would also receive the following:
    - A list of phone numbers of the applicant's personnel with the (archeologist, biologist, environmental compliance coordinator, and regional spill response coordinator);
    - Instruction on the South Coast Air Quality Management District Rule 403 for control of dust;
    - Instruction on what typical cultural resources look like, and if discovered during construction, to suspend work in the vicinity of any find and contact the site foreman and archeologist or environmental compliance coordinator;
    - Instruction on individual responsibilities under the Clean Water Act, the Storm Water Pollution Prevention Plan for the projects, site-specific Best Management Practices, and the location of Material Safety Data Sheets for the projects;
    - Instructions to notify the foreman and regional spill response coordinator in case of hazardous materials spills and leaks from equipment or upon the discovery of soil or groundwater contamination;
    - A copy of the truck routes to be used for material delivery; and
    - Instruction that noncompliance with any laws, rules, regulations, or mitigation measures could result in being barred from participating in any remaining construction activities associated with the projects.

4.5.5.2 Impacts Analysis (Alberhill Project)

Impact CR-1 (ASP): Substantial adverse change in the significance of an historical resource or an archaeological resource.
LESS THAN SIGNIFICANT WITH MITIGATION/NO DETERMINATION

Construction Alberhill Substation Site and 115-kV Segments ASP1 and ASP1.5

There are no known prehistoric-age resources or unique archaeological resources on the Alberhill Substation Site or immediately adjacent to 115-kV Segments ASP1 and ASP1.5~~; however, there~~.

There are five known historic resources in this area. Three historic-age resources (P33-17571/CWA18-2, P33-17572/CWA18-1, and P33-15426) occur within 0.1 miles of the substation site or 115-kV Segments ASP1 and ASP1.5 but are not eligible for the California or National Registers. These resources do not otherwise qualify as an historical resource under the CEQA Guidelines so these project components would not result in any impact with respect to these three resources.

Project activities would not affect the fourth known historic resource, Temescal Valley Road, which has been recommended as not eligible. The road has been re-graded, widened, realigned, and recently repaved. This road would be used during construction, but no alterations would be made. There would be no substantial adverse change in the significance of the Temescal Valley Road resource.

The fifth known historic resource (~~Resource~~ P~~22~~33-15428),~~,~~ a house built in 1920, has not been evaluated for California or National Register eligibility. Adverse effects to the resource could result in a significant impact, given that the resource has not been evaluated for eligibility. SCE has proposed Project Commitment B, which would require preparation of a WEAP. Part of the WEAP would focus on recognition of cultural resources; this would not reduce impacts to less than significant because it would not prevent substantial adverse changes to resources. MM CR-1b would require a plan that outlines that avoidance of this resource ~~is required~~. Implementation of MM CR-1b would prevent any change in significance of P22-15428. With implementation of MM CR-1b, there would be no substantial adverse change in the significance of a known historical resource.

There is a potential for discovery of previously unknown prehistoric-age and historic-age cultural resources and unique archaeological resources during substation and 115-kV alignment construction activities. As previously described, though there are no known prehistoric cultural resources within 0.1 miles of the work areas, cultural sensitivity in the area is moderate to high due to proximity to a known traditional cultural property (Paayoxch), the type of alluvial material present at the substation site, and known importance of the general area to local Native American groups. Construction impacts could potentially include physical damage or alteration, change in visual elements of a resource, and destruction of a resource. Impacts to previously unknown cultural resources, including historic resources and unique archaeological resources, would be significant if the resources are considered historic resources and if the impacts are substantial and adverse. SCE has proposed Project Commitment B, which would require preparation of a WEAP. Part of the WEAP would focus on recognition of cultural resources and when to suspend work if a cultural resource is encountered. Impacts would be potentially significant after implementation of Project Commitment B because the measure would not prevent substantial adverse changes to the significance of any discovered resource. MM CR-1a requires the applicant to ensure surveys have been conducted in all work areas and staging areas prior to construction. MM CR-1b requires preparation of plan outlining the procedures for analyzing a previously unknown resource discovered during construction activities. MM CR-2 outlines monitoring requirements, including involvement of Native American tribes and groups to determine Native American monitoring locations. ~~MM CR-3 describes procedures to be followed on-site if a previously unknown resource is discovered.~~ Impacts to previously undiscovered cultural resources (including historical and unique archaeological resources) would be less than significant with implementation of MM CR-1a, MM CR-1b, and MM CR-2~~, and MM CR-3~~.

ASP 500-kV Transmission Line Routes

There are no known prehistoric-age resources or unique archaeological resources at or immediately adjacent to the ASP 500-kV Transmission Lines.

There are seven known historic resources in this area. Two historic-age resources (P33-17571/CWA18-2 and P33-15426/CWA18-1) occur within 0.1 miles of the 500-kV transmission line routes but are not eligible for the California or National Registers. These resources do not otherwise qualify as an historical resource under the CEQA Guidelines and so these project components would not result in any impact with respect to these two resources.

Another two~~Two~~ resources within 0.1 miles of the proposed 500-kV transmission line routes (Temescal Valley Road [currently Temescal Canyon Road] and P-33-021068/CA-RIV-10913) have been evaluated but recommended not eligible.~~, while three resources within 0.1 miles of the proposed 500-kV transmission line routes have not been formally evaluated for eligibility.~~ Project activities, as previously described for the Alberhill Substation site, would not affect Temescal Valley Road, which was recommended not eligible for the California Register~~, as previously described for the Alberhill Substation site,~~ so there would be no substantial adverse change in the significance of the Temescal Valley Road resource.

Resource P-33-021068/CA-RIV-10913, a culvert, has also been recommended not eligible, although~~.~~ SHPO has not concurred on the eligibility of this resource. Therefore, adverse~~Adverse~~ effects to this resource, which could include damage or destruction of the resource, could ~~therefore~~ result in significant effects if the affected resource is determined to be eligible by the SHPO. SCE has proposed Project Commitment B, which would require preparation of a WEAP. Part of the WEAP would focus on recognition of cultural resources; this would not reduce impacts to less than significant because it would not prevent substantial adverse changes to resources. MM CR-1b would require avoidance of known resources. Implementation of MM CR-1b would prevent any change in significance of the resources.

The remaining three resources within 0.1 miles of the proposed 500-kV transmission line routes (~~Resources~~ CWA60-3, P33-021067/CA-RIV-10912, and P-33-021069/CA-RIV-10914) have not been evaluated for California or National Register eligibility. Therefore, substantial~~Substantial~~ adverse effects to the resources could result in a significant impact, given that the resources have not been evaluated for eligibility. SCE has proposed Project Commitment B, which would require preparation of a WEAP. Part of the WEAP would focus on recognition of cultural resources; this would not reduce impacts to less than significant because it would not prevent substantial adverse changes to resources. MM CR-1b would require avoidance of known resources. Implementation of MM CR-1b would prevent any change in known resources. With implementation of MM CR-1b, there would be no substantial adverse change in the significance of a known historical resource.

There is a potential for discovery of previously unknown prehistoric-age and historic-age cultural resources and unique archaeological resources during construction activities at the 500-kV lattice steel tower sites within the substation site boundaries where archaeological sensitivity is moderate to high. The potential for discovery is higher under the Conventional Method than the Helicopter Construction method for the 500-kV transmission lines, since the latter construction approach would result in less ground disturbance (refer to Section 2.4.2.2). Impacts would be potentially significant under both approaches, however, as described previously for work at the Alberhill Substation site. Impacts would be potentially significant even after implementation of Project Commitment B because the measure would not prevent substantial adverse changes to the significance of any discovered resource. MM CR-1a, MM CR-1b, and MM CR-2~~, and MM CR-3~~ would be implemented for these project components, as described in the substation site analysis, to reduce impacts to previously undiscovered cultural resources at the two 500kV lattice steel tower sites within the substation site boundaries. At other locations along the 500-kV transmission alignment where archaeological sensitivity is low, monitoring would not be required but MM CR-1a, MM-CR1b, and MM CR-2 would be implemented to reduce impacts to previously undiscovered cultural resources. Impacts to previously undiscovered cultural resources (including historical and unique archaeological resources) would be less than significant with implementation of MM CR-1a, MM CR-1b, and MM CR-2~~, and MM CR-3~~.

115-kV Segments ASP2 through ASP8

There are seven known cultural~~prehistoric- and historic-age~~ resources along 115-kV Segments ASP2 through ASP8. One of these known ~~Three historic-age~~ resources is a~~and one~~ prehistoric-age resource within 0.1 miles of the 500-~~kv~~kV transmission line routes (P33-013802, an isolated mano) that is~~are~~ not eligible for the California or National Registers and does not otherwise qualify as a historical resources under the CEQA Guidelines.~~:~~

The remaining six known cultural resources are historic-age resources. Four of the known historic-age resources within 0.1 miles of the 500-kV transmission line routes (P33-06883/CARIV-5785H, P33-03832, P33-14891, and P33-021126) are not eligible for the California or National Registers.

- ~~Prehistoric~~
  - ~~P33-14712~~
- ~~Historic~~
  - ~~P33-06883/CA-RIV-5785H~~
  - ~~P33-03832~~
  - ~~P33-14891~~

These resources do not otherwise qualify as an historical resource under the CEQA Guidelines and so these project components would not result in any impact with respect to these four known historic-age resources.

The fifth known~~Within 0.1 miles of the project, there is one~~ historic-age resource ~~that has been determined eligible~~ (P33-17016/Alberhill community and industrial buildings) has been determined eligible and the sixth known~~and one~~ historic-age resource (CWA60-2/irrigation pump and motor)~~that~~ has not been formally evaluated for eligibility.~~ (CWA60-2/irrigation pump and motor).~~ Substantial adverse effects to either of these two known historic-age resources~~resource~~ could result in a significant impact, given that one resource is eligible and the other may be eligible, pending formal evaluation. SCE has proposed Project Commitment B, which would require preparation of a WEAP. Part of the WEAP would focus on recognition of cultural resources; this would not reduce impacts to less than significant because it would not prevent substantial adverse changes to resources. MM CR-1b would require avoidance of these known resources. Implementation of MM CR-1b would prevent any change in significance of P3317016 and CWA60-2. With implementation of MM CR-1b, there would be no substantial adverse change in the significance of a known resource.

There is a potential for discovery of previously unknown prehistoric-age and historic-age cultural resources and unique archaeological resources during construction activities along 115-kV Segments ASP3 through ASP8, where archaeological sensitivity is moderate to high (as previously discussed) and where ground-disturbing activities would occur. No ground-disturbing activities would occur along ASP2, where only stringing of conductor and installation of additional structures on existing poles would occur. Impacts would be potentially significant, as described previously for work at the Alberhill Substation site. SCE has proposed Project Commitment B, which would require preparation of a WEAP. Part of the WEAP would focus on recognition of cultural resources; this would not reduce impacts to less than significant because it would not prevent substantial adverse changes to resources. MM CR-1a, MM CR-1b, and MM CR-2~~, and MM CR-3~~ would be implemented for these project components, as described in the substation site analysis, to reduce impacts to previously undiscovered cultural resources. Impacts to previously undiscovered cultural resources (including historical and unique archaeological resources) would be less than significant with implementation of MM CR-1a, MM CR-1b, and MM CR-2~~, and MM CR-3~~.

Additional Temporary Construction Areas

The design modification and additional engineering refinements have resulted in approximately 11.4 acres of temporary construction areas that have been added to the Proposed Project's footprint but have not been covered by a previous cultural resource study. These areas include:

- four staging areas,
- six structure work areas,
- one temporary disturbance area, and
- an extension of one underground trench.

The four staging areas are all located within undeveloped but heavily disturbed plots. Of the six structure work areas, all are located in the vicinity of existing structures with three located in developed land and the remaining three located in mountainous terrain. The temporary disturbance area is located on a plot of land that has been disturbed by grading. Lastly, the extended underground trench disturbance area is located on commercially developed land.

Due to the lack of survey coverage of these areas, the potential to impact known or previously known historical resources or archaeological resources could not be determined at this time. Cultural resource surveys for these additional temporary construction areas are currently underway. SCE will provide the results of the surveys as well as a revised assessment of the potential impacts in these locations once the surveys are complete. As a result, no significance determination can be made for these locations.

Operation and Maintenance

Operation and maintenance activities on proposed Alberhill Project components would all occur within areas disturbed during construction of the project or within or along facilities erected during construction of the project. No ground-disturbing activities in previously undisturbed areas would occur during operation and maintenance. There would be no potential to affect known or previously unknown historic-age or prehistoric-age historical resources or unique archaeological resources during operation and maintenance. As a result, there would be no impact to these resources.

Mitigation Measures

MM CR-1a: Ensure preconstruction survey coverage of all work areas and staging areas.

MM CR-1b: Avoid impacts to known and undiscovered historic resources and unique archaeological resources (except for site P33-000714).

MM CR-2: Monitor ground disturbing activities (includes Native American monitoring).

MM CR-3: Follow historic resource and unique archaeological resource discovery protocol.

Impact CR-2 (ASP): **Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.**
LESS THAN SIGNIFICANT WITH MITIGATION

Construction

There are no known unique paleontological resources or sites or unique geologic features in the proposed Alberhill project area; however, undiscovered surface and subsurface paleontological resources could occur in the area, as described in Table 4.5-6. The proposed Alberhill Project would include ground disturbance and excavation at the substation site, along the 500-kV alignments, and along all 115-kV segments except ASP2 (where the ASP conductor would be located on existing poles and therefore would not result in ground disturbance), which could destroy undiscovered paleontological resources and result in a significant impact. The potential for discovery is higher under the Conventional Method than the Helicopter Construction method for the 500-kV transmission lines, since the latter construction approach would result in less ground disturbance (refer to Section 2.4.2.2). Impacts would be potentially significant, however, under both approaches. MM CR-4 would require monitoring where it has been determined that there is a reasonable potential for discovery of fossils in the project area based on information from the records search and literature review summarized in Table 4.5-6. MM CR-5 outlines procedures to follow if a paleontological resource is discovered during construction. Impacts to paleontological resources would be less than significant with implementation of MM CR-4 and MM CR-5.

Operation and Maintenance

Operation and maintenance activities on ASP components would all occur within areas disturbed during construction of the project. No ground-disturbing activities in previously undisturbed areas would occur during operation and maintenance. There would be no potential to affect known or previously unknown unique paleontological resources or unique geologic features during operation and maintenance. As a result, there would be no impact to these resources.

Mitigation Measures

MM CR-4: Monitor Paleontologically Sensitive Areas.

MM CR-5: Follow Paleontological Resource Discovery Protocol.

Impact CR-3 (ASP): **Disturb any human remains, including those interred outside of formal cemeteries.**
LESS THAN SIGNIFICANT WITH MITIGATION

Construction

Research has not uncovered any known Native American or other human remains in the project area. One potential archaeological resource may contain human remains; it is located approximately 0.8 miles from the Alberhill Substation site. Given the rich Native American history of the general area and the potential for human burial sites in the vicinity of the project components, there is a possibility that previously unknown human remains may be encountered during construction activities. This would be a potentially significant impact. MM CR-7 would require adherence to applicable laws as well as training of workers of the appropriate procedures to follow if human remains are discovered. Impacts would be less than significant with mitigation.

Operation and Maintenance

All operation and maintenance activities on proposed Alberhill Project components would occur within areas disturbed during construction of the project. No ground-disturbing activities in previously undisturbed areas would occur during operation and maintenance. There would be no potential to affect disturb human remains during operation and maintenance. As a result, there would be no impact to these resources.

Mitigation Measure

MM-CR-7: Follow Necessary Procedures for Unanticipated Discovery of Human Remains.

GEOLOGY, SOILS, AND MINERAL RESOURCES

Section 4.6.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As demonstrated by the revisions to the FEIR analysis that follows, no new impacts were identified and the severity of previously identified impacts have not increased.

4.6.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

4.6.5.1 Project Commitments (Alberhill Project)

The applicant has committed to the following as part of the design of the proposed Alberhill Project. See Section 2.6, "Project Commitments," for a complete description of each project commitment.

- **Project Commitment** B: Worker Environmental Awareness Plan. Prior to construction, a Worker Environmental Awareness Plan would be developed based on final engineering designs, the results of preconstruction surveys, and mitigation measures developed by the California Public Utilities Commission (CPUC). A presentation would be prepared by the applicant and shown to all site workers prior to their start of work. A record of all trained personnel would be kept with the construction foreman. In addition to the instruction for compliance with any site specific biological or cultural resource protective measures and project mitigation measures, all construction personnel would also receive the following:
  - A list of phone numbers of the applicant's personnel (i.e., archeologist, biologist, environmental compliance coordinator, and regional spill response coordinator);
  - Instruction on the South Coast Air Quality Management District Rule 403 for control of dust;
  - Instruction on what typical cultural resources look like, and if discovered during construction, to suspend work in the vicinity of any find and contact the site foreman and archeologist or environmental compliance coordinator;
  - Instruction on washing the wheels, tracks, and underbodies of construction vehicles to minimize the spread of invasive species;
  - Instruction on individual responsibilities under the CWA, the Storm Water Pollution Prevention Plan (SWPPP) for the proposed projects, site-specific Best Management Practices (BMPs), and the location of Material Safety Data Sheets for the proposed projects;
  - Instructions to notify the foreman and regional spill response coordinator in case of hazardous materials spills and leaks from equipment or upon the discovery of soil or groundwater contamination;
  - Instructions to follow worker safety guidelines and policies in the event of an earthquake;
  - A copy of the truck routes to be used for material delivery; and

- Instruction that noncompliance with any laws, rules, regulations, or mitigation measures could result in being barred from participating in any remaining construction activities associated with the proposed projects.

- **Project Commitment A: Landscaping and Irrigation Plan.** For the Alberhill Project, ~~prior to the start of construction,~~ the applicant would develop a Landscaping and Irrigation Plan for Alberhill Substation road frontage only along Temescal Canyon Road, Concordia Ranch Road and Love Lane that is consistent with surrounding community standards, substation security and safety requirements. The applicant would consult with Riverside County about the Plan and incorporate applicable County recommendations to the extent possible. Landscaping would be designed to filter views from the surrounding community and other potential sensitive receptors near the proposed substation and be consistent with the surrounding community. The landscape plan would include a plant species list and installation and construction requirements. The applicant would contract a landscape architect to complete the landscaping plan during final engineering for the Alberhill Project. Irrigation and landscaping installation would occur after construction of the substation perimeter wall, subtransmission and transmission poles/towers erected, underground utility lines/cable ducts installed, and water service has been established. During operations, the applicant would maintain the substation site pursuant to the Landscaping and Irrigation Plan and be responsible for upkeep as long as the applicant owns the property.

- **Project Commitment D: Habitat Restoration and Revegetation Plan.** With input from the appropriate resource agencies, the applicant would develop and implement a Habitat Restoration and Revegetation Plan to restore temporarily impacted areas where construction of the projects would be unable to avoid impacts on native vegetation and sensitive resources, such as wetlands, wetland buffer areas, riparian habitat, and other sensitive natural communities. The applicant would restore all temporarily impacted areas disturbed during construction of the projects, including staging areas and pull, tension, and splicing sites, to as close to pre-construction conditions as possible, or to the conditions agreed upon between the applicant and landowner. Replanting and reseeding would be conducted under the direction the applicant or contract biologists. If revegetation would occur on private property, revegetation conditions would be part of the agreement between the applicant and the landowner.

- **Project Commitment E: Grading Plan.** SCE shall consult with ~~The~~ Riverside County ~~Flood Control and Water Conservation District shall be consulted~~ regarding grading the plans for construction and operation of the proposed projects. ~~The County will review and approved final grading (and drainage) plans prior to start of construction.~~ Storm water improvement ~~sections of the plans~~ shall be designed to maintain a discharge of storm water runoff consistent with the characteristics of storm water runoff presently discharged from project areas including the Alberhill Substation site. Measures included in the plans shall minimize adverse effects on existing or planned storm water drainage systems. Ground surface improvements installed at the site pursuant to the plans shall be designed to minimize discharge of materials that would contribute to a violation of water quality standards or waste discharge requirements. The final grading design shall include features that would minimize erosion and siltation both onsite and offsite. In addition, the final grading (and drainage) design shall be based on the results of the geotechnical study and soil evaluation for the substation site (Project Commitment F).

- **Project Commitment F: Geotechnical Study, Soil Testing, and Seismic Design Standards.** Prior to the start of construction, the applicant shall conduct geotechnical and hydrologic studies and field investigations of the Alberhill Substation site, 500-kV transmission line routes, all 115-kV subtransmission line routes, and all telecommunications line routes. The studies shall include an evaluation of the depth to the water table, liquefaction potential, physical properties of subsurface soils, soil resistivity, and slope stability (landslide susceptibility). The studies shall include soil boring and laboratory testing to determine the engineering properties of soils, would characterize soils and underlying bedrock units, characterize groundwater conditions, and evaluate faulting and seismicity risk. Soil samples shall be collected and analyzed for common contaminants and the presence of hazardous materials, if indicated by the Phase 1 results. If chemicals are detected in the soil samples at concentrations above acceptable ~~action~~ levels, the applicant shall avoid the above threshold ~~contaminated~~ soil or work with the property owner to remove the above threshold ~~contaminated~~ soil. The results of this study shall be applied to final engineering designs for the projects. The information collected shall be used to determine final tubular steel pole foundation designs. In addition, the applicant shall design Alberhill Substation consistent with the applicable Federal, State, and Local codes including the Institute of Electrical and Electronic Engineers 693 Standard, *Recommended Practices for Seismic Design of Substations*.

4.6.5.2 Impacts Analysis (Alberhill Project)

Impact GE-1 (ASP): Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault (refer to Division of Mines and Geology Special Publication 42); strong seismic ground shaking; seismic related ground failure including liquefaction; or landslides.
LESS THAN SIGNIFICANT ~~WITH MITIGATION~~

Refer to Impact GE-3 (ASP) for discussion of liquefaction and landslides.

The proposed Alberhill Substation, 500-kV transmission lines, and 115-kV transmission lines would be constructed within a Seismic Hazard Zone as specified by the California Seismic Hazards Mapping Act. The Elsinore Fault system is located approximately 1.5 miles southwest of the proposed Alberhill Substation site and 500-kV transmission lines routes. A Glen Ivy North fault section of the Elsinore Fault system crosses beneath 115-kV Segments ASP4 and ASP5, but the section is not within an established Alquist-Priolo Earthquake Fault Zone (Figure 4.6-1). The Elsinore Fault system is capable of generating earthquakes with maximum magnitudes in the range of 6.8 to 7.0 and a recurrence interval of approximately 250 years between major events. Smaller events are likely to occur more frequently. The proposed Alberhill Project area is likely to experience moderate to intense ground shaking generated by the Elsinore Fault system or other active faults in the region (Table 4.6-3).

Construction

Although there is a risk of an earthquake occurring in the area, the chance of an earthquake occurring during the approximately 30~~2728~~-month long construction period is low. In addition, the applicant ~~However, such and event~~ would implement Project Commitment B, which includes worker ~~expose construction workers on site to seismic hazards. This impact would be potentially significant. MM GE-1 would ensure that, prior to the start of construction, construction personnel receive training about seismic risks and the applicant's~~ safety guidelines and policies that would be implemented in the event of an earthquake; therefore, impacts ~~and that workers follow the guidelines during construction. Impacts~~ would be less than significant~~ with implementation of MM GE-1~~.

Operation and Maintenance

Strong ground shaking is likely to occur in the proposed project area, and fault rupture and seismic related ground failure could occur during the operational lifetime of the proposed Alberhill Project. Strong seismic shaking could cause damage to certain project components. Fault rupture is most likely to occur on known fault traces. A Glen Ivy North fault section of the Elsinore Fault system crosses beneath 115-kV Segments ASP4 and ASP5, and fault rupture may occur in this area. Underground and aboveground components of the telecommunications system and transmission system would be subject to ground shaking. Ground shaking could cause poles to topple over and underground conduit to crack and could also affect structures at the substation. This would potentially cause harm to people and damage to property. This impact would be significant. Project Commitment F requires the applicant to design the proposed Alberhill Substation consistent with the Institute of Electrical and Electronic Engineers 693 Standard, Recommended Practices for Seismic Design of Substations and consistent with California Building Code standards for the area. Impacts at the proposed Alberhill Substation would be less than significant. Project Commitment F would require the applicant to complete a geotechnical study and incorporate recommendations from the study into final engineering designs. Impacts would be less than significant.

Mitigation Measure

~~MM GE-1: Seismic Safety Training.~~

Impact GE-2 (ASP): Result in substantial soil erosion or the loss of topsoil.
LESS THAN SIGNIFICANT WITH MITIGATION

Soils at the proposed Alberhill Substation site (including the Import Soil Source Area) and along the 500-kV transmission lines and 115-kV subtransmission line routes lack substantial organic material, are located within a dry climate, and are prone to erosion (Tables 4.6-2 through 4.6-4). Moderate to high levels of erosion have occurred and are expected to continue in sloped areas (15 to 50 percent slope) with sandy and rocky loam soils along greater than 90 percent of the 500-kV transmission line routes and severe erosion may occur along the proposed and existing access roads to the proposed 500-kV towers (NRCS 2003, 2008). The potential for erosion is expected to be low along paved areas of the proposed 115-kV subtransmission line routes but moderate to severe within undeveloped, sloped areas with sandy, rocky loam, and cobbly clay soils (e.g., sections of 115-kV Segments ASP2, ASP3, and ASP5). Substantial erosion would not occur in staging areas, which are flat areas that would not be graded and would be covered with gravel or crushed rock.

Construction

During construction, erosion would occur from soil disturbance during grading and excavation associated with 500-kV transmission line, subtransmission line, and fiber optic line construction. Soil disturbance would be distributed along the entire alignment, such that the amount of erosion or loss of topsoil at any one location along the transmission line or subtransmission line would be minor. As a whole, however, construction of the transmission line and subtransmission line could result in substantial soil erosion. The potential for erosion along the 500-kV transmission line would be greater at the nine tower locations where conventional construction methods ~~under the Conventional Method~~ would be used when compared to the three tower locations where helicopter construction methods ~~than under the Helicopter Construction option~~would be used, as the latter would involve less ground disturbance. This impact would be potentially significant, however, ~~under both options~~ due to the extent of ground disturbance. The applicant would implement Project Commitment D, which would require restoration of temporarily disturbed areas and would prevent erosion after construction. Project Commitment E would require preparation of a grading plan that would in part aim to reduce erosion. Project Commitment D would not address impacts during construction, and Project Commitment E would address erosion only from grading activities. Impacts would remain significant. MM BR-15 would require implementation of ~~certain erosion~~ BMPs during construction as part of the SWPPP developed for the proposed project. Impacts from construction of the 500-kV transmission line, 115-kV subtransmission line, and fiber optic line would be less than significant after implementation of MM BR-15.

Construction of the Alberhill Substation would involve soil-disturbing activities at the proposed substation site, such as vegetation clearing, excavation, grading, and other earth-moving activities. Soils at the site are prone to moderate to high erosion and have 4 to 12 percent slopes. The soil would be improved at the site by obtaining soil from the Import Soil Source Area (Import Soil Option 1) or by obtaining soil from a nearby quarry (Import Soil Option 2).

If Import Soil Option 2 is selected for construction of the proposed Alberhill Substation, soil would be trucked in from a nearby active quarry, such as Corona Rock and Asphalt (also known as Vulcan Materials Company–Western Division or Corona Quarry). Impacts would be limited to impacts from substation construction. The soil would be graded and compacted to create an even slope that varies between 1 and 2 percent and slopes downward from east to west parallel with Temescal Canyon Road and perpendicular to Love Lane. Impacts from these activities would be significant due to destabilization of the soils during construction. As previously described, the applicant would implement Project Commitments D and E. Project Commitment D would not address impacts during construction, and Project Commitment E would address erosion only from grading activities. However, impacts would remain significant. To address these remaining impacts, MM BR-15 would require implementation of ~~certain erosion~~ BMPs during construction as part of the SWPPP developed for the proposed project. Impacts from substation construction under Import Soil Option 2 would be less than significant after implementation of MM BR-15.

Construction that utilizes Import Soil Option 1 would have the same impacts as Import Soil Option 2 but would also have erosion impacts related to excavation of the Import Soil Source Area on the Alberhill Substation Site. If Import Soil Option 1 is selected for construction of the proposed Alberhill Substation, a 5.2-acre area located adjacent to the northeast side of the proposed substation site would be excavated and up to 80,000 cubic yards of soil removed for use as fill within the footprint of the proposed substation. The soils within the larger, central part of 5.2-acre Import Soil Source Area are prone to moderate erosion, and slopes are less than 10 percent. The soils extending from the central part of the Import Soil Source Area, however, are prone to high to severe erosion, and slopes exceed 15 percent. Preliminary engineering designs indicate that natural slopes along the outer parts of the Import Soil Source Area would be substantially increased after excavation. Hence, erosion levels in proximity to the Import Soil Source Area are anticipated to substantially increase if Import Soil Option 1 is selected for construction of the proposed Alberhill substation. This would be a significant impact. The applicant would implement Project Commitments A, D, and E, as previously described. If Import Soil Option 1 were implemented, these Project Commitments would also cover activities at the Import Soil Source Area. Project Commitments A and D would not address impacts during construction, and Project E would address erosion only from grading activities. Impacts would remain significant. MM BR-15 would require implementation of ~~certain erosion~~ BMPs during construction as part of the SWPPP developed for the proposed project. Impacts would be less than significant after implementation of MM BR-15.

Operation and Maintenance

No additional ground disturbance would occur during operation of the proposed project. There would be no impact related to soil erosion or loss of topsoil.

Mitigation Measure

MM BR-15: Stormwater Pollution Prevention Plan (SWPPP) Best Management Practices (BMPs).

Impact GE-3 (ASP): Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or offsite landslide, lateral spreading, subsidence, liquefaction or collapse.
LESS THAN SIGNIFICANT

The proposed Alberhill Substation site is a relatively flat area with slopes less than 5 percent in most areas and less than 12 percent in all areas (Table 4.6-2). The proposed substation site has low to locally moderate landslide susceptibility. The steep hills to the northeast through which the proposed 500-kV transmission lines and proposed access roads would traverse have a moderate potential for landslide, with a high potential in some areas. Low to moderate landslide susceptibility is expected along 115-kV Segments ASP2, ASP3, and ASP5 depending on the steepness of slopes. For the remaining 115-kV subtransmission line segments, landslide susceptibility would be low (CGS 2011; County of Riverside 2003; USGS 2015a, 2003).

Liquefaction susceptibility ranges from low to moderate at the proposed Alberhill Substation site, the lower sections of the proposed 500-kV transmission line routes, and along the proposed 115-kV subtransmission line routes. Liquefaction is not expected along the upper sections of the 500-kV transmission lines. Sections of 115-kV Segments ASP2 and ASP5 and the entirety of 115-kV Segment ASP3 would be constructed within or adjacent to areas with very high susceptibility to liquefaction (Figure 4.6-2). Lateral spreading may occur in sloped areas prone to liquefaction or subsidence.

The potential for subsidence at the proposed substation site or along the proposed 500-kV transmission line routes is low (County of Riverside 2003; NRCS 2008). Within the greater Lake Elsinore area, no clear evidence of subsidence has been identified, although continued groundwater deficits, which have been recorded annually in the South Coast Hydrologic Region (Section 4.9, “Hydrology and Water Quality”), could lead to subsidence (City of Lake Elsinore 2006). The Riverside County General Plan identifies much of the 115-kV subtransmission line route along the south side of I-15 though the City of Lake Elsinore and into the City of Wildomar as being susceptible to subsidence, but no documented areas of subsidence have been identified (County of Riverside 2003, 2008b).

The proposed Alberhill Substation site and sections of 115-kV Segments ASP1, ASP1.5, ASP2, ASP3, ASP4, ASP5, and ASP8 would be constructed on recent alluvial deposits (Tables 4.6-1) that may collapse when hydrated. In addition, the proposed substation site, lower sections of the proposed 500-kV transmission line routes, and sections of the proposed 115-kV subtransmission line segments would be located at the base of mountainous areas or hills where collapsible soils may be present.

The proposed project would be located in areas with potential for landslides, liquefaction, and soil collapse. Subsidence may also occur, but the potential is low. The various forms of soil instability could lead to damage to project components such as poles, conduit, and the proposed substation equipment. This may also lead to harm to people nearby should, for example, a pole topple or a slope become destabilized during construction activities. This would be a significant impact. Project Commitment F would require the applicant to conduct a geotechnical study of the proposed Alberhill Substation site (including the Import Soil Source Area if Import Soil Option 1 is selected), 500-kV transmission line routes, and 115-kV subtransmission line routes. The study would include an evaluation of the depth to the water table, liquefaction potential, physical properties of subsurface soils, soil resistivity, and slope stability. The results of the geotechnical study would be applied to final engineering designs for the proposed Alberhill Project. In addition, Project Commitment F requires the applicant to design the proposed Alberhill Substation consistent with the Institute of Electrical and Electronic Engineers 693 Standard, Recommended Practices for Seismic Design of Substations. Impacts would be less than significant.

Impact GE-4 (ASP): Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
LESS THAN SIGNIFICANT

The shrink-swell potential at the proposed Alberhill Substation site and along the proposed 500-kV transmission line routes is low (Table 4.6-2). The shrink-swell potential along the proposed Alberhill Project 115-kV segments is generally low except for areas with higher clay concentrations along sections of 115-kV Segment ASP2 and 115-kV Segment ASP8 (Table 4.6-2). Expansive soils (e.g., those with high-plasticity clay content) can cause structural failure of foundations such as those associated with the proposed subtransmission line structures and with the substation. This would be a significant impact.

The presence of expansive soils at the proposed Alberhill Substation site or along the 500-kV transmission line or 115-kV subtransmission line routes would be identified during the geotechnical study conducted prior to construction of the proposed Alberhill Project (Project Commitment F). If identified, the geotechnical report would offer site-specific design and construction recommendations to minimize effects due to the presence of expansive soils. The results of the study would be applied to final engineering design of the proposed Alberhill Project. Impacts would be less than significant.

Impact GE-5 (ASP): Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.
LESS THAN SIGNIFICANT

The proposed Alberhill Substation site is not served by a public sewer system. A stand-alone, prefabricated, permanent restroom would be installed within the proposed Alberhill Substation perimeter near the control building. The restroom would discharge to an onsite septic system.

The soils present at the proposed Alberhill Substation site are sandy and should accommodate septic system installation (Table 4.6-2). There is a possibility that the soils may be inadequate to support a septic system, which would be a potentially significant impact. If a septic system is installed, the ~~The~~ applicant would conduct a geotechnical investigation according to Project Commitment F, which would include a soils investigation. If, during the site-specific geotechnical investigation, some soils are found to be inadequate for supporting a septic system, the information obtained would be used to design a septic system that would be appropriate for site conditions pursuant to County permit requirements. Impacts would be less than significant.

Impact GE-6 (ASP): Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
LESS THAN SIGNIFICANT

The proposed project area includes areas with economically viable deposits of clay, sand, gravel, and stone products. Most of the proposed project area and western Riverside County are classified MRZ-3 (undetermined mineral resource significance), but areas along the I-15 corridor north of Lake Elsinore are classified MRZ-2 (areas where there are, or there is a significant likelihood of, significant mineral deposits). Sections of 115-kV Segment ASP2 would traverse areas classified as MRZ-2.

Although 115-kV Segment ASP2 would traverse land classified MRZ-2, ground-disturbing activities would only occur where four 115-kV structures would be ~~replaced~~ removed and replaced with five 115-kV structures adjacent to the proposed Alberhill Substation site. Along 115-kV Segment ASP2, a second 115-kV subtransmission line would be installed on the proposed Valley–Ivyglen 115-kV structures (115-kV Segments VIG4 and VIG5). Therefore, impacts would be less than significant under this criterion.

Impact GE-7 (ASP): Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.
LESS THAN SIGNIFICANT

The Riverside County General Plan and City of Lake Elsinore General Plan discuss mineral resources in terms of the areas classified by the State of California using the MRZ classification system. Impacts to areas designated MRZ-2 are discussed under Impact GE-6 (ASP) and would be less than significant.

GREENHOUSE GASSES

Section 4.7.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As demonstrated by the revisions to the FEIR analysis that follows, no new impacts were identified and the severity of previously identified impacts have not increased. The FEIR's original GHG analysis (Appendix B) has been revised to account for the changes in the Proposed Project and is presented as Appendix P: Revised Air Quality and GHG Emissions.

4.7.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

4.7.5.1 Project Commitments (Alberhill Project)

The applicant has not proposed any project commitments related to reduction of GHGs for the proposed Alberhill Project.

4.7.5.2 Impacts Analysis (Alberhill Project)

Impact GHG-1 (ASP): Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment
LESS THAN SIGNIFICANT

Construction

During construction of the proposed Alberhill Project, GHGs, primarily CO_2, would be emitted from engine exhaust of diesel- and gasoline-fueled construction equipment and on-road vehicles (e.g., delivery trucks, helicopters, and worker vehicles). Construction of the proposed substation would involve one of two soil import options: importing soil from a 5.2-acre source area located adjacent to the northeastern side of the proposed Alberhill Substation site (Import Soil Option 1) or trucking in soil from a local quarry located approximately 32 miles from the proposed substation site (Import Soil Option 2). Refer to Section 2.4.4.2, "Fill, Grading, Drainage, and Surface Materials," for further details.

Emissions are detailed in Table 4.7-6. Based on the proposed construction equipment and vehicle use (including the use of both conventional and helicopter methods to construct the 500 kV transmission towers), it is estimated that approximately ~~5,116122~~6,069 $MTCO_2e$ would be generated from all project construction activities under Import Soil Option 1 ~~using the conventional method for 500-kV transmission line construction, and total GHG emissions would increase by 4 percent (5,330 MTCO2e) if the helicopter construction method is used. The increased emissions would be due to greater helicopter use under the helicopter construction method when compared to the conventional method.~~ and ~~A~~approximately ~~5,122116~~6,073 $MTCO_2e$ would be generated under Import Soil Option 2. ~~using the conventional construction method for 500-kV transmission line construction, with a similar 4 percent increase in total GHG emissions if the helicopter construction method is used. Refer to Section 2.4.5.5, "500-kV Tower Construction (Alberhill Project)," for a description of the different options for 500-kV construction.~~ Refer to Section 2.4.6.2, "Fill, Grading, Drainage, and Surface Materials," for a discussion of the two import soil options.

Amortized over 30 years, construction emissions are estimated to be up to ~~178~~ 203 $MTCO_2e$ per year under ~~either construction method and~~ either import soil option (Table 4.7-6). Calculations and assumptions are presented in Appendix ~~B~~P.

GHG emissions from construction would be below the SCAQMD threshold. Impacts would be less than significant.

Table 4.7-6 Estimated Greenhouse Gas Emissions from Construction of the Proposed Alberhill Project

Proposed Alberhill Project Component	Construction GHG Emissions ($MTCO_2e$)			
	~~Conventional Method~~		~~Helicopter Construction~~	
	Import Soil Option 1	Import Soil Option 2	~~Import Soil Option 2~~	~~Import Soil Option 2~~
Substation site demolition	~~284~~283	~~284~~283	~~284~~	~~284~~
Substation site water line relocation	12	12	~~12~~	~~12~~
Alberhill Substation	~~1,675~~1,668	~~1,670~~1,672	~~1,675~~	~~1,670~~
500-kV Transmission Lines	~~1,330~~2,097	~~1,330~~2,097	~~1,461~~	~~1,461~~
115-kV Subtransmission Lines	~~1,714~~1,843	~~1,714~~1,843	~~1,791~~	~~1,791~~
Telecommunications	107	107	~~107~~	~~107~~
Additional Substation Modifications	58	58		
Total emissions	**~~5,116122~~6,069**	**~~5,122116~~6,073**	**~~5,325330~~**	**~~5,330325~~**
Amortized (30-year period)	**~~171~~203**	**~~171~~202**	**~~178~~**	**~~178~~**
CPUC-Applied SCAQMD Threshold	**10,000**	**10,000**	**~~10,000~~**	**~~10,000~~**
Exceeds Threshold (Yes/No)	**No**	**No**	**~~No~~**	**~~No~~**

~~Source: SCE 2015~~
Key:
CPUC = California Public Utilities Commission
GHG = greenhouse gas
kV = kilovolt
$MTCO_2e$ = metric tons of carbon dioxide equivalent
SCAQMD = South Coast Air Quality Management District

Operation and Maintenance

GHG emissions would be generated during maintenance and inspection of proposed Alberhill Project components. Maintenance vehicles would emit CO_2 and CH_4, but the majority of GHG emissions (in terms of CO_2e) would be from SF_6 leaks from electrical equipment. Fugitive emissions of SF_6 would be emitted from new gas-insulated equipment at the proposed Alberhill Substation and the applicant's existing Newcomb Substation. ~~The 500-kV gas-insulated switchrack proposed to be installed at the substation would contain up to 50,000 pounds of SF_6. In addition, circuit~~ Circuit breakers to be installed on the proposed 500-kV and 115-kV switchracks at the proposed Alberhill Substation ~~at the same site~~ would contain approximately 12,760~~up to 15,000~~ pounds of SF_6 ~~(SCE 2011)~~. The single 115 kV circuit breaker that would be added at Newcomb Substation would contain approximately 83 pounds of SF_6. In addition, one 115 kV circuit breaker containing approximately 71 pounds of SF_6 would be removed from Valley Substation. In total, the Proposed Project would increase SF_6 use by approximately 12,772 pounds. Table 4.7-7 shows estimated emissions during operation. GHG emissions calculations are presented in Appendix ~~B~~P. Annual GHG emissions from operational activities are estimated to be approximately ~~3,371~~670 $MTCO_2e$. When combined with amortized construction GHG emissions, the total is estimated to be between ~~3,542~~871 and ~~3,549~~ 872 $MTCO_2e$, depending on the soil import option used at the proposed Alberhill Substation~~500-kV transmission line construction technique to be used~~ (Table 4.7-7). GHG emissions from unforeseen emergency repairs are not included in these estimates but would be far below the 10,000-metric-ton threshold.

Greenhouse gas emissions from construction would be below the SCAQMD threshold. Impacts would be less than significant.

Impact GHG-2 (ASP): Conflict with any applicable plan, policy or regulation adopted for the purpose of reducing the emission of GHGs.
NO IMPACT

Project construction and operation would result in emissions covered by several relevant, plans, policies, and regulations. Table 4.7-8 contains an analysis of conformity with those plans, policies, and regulations. As demonstrated in Table 4.7-8, the proposed Alberhill System Project would be consistent with all applicable plans, policies, and regulations. There would be no impact.

Table 4.7-7 Estimated Greenhouse Gas Emissions from Operation of the Proposed Alberhill Project

Emission Source	Annual GHG Emissions ($MTCO_2e$/year)
Emergency Diesel Generator	8
Motor Vehicle Use[1]	2
SF_6 Leakage[2]	~~3,361~~660
Total – Operations	~~3,371~~670
Amortized Construction Emissions (30-year period)[3]	~~171~~ 201 to ~~178~~202
Total Annualized Emissions (Construction and Operations)	**~~3,542~~871 to ~~3,549~~872**
CPUC-Applied SCAQMD Threshold	**10,000**
Exceeds Threshold (Yes/No)	**No**

~~Source: SCE 2011~~

Key:
CO_2 = carbon dioxide
CO_2e = carbon dioxide equivalent
CPUC = California Public Utilities Commission
GWP = global warming potential
lbs = pounds
$MTCO_2e$ = metric tons of carbon dioxide equivalent
SCAMD = South Coast Air Management District
SF_6 = sulfur hexafluoride
VMT = vehicle miles traveled

Notes:

1 Direct emissions of CO_2 estimated based on VMT per day and 1.1lbs CO_2/mile. Assumptions: 65 VMT/day for transmission line inspection, 62 VMT/day for subtransmission line inspection, and 60 VMT/day for substation maintenance.

2 The applicant would install new gas-insulated equipment certified by the manufacturer to have SF_6 leak rates of 0.5% or less per year. Direct emissions of SF_6 are therefore estimated by assuming 0.5% leak rate from equipment storing an increase of approximately ~~65,000~~12,772 lbs of SF_6, which would equal approximately ~~325~~64 lbs of SF_6/year, or ~~3,361~~660 $MTCO_2e$/year (using a GWP of 22,800, per Table 4.7-1).

3 Amortized emissions account for use of either soil import option ~~and either conventional method or helicopter construction method for 500-kV transmission line construction~~.

Table 4.7-8 Alberhill Project Conformity with Plans, Policies, and Regulations

Plan, Policy, or Regulation	Consistency Analysis
Federal vehicle emissions standards	The project would be subject to federal vehicle regulations and would therefore utilize vehicles that comply with federal vehicle emissions standards.
AB 32	The project would be subject to and comply with policies and measures in the AB 32 Scoping Plan that have been and will be implemented as regulations.
AB 1493—Pavley	The project would be subject to state vehicle regulations and would therefore utilize vehicles that comply with state vehicle emissions standards.
EO S-01-07—Low Carbon Fuel Standard	Fuels purchased for the project would be required to comply with the Low Carbon Fuel Standard.
Advanced Clean Cars Program	Vehicles with a model year from 2017 to 2025 purchased for the proposed project would comply with regulations in the Advanced Clean Cars Program.
Heavy Duty Truck GHG Regulations	The project would be subject to heavy duty truck and trailer regulations and would therefore utilize heavy duty truck and trailers that comply with state regulations.
On-Road Heavy Duty Diesel Vehicle Regulations	The project would be subject to heavy duty truck and trailer regulations and would therefore utilize heavy duty truck and trailers that comply with state regulations.
State regulations for reducing SF_6 emissions from gas insulated switchgear (17 CCR Sections 95350 to 95359).	By 2020, the maximum emission requirement would be 1 percent per year for all gas-insulated equipment; the applicant would only purchase and install gas-insulated equipment with a manufacturer's certified SF_6 leak rate of 0.5 percent per year or less, and implement SF_6 best management practices during operation and maintenance of the proposed Alberhill Project. The applicant currently complies with the maximum annual SF_6 emission rate requirements established by 17 CCR 95352.
SCAG Regional Transportation Plan/Sustainable Communities Strategy	The applicant has not proposed to have its workers participate in any transportation demand management programs such as carpooling or ridesharing. However, the applicable policy from the strategy only aims to encourage such behavior. The proposed project would therefore not be inconsistent with this plan.
Western Riverside Council of Governments Subregional Climate Action Plan	The project would be consistent with AB 1493, as previously discussed in this table, and would therefore be consistent with Measure SR-6. In addition, the project would be subject to and comply with policies and measures included in the regional SCS/RTP and AQMP for the use of low emission trucks consistent with state legislation. Therefore, the project would be consistent with Measure SR-11 of this plan. Measure SR-13 requires compliance with the mandatory requirement to divert 50 percent of construction and demolition waste from the landfill waste stream. The applicant would be required to comply with applicable waste reduction standards for covered buildings on the Alberhill Substation site. The Alberhill Project would be constructed in compliance with the California Building Standards Code, Title 24, CCR, which requires a minimum of 50 percent of non-hazardous construction and demolition waste and implementation of a construction waste management plan (Part 11, Section 5.408). Therefore, the project would be consistent with Measure SR-13 of this plan.

Plan, Policy, or Regulation	Consistency Analysis
	The applicant has indicated approximately 40 tons of solid waste would be either recycled or salvaged, which represents approximately 0.03 percent of the total construction waste that would be generated (142,070 tons). However, the actual percentage of recyclable waste from building construction is unknown. Therefore, the project has the potential to be inconsistent with Measure SR-13. Construction of the Alberhill Project would require approximately 55~~39~~ million gallons of water. Operation of the project would require approximately 3,000 gallons per year. The project would obtain water from local water agency subject to the local jurisdiction's per-capita water use in compliance with the SB X7-7 requirements. Therefore, the project would not be inconsistent with this Measure SR-14 of this plan.
Western Riverside Council of Governments Subregional Climate Action Plan	A portion of project waste would be recycled or salvaged. The proposed Alberhill Project would generate approximately 40 tons of solid waste during construction that would either be recycled or salvaged. Therefore, the proposed project would be consistent with this policy.
City of Menifee General Plan Policy OCS-10.1	Since the proposed project would be consistent with AB 32, as described in this table, it would also be consistent with this policy.
City of Menifee General Plan Policy OCS-10.2	Since the proposed project would be consistent with Executive Order S-03-05, as described in this table, it would also be consistent with this policy.

Key:
AB = Assembly Bill
AQMP = Air Quality Management Plan
CCR = California Code of Regulations
EO = Executive Order
GHG = greenhouse gas
RTP = Regional Transportation Plan
SB = Senate Bill
SCAG = Southern California Association of Governments
SCS = Sustainable Communities Strategy

HAZARDS AND HAZARDOUS MATERIALS

Section 4.8.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As demonstrated by the revisions to the FEIR analysis that follows, no new impacts were identified and the severity of previously identified impacts have not increased.

4.8.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

4.8.5.1 Project Commitments (Alberhill Project)

The applicant has committed to the following as part of the design of the proposed Alberhill Project. See Section 2.6, "Project Commitments," for a complete description of each project commitment.

- Project Commitment A: Landscaping and Irrigation Plan: The~~Prior to the start of construction, the~~ applicant would develop a Landscaping and Irrigation Plan for the proposed Alberhill Substation road frontage only along Temescal Canyon Road, Concordia Ranch Road and Love Lane that is consistent with surrounding community standards, substation security and safety requirements. The applicant would consult with Riverside County about the Plan and incorporate applicable County recommendations to the extent possible. Landscaping would be designed to filter views from the surrounding community and other potential sensitive receptors near the proposed substation and be consistent with the surrounding community. The landscape plan would include a plant species list and installation and construction requirements. The applicant would contract a landscape architect to complete the landscaping plan during final engineering for the Alberhill Project. Irrigation and landscaping installation would occur after construction of the proposed substation perimeter wall, and transmission poles/towers erected, underground utility lines/cable ducts installed, and water service has been established. During operations, the applicant would maintain the substation site pursuant to the Landscaping and Irrigation Plan and be responsible for upkeep as long as the applicant owns the property.

- Project Commitment B: Worker Environmental Awareness Plan: Prior to construction, a Worker Environmental Awareness Plan would be developed based on final engineering designs, the results of preconstruction surveys, and mitigation measures developed by the California Public Utilities Commission. A presentation would be prepared by the applicant and shown to all site workers prior to their start of work. A record of all trained personnel would be kept with the construction foreman. In addition to the instruction for compliance with any site-specific biological or cultural resource protective measures and project mitigation measures. All construction personnel would also receive instruction on site-specific dust control, cultural resources identification, contaminant reduction practices, spill prevention and response procedures, emergency procedures, hazardous material safety, incident reporting, Best Management Practices, individual worksite responsibilities and legal requirements.

- Project Commitment F: Geotechnical Study, Soil Testing, and Seismic Design Standards: Prior to the start of construction, the applicant would conduct geotechnical and hydrologic studies and field investigations of the proposed Alberhill Substation site, 500-kV transmission line routes, and all 115-kV subtransmission line routes. The studies would include an evaluation of the depth to the water table, liquefaction potential, physical properties of subsurface soils, soil resistivity, and slope stability (landslide susceptibility). The studies would include soil boring and laboratory testing to determine the engineering properties of soils, would characterize soils and underlying bedrock units, characterize groundwater conditions, and evaluate faulting and seismicity risk. ~~Based on the results of a Phase 1 study, s~~Soil samples would be collected and analyzed for common contaminants and the presence of hazardous materials, if indicated by the Phase 1 results. If chemicals are detected in the soil samples at concentrations above acceptable~~action~~ levels, the applicant would avoid the contaminated soil or work with the property owner to remove the contaminated soil. The results of this study would be applied to final engineering designs for the proposed projects. The information collected would be used to determine final TSP foundation designs. In addition, the proposed Alberhill Substation would be located in an area susceptible to earthquakes. The applicant would design the proposed substation consistent with the applicable federal, state, and local codes, including the Institute of Electrical and Electronic Engineers 693 Standard, Recommended Practices for Seismic Design of Substations.

4.8.5.2 Impacts Analysis (Alberhill Project)

Impact HZ-1 (ASP): Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction and operation of the proposed Alberhill Project would include the use, transport, and disposal of hazardous materials. Hazardous materials that would be used throughout the proposed Alberhill Project area during construction and operation include fuel, lubricants, and antifreeze associated with construction and maintenance equipment and vehicles, as well as paints, solvents, adhesives, and cleaning chemicals. Blasting would not occur as part of the proposed Alberhill Project.

Construction vehicles would be fueled by existing offsite fuel supply facilities or from an offsite fuel supply truck temporarily brought onsite to provide fuel. Helicopters used for 500-kV transmission line construction and conductor stringing would be fueled by either the helicopter contractor's fuel truck or fuel service available at a local airport (e.g., Skylark Field). Helicopter fueling may occur at Skylark Field Airport, Perris Valley Airport, French Valley Airport, or the applicant's Chino Air Operations Facility, the proposed Alberhill Substation site, Staging Area ASP1, ~~Staging Area ASP2,~~ and Staging Area ASP3. Small quantities of fuel (10 to 40 gallons) would be stored onsite for gasoline-powered hand tools, small portable generators, and the emergency backup generator; otherwise, the applicant would not store bulk fuels at work sites during construction of the proposed Alberhill Project.

Construction of the Alberhill Substation would require the transportation of approximately ~~134,200~~103,500 gallons of transformer oil. Federal and state laws regulate transport vehicle specifications, driver qualifications, and load container specifications used for transportation of the proposed volume of oil such that under normal conditions, no release of oil to the environment would occur.

Construction waste would be managed in accordance with federal, state, and local regulations and requirements. The majority of construction-related waste would be inert material (clean soil, vegetation, metal scrap, packaging materials, etc.), most of which would be containerized and disposed of at a licensed facility. Hazardous wastes that are likely to be generated during construction include waste motor oils, used transformer oil, waste hydraulic fluids, discarded batteries, waste solvents and adhesives, aboveground storage tanks, contaminated water, and old conductor wire. Wooden utility poles and wooden components treated with preservatives would be managed in accordance with California Health and Safety Code Section 25150.7 requirements. To comply with this code, the applicant would dispose of treated wooden poles only at a Class I hazardous landfill or in a composite-lined portion of a solid waste landfill unit that meets the requirements outlined in the code. During construction at the proposed Alberhill Substation site, the applicant or its contractor may encounter subsurface structures such as pipelines or unknown/undetected storage tanks, or materials resulting in a release of contaminants such as lead, asbestos, pesticides, or fuel, that may be associated with past uses.

During operation, the applicant would store up to ~~134,200~~103,500 gallons of transformer oil used as insulating media for the 500/115-kV transformers; approximately 960 gallons of diesel (Low-Sulfur Diesel No. 2) for the backup generator; and lead-calcium batteries would be stored in the control room at the proposed Alberhill Substation. Prior to operation, an SPCC plan would be developed and implemented. The proposed Alberhill Substation would be unstaffed, and electrical equipment within the proposed substation would be remotely monitored and controlled by an automated system from the applicant's Valley Substation Regional Control Center. The applicant's personnel would visit the proposed Alberhill Substation for electrical switching and routine maintenance purposes at least once per week. Routine maintenance would include equipment testing, equipment monitoring, and repair. Maintenance activities at the transmission and subtransmission lines would be inspection-related and would occur at least once per year by driving and/or flying the line routes. It is not anticipated that vehicle fueling would occur at the proposed substation site or along the transmission or subtransmission lines during routine maintenance.

The applicant would transport, use, or disposal of hazardous materials and petroleum products in accordance with all applicable federal, state, and local regulations, including the preparation and implementation of an SPCC plan (40 CFR Part 112) and an HMBP (Riverside County Ordinance 651.3, California Health and Safety Code Section 25500) for construction and operation of the proposed Alberhill Substation. However, routine transport, use, or disposal of hazardous materials and petroleum products could result in accidental releases or spills, representing a potentially significant hazard to the public and environment during construction and operations. The applicant would prepare and require all site workers to participate in Worker Environmental Awareness Plan training prior to construction, as described in Project Commitment B. The training would instruct workers on their individual responsibilities under the SWPPP, site-specific BMPs, and location of material safety data sheets. The Worker Environmental Awareness Plan would also instruct workers on proper procedures in the event of hazardous materials spills, leaks from equipment, or upon the discovery of soil or groundwater contamination. Project Commitment B would reduce impacts but not to less than significant. The applicant would also develop and implement a ~~Hazardous Material Management Plan~~SWPPP (MM ~~HZ-1~~BR-15) that would address prevention, control, and clean-up of upset and accident conditions involving the release of hazardous materials. Impacts would be less than significant with implementation of MM ~~HZ-1~~BR-15.

The closest aquatic resource, Lake Elsinore, is located 1 mile east of the closest Alberhill Project component. Spills that occur near storm drains that lead to Lake Elsinore or the other surface waters shown in Figure 4.9-2 could have a significant impact on water quality that could quickly spread downstream. Implementation of MM BR-15 would require the applicant to perform vehicle maintenance activities at a distance recommended by a qualified SWPPP Practitioner~~least 150 feet (or as specified by agency permits)~~ from all aquatic resources~~ recommended by a qualified SWPPP preparer~~. The SWPPP would also~~ and MM HZ-1 would~~ contain other standard measures related to~~require immediate~~ cleanup of hazardous materials spills.

Eleven hazardous material or waste sites were identified in proximity to proposed Alberhill Project components, and unrecorded hazardous material sites may also be present. It remains possible that hazardous materials or wastes from undocumented releases may be encountered along the proposed routes because soil contamination in these areas has not been thoroughly investigated. Improper handling and disposal of soils from contaminated sites would result in a significant impact. The applicant would perform geotechnical studies along the 115-kV subtransmission line segments (Project Commitment F), which would include soil studies. The soil analysis studies would include the collection and analysis of soil samples for common contaminants and the presence of hazardous materials, if the Phase 1 results indicate the potential for the presence of hazardous chemicals. If chemicals are detected in the soil samples at concentrations above acceptable~~action~~ levels, the applicant would avoid the contaminated soil or work with the property owner to remove it. In addition, the applicant would train construction personnel to notify the foreman and regional spill response coordinator in the event of hazardous materials spills and leaks from equipment or upon the discovery of soil or groundwater contamination (Project Commitment B). Project Commitments B and F would reduce impacts, but impacts would remain significant if unanticipated contamination is discovered. MM HZ-2 would require the applicant to develop a Contaminated Soil/Groundwater Contingency Plan, which would define procedures for soil and groundwater testing if unanticipated contamination is encountered. Implementation of MM HZ-2 would reduce the risk of improper handling and disposal of contaminated soil, contaminated groundwater, and spilled hazardous materials by generating accurate and precise data on the contamination extent and characteristic.

In summary, compliance with applicable laws and regulations and implementation of Project Commitment B would reduce impacts under this criterion. However, implementation of ~~MM HZ-1,~~ MM HZ-2~~,~~ and MM BR-15 would reduce impacts under this criterion to a less than significant level.

Mitigation Measures

MM BR-15: Stormwater Pollution Prevention Plan (SWPPP) Best Management Practices (BMPs).

~~**MM HZ-1: Hazardous Materials Management.**~~

MM HZ-2: Contaminated Soil/Groundwater Contingency Plan.

Impact HZ-2 (ASP): Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction and operation of the proposed project would require the transport of large quantities (i.e., more than 10,000 gallons) of new and used transformer oil to and from the proposed Alberhill Substation site. In addition, 960 gallons of Low-Sulfur Diesel No. 2 would be stored at the proposed substation site within the fuel tank of a backup generator. The transportation of oil, fuel, and hazardous materials would have the potential to leak along roadways and enter nearby sensitive areas. Federal and state regulations regarding hazardous materials/wastes are designed to ensure that the use, transport, storage, and disposal of hazardous materials are done safely and in a manner to avoid upset and accident conditions. Upset and accident conditions involving release of these materials would be a significant impact.

The applicant would implement a SWPPP (MM BR-15), which would reduce the potential for stormwater pollution~~, and wouldto prevent the release of stored hazardous materials on site during construction, which would be reviewed and overseen by the Regional Water Quality Control Board (MM BR-15). The applicant would also develop and implement a Hazardous Material Management Plan (MM HZ-1) that would address~~ and would address prevention, control, and cleanup of upset and accident conditions involving the release of hazardous materials. Impacts during construction of the substation would be less than significant with implementation of ~~these~~ this mitigation measures.

During operation of the proposed substation, the applicant would also implement an SPCC plan to prevent a release of stored hazardous materials on site during operation. In addition, an HMBP would be developed to describe and identify storage areas for hazardous materials and waste; describe appropriate handling, storage, and disposal techniques; and provide measures for avoiding and addressing spills. The substation would also have secondary containment around the transformer and a grading design that incorporates requirements from the SPCC plan. Typical required SPCC plan features include secondary containment, curbs, berms, and basins designed and installed to contain spills should they occur. Impacts would still be potentially significant. Project Commitment B would ensure that workers have a list of phone numbers of key personnel associated with the proposed project to ensure proposer communication during an emergency (e.g., environmental compliance coordinator and regional spill response coordinator). Compliance with the applicable regulations would reduce the potential for leakage of transported hazardous materials to less than significant.

During construction activities, especially in the area of the proposed substation site, the applicant or its contractor may encounter subsurface structures such as pipelines or unknown/undetected storage tanks, or materials resulting in a release of contaminants such as lead, asbestos, pesticides, or fuel, that may be associated with past uses. It is not anticipated that hazardous materials would be encountered along the 115-kV subtransmission lines because they would be constructed within existing ROWs. The applicant has stated that it performs Phase I ESAs and subsequent ESAs when acquiring property in fee or in easement. A review of state databases found that two active leaking underground fuel tank (LUFT) cleanup sites are located within 100 feet of 115-kV Segment ASP4 (Table 4.8-1), indicating that underground soil or groundwater contamination could be present along this route. Impacts may occur if fuel has spread offsite from one or both of the LUFT sites onto the ROW. These impacts are further discussed below under Impact HZ-4. Records searches indicated that no active cleanup sites are located within 0.3 miles of the proposed substation site, but lead- and asbestos-containing materials were identified and removed from the site (McKenna Environmental 2010). Additionally, demolition activities that took place at the site in 2011 indicated the presence of creosote-treated wood poles at the site. Past uses of the proposed substation site and the aboveground materials removed from the site during demolition activities indicate the potential presence of underground hazardous materials or petroleum products that could be disturbed and/or released during excavation activities.

The Phase I and II ESAs indicate that four septic tanks and associated leach areas, a water well, and an aboveground water tank are located at the proposed Alberhill Substation site (Rubicon 2009a,b). Abandonment and abatement of the water well and septic systems are discussed in Section 4.9, "Hydrology and Water Quality." The applicant would dispose of the water in the aboveground tank at a facility licensed to accept water contaminated with oil and grease, and the water tank would be removed and disposed of in accordance with all applicable laws and regulations. There could still be contamination on the substation site, which could lead to a potentially significant impact. As described in Project Commitment F, the applicant would conduct follow-up assessments to the Phase II ESA (Rubicon 2009b) at the proposed substation site, along the proposed 500-kV transmission lines, and along the proposed 115-kV subtransmission lines. Soil samples would be collected and analyzed for common contaminants. If chemicals are detected in the soil samples at concentrations above acceptable~~action~~ levels, the applicant would avoid the above-threshold~~contaminated~~ soil or work with the property owner to remove it (Project Commitment F). In addition, construction personnel would be trained to notify the foreman and regional spill response coordinator in the event of hazardous materials spills and leaks from equipment or upon the discovery of soil or groundwater contamination (Project Commitment B). Project Commitments would reduce impacts, but the impacts would remain significant. The implementation of MM HZ-2 would address the potential for encountering subsurface sources of contamination throughout all areas that may be disturbed during construction of the proposed project or identified after conducting onsite evaluations for the presence of hazardous materials and other contaminants. Mitigation would reduce the potential for significant impacts related to below-ground contaminants to less than significant.

Accidental contact with existing underground utility lines or private utilities line such as leach lines associated with a septic system during construction of the proposed Alberhill Project could release hazardous materials. Compliance with California Government Code 4216.1 (DigAlert) would reduce potential impacts to public utility lines. However, significant impacts would remain for private underground infrastructure. Prior to finalizing the engineering design, MM HZ-3 would require the applicant to ~~contact the Underground Service Alert of Southern California to identify the exact locations~~

~~of gas pipelines within the project area. In addition, the applicant will~~ contact affected private landowners to determine if septic systems and associated leach fields, as well as other underground facilities, may be impacted by construction of the projects. Final engineering plans for the projects will be designed to avoid or minimize interference or damage to underground facilities, both public and private. Once identified, the applicant will immediately notify by telephone the owner of underground facilities that may have been damaged or dislocated during construction of the projects. The implementation of MM HZ-3 would reduce potential impacts to private underground infrastructure to less than significant.

As described under Impact HZ-1 (ASP), the applicant would transport, use, or dispose of hazardous materials and petroleum products in accordance with all applicable federal, state, and local regulations. However, routine transport, use, or disposal of hazardous materials and petroleum products could result in accidental releases or spills, representing a potential hazard to the public and environment during construction and operations.

Felled aboveground transmission lines would pose a health and safety hazard to people in the area if people come in contact with active lines. Compliance with CPUC GO 95, GO 165, and GO 166 would reduce the risk and prevent significant impacts that may occur during accidents and natural events that would cause public safety hazards from damaged overhead electrical lines.

In summary, compliance with applicable regulations and implementation of a SPCC plan, HMBP, Project Commitment B, and Project Commitment F would reduce the risk but not prevent significant impacts that may still occur from upset and accident conditions involving the release of hazardous materials. The implementation of~~ a~~ ~~site-specific hazardous materials management plan (MM HZ-1),~~ a SWPPP (BR-15)~~,~~ and a contaminated soil/groundwater contingency plan (MM HZ-2) would further prevent the potential for upset and accident conditions and would reduce impacts under this criterion to less than significant levels.

Mitigation Measures

MM BR-15: Stormwater Pollution Prevention Plan (SWPPP) Best Management Practices (BMPs).

~~**MM HZ-1: Hazardous Materials Management.**~~

MM HZ-2: Contaminated Soil/Groundwater Contingency Plan.

MM HZ-3: Contacting Affected Landowners Regarding Underground Facilities~~DigAlert~~.

Impact HZ-3 (ASP): Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school.
LESS THAN SIGNIFICANT WITH MITIGATION

Twelve schools are located within 0.25 miles of the proposed Alberhill Project 115-kV subtransmission segments (Table 4.8-2). No schools are located within 0.25 miles of the proposed Alberhill Substation site or 500-kV transmission line routes. Construction and operation of the 115-kV subtransmission segments would not involve the handling or emission of hazardous or acutely hazardous materials as defined by CEQA Section 21151.4 in quantities equal to or greater than the state threshold quantities specified in Section 25532 of the California Health and Safety Code.

Diesel-powered vehicles and construction equipment would be used during construction of the proposed Alberhill Project. The California Air Resources Board considers diesel exhaust emissions toxic. Diesel exhaust would be emitted within 0.25 miles of schools along the proposed 115-kV subtransmission line segments; however, because construction activities would be temporary and would not take place at any single location for an extended period, impacts from diesel exhaust emissions would be less than significant.

As discussed under Impact HZ-1 (ASP) and Impact HZ-2 (ASP), hazardous materials could be released during construction or operation of the proposed Alberhill Project. However, Project Commitments B and F and implementation of ~~MM HZ-1,~~ MM HZ-2, MM HZ-3, and MM BR-15, in addition to compliance with applicable laws and regulations, would reduce impacts under this criterion to less than significant levels.

Mitigation Measures

MM BR-15: Stormwater Pollution Prevention Plan (SWPPP) Best Management Practices (BMPs).

~~MM HZ-1: Hazardous Materials Management.~~

MM HZ-2: Contaminated Soil/Groundwater Contingency Plan.

MM HZ-3: Contacting Affected Landowners Regarding Underground Facilities~~DigAlert~~.

Impact HZ-4 (ASP): Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment.
LESS THAN SIGNIFICANT WITH MITIGATION

As described in Section 4.8.1.1, Cortese List (Government Code Section 65962.5) database searches did not identify solid waste disposal sites, sites with Cease and Desist Orders or Cleanup and Abatement Orders, or DTSC EnviroStor and hazardous waste sites within 1,000 feet of components of the proposed Alberhill Project (DTSC 2015a,b; SWRCB 2015a,b,c). Two open-case LUFT sites (Table 4.8-1), however, were listed in the SWRCB Geotracker database that would be located less than 100 feet from 115-kV Segment ASP4. No other open-case SWRCB Geotracker sites were identified within 1,000 feet of the proposed Alberhill Project. There are also nine other Cortese List sites, including eight closed-cased LUFT sites and an open-case DTSC voluntary cleanup site.

The two LUFT sites are located on the property of operational gas stations (Yellow Pages 2015b). It is not anticipated that excavation along 115-kV Segment ASP4, which would occur within an existing ROW, would expose contaminated soils, but impacts could occur if the fuel leaks have spread underground from the LUFT sites into the ROW or if undocumented sites or released are discovered. This would lead to a potentially significant impact. MM HZ-2 would require the applicant to develop a Contaminated Soil/Groundwater Contingency Plan to address the potential for encountering subsurface sources of contamination throughout all areas to be disturbed during construction of the proposed Alberhill Project. Therefore, impacts under this criterion would be less than significant with mitigation.

Several potentially contaminated soil and/or groundwater sites have been identified adjacent to proposed Alberhill Project components, as indicated in Table 4.8-1. Excavation and handling of contaminated soils associated with these sites or any other previously unrecorded contaminated site would result in a significant impact. The applicant would perform geotechnical studies along the proposed 500-kV transmission lines and 115-kV subtransmission line segments (Project Commitment F). The geotechnical studies would include the collection and analysis of soil samples for common contaminants and the presence of hazardous materials. If chemicals are detected in the soil samples at concentrations above acceptable~~action~~ levels, the applicant would avoid the above-threshold~~contaminated~~ soil or work with the property owner to remove it. In addition, the applicant would train construction personnel to notify the foreman and regional spill response coordinator in the event of hazardous materials spills and leaks from equipment or upon the discovery of soil or groundwater contamination (Project Commitment B). Impacts would still be potentially significant without guidelines to adhere to during construction activities. MM HZ-2 would require the applicant to develop a Contaminated Soil/Groundwater Contingency Plan, which would define procedures for soil and groundwater testing. Impacts would be less than significant with implementation of MM HZ-2.

Mitigation Measure

MM HZ-2: Contaminated Soil/Groundwater Contingency Plan.

Impact HZ-5 (ASP): For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area.
NO IMPACT

Proposed 115-kV Segment ASP8 would be located approximately 1.6 miles southeast of Perris Valley Airport but would not be located within a Perris Valley Airport Land use zone under the adopted Perris Valley Airport Land Use Compatibility Plan (Riverside County ALUC 2004c). 115-kV Segment ASP8 would be located within the Perris Valley Airport Compatibility Zone E under the draft version of the revised Perris Valley Airport Land Use Plan (Riverside County ALUC 2010). Applicable development conditions within Perris Valley Airport Compatibility Zone E include required airspace review for developments over 150 feet due to concerns about compatibility with airport activities (Riverside County ALUC 2004b). The segment would also be located within an Aircraft Approach Accident Risk Intensity Contours, which indicates that the proposed segment would be located in an area with statistically higher potential for accidents based on nationwide data (Riverside County ALUC 2010).

The proposed 115-kV Segment ASP8 would be located within the applicant's existing ROW, on the north and south sides of the existing Valley–Serrano 500-kV transmission line. The line would have LWS~~P~~ poles and TSPs that would range from 70 to 115 feet tall. Because these structures are less than 150 feet in height, installation of these structures would not require airspace review under the draft version of the revised Perris Valley Airport Land Use Plan. Furthermore, the existing Valley – Serrano 500-kV transmission line lattice steel towers range from 129 to 132 feet above the ground and would be taller than the LWS~~P~~ poles and TSPs that would be installed as part of 115-kV Segment ASP8. Installation of 115-kV Segment ASP8 would therefore not result in a significant safety hazard for people residing or working in the project area and there would be no impact under this criterion.

Airspace hazards, in general, are discussed in Section 4.15, "Traffic and Transportation."

Impact HZ-6 (ASP): For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area.
LESS THAN SIGNIFICANT

Sections of 115-kV Segments ASP4 and ASP5 would be located less than 1,000 feet east of Skylark Field Airport (Figure 2-~~2b~~2h). Construction would occur along an existing 115-kV subtransmission line and within an existing ROW.

The lightweight steel poles installed along 115-kV Segments ASP4 and ASP5 within the Influence Area of Skylark Field Airport would range in height from 70 to 115 feet (Figure 2-~~6~~8). The Skylark Field Airport manager stated that an initial review of the project did not raise concerns with regard to the proposed Alberhill Project as long as the structures installed are less than 120 feet high (Gulledge personal communication 2010). The 115-kV structures would range from 70 to 115 feet tall. Because the proposed structures would be less than 120 feet in height, installation of structures along ASP4 and ASP5 within the vicinity of the Skylark Field Airport would not result in a safety hazard for people working in the project area. Impacts under this criterion would be less than significant.

Impact HZ-7 (ASP): Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
LESS THAN SIGNIFICANT

No emergency or evacuation routes are identified in the Riverside County General Plan, Riverside County EOP, or Local Hazard Mitigation Plan, the City of Lake Elsinore General Plan, or the City of Menifee Draft General Plan in the vicinity of any of component of the proposed Alberhill Project (County of Riverside 2006, 2008, 2012; City of Lake Elsinore 2011; City of Menifee 2013). The City of Orange's EOP does not define evacuation routes for emergencies (City of Orange 2010).

Construction activities completed within or along public streets would be conducted in accordance with local ordinances, applicable general plan policies, Riverside County EOP and Multi-Jurisdictional Local Hazard Mitigation Plan, and control measures published in the California Joint Utility Traffic Control Manual (California Inter-Utility Coordinating Committee 2014). In places where the components of the proposed Alberhill Project would span a road or require lane closure, construction activities would be coordinated with the local jurisdiction in accordance with local ordinances and permit conditions to avoid closure of emergency routes. Traffic Control Plans would be developed and implemented as required by Riverside County and the cities of Lake Elsinore, Menifee, and Wildomar during local permitting processes that would provide traffic control services to ensure adequate flow of traffic during lane or road closures (Section 4.15, "Transportation and Traffic").

Operation of the proposed Alberhill Project would not result in lane closures or other obstructions to area roads or traffic. Maintenance would be performed consistent with local ordinances, applicable general plan policies, the Riverside County EOP and Multi-Jurisdictional Local Hazard Mitigation Plan, and control measures published in the California Joint Utility Traffic Control Manual (California Inter-Utility Coordinating Committee 2014). Therefore, impacts under this criterion would be less than significant.

Impact HZ-8 (ASP): Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction, operation, and maintenance activities associated with the proposed Alberhill Project would increase fire risk during refueling, vehicle and equipment use, welding, vegetation clearing, worker cigarette smoking, and other activities. Fires could ignite when objects contact the proposed power lines or other energized equipment, when a live-phase conductor falls to the ground, due to conductor-to-conductor contact, or due to power surges.

During construction, the applicant would clear vegetation from the proposed Alberhill Substation site and staging areas and along access roads and power line routes. Landscaping and irrigation would be installed after the proposed Alberhill Substation wall is constructed and maintained during operation of the proposed Alberhill Project (Project Commitment A). To address fire risk during operation of the proposed Alberhill Substation, the applicant would install an early-detect smoke and fire detection system in the proposed Alberhill Substation control room. Handheld fire extinguishers rated for electrical fire would be available in the control building and within the proposed Alberhill Substation boundary. The 500-kV transmission lines, transformer bank leads, and 115-kV operating buses would have lightning arresters.

Additionally, the proposed transmission and subtransmission facilities would be constructed and maintained in a manner consistent with California Public Resources Code Sections 4291 through 4299, which regulate vegetation management. Per these regulations, the applicant would maintain vegetation clearance areas around the proposed Alberhill Substation and transmission and subtransmission lines. The proposed Alberhill Project would also be constructed and maintained in a manner consistent with CPUC GO 95, GO 165, and GO 166 for power line construction, inspection, and safety.

Because components of the proposed Alberhill Project would be located in Very High Fire Hazard Severity Zones and in areas identified by CAL FIRE as having significant potential for large, destructive wildfires (CAL FIRE 2005), construction of the proposed Alberhill Project would substantially increase fire risk regardless of fire prevention systems that would be installed, vegetation clearing, and compliance with applicable laws, regulations, and standards. Operation of the proposed Alberhill Project would also increase fire risk. These impacts would be potentially significant given nearby residential areas. MM HZ4 presents requirements for a Fire Control and Emergency Response Plan that would reduce the risk of fire and impacts that would result should a fire occur. Implementation of MM HZ-4 would ensure that impacts under this criterion are less than significant during construction and operation.

Mitigation Measure

MM HZ-4: Fire Control and Emergency Response.

Impact HZ-9 (ASP): Result in substantial safety risks to hang gliders.
NO IMPACT

The proposed subtransmission line would be located in an area known to be used for hang glider landing. The vacant fields adjacent to Interstate-15 (I-15) where it crosses Nichols Road are used as a landing zone for hang gliders west of I-15. This area is about 1,250 feet east of 115-kV Segment ASP2. Here, 115-kV ASP2 would be placed on existing structures installed as part of ~~proposed~~ 115-kV Segments VIG4 and VIG5 and would not require increasing the height of the structures. Therefore, installation of 115-kV ASP2 would not result in substantial safety risks to hang gliders and there would be no impact under this criterion.

HYDROLOGY AND WATER QUALITY

Section 4.9.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As demonstrated by the revisions to the FEIR analysis that follows, no new impacts were identified and the severity of previously identified impacts have not increased.

4.9.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

4.9.5.1 Project Commitments (Alberhill Project)

The applicant has committed to the following as part of the design of the proposed Alberhill Project. See Section 2.6, "Project Commitments," for a complete description of each project commitment.

- **Project Commitment A: Landscaping and Irrigation Plan.** For the Alberhill Project, prior to the start of construction, the applicant would develop a Landscaping and Irrigation Plan for Alberhill Substation road frontage only along Temescal Canyon Road, Concordia Ranch Road and Love Lane that is consistent with surrounding community standards, substation security and safety requirements. The applicant would consult with Riverside County about the Plan and incorporate applicable County recommendations to the extent possible. Landscaping would be designed to filter views from the surrounding community and other potential sensitive receptors near the proposed substation and be consistent with the surrounding community. The landscape plan would include a plant species list and installation and construction requirements. The applicant would contract a landscape architect to complete the landscaping plan during final engineering for the Alberhill Project. Irrigation and landscaping installation would occur after construction of the substation perimeter wall, subtransmission and transmission poles/towers erected, underground utility lines/cable ducts installed, and water service has been established. During operations, the applicant would maintain the substation site pursuant to the Landscaping and Irrigation Plan and be responsible for upkeep as long as the applicant owns the property.

- **Project Commitment B: Worker Environmental Awareness Plan.** Prior to construction, a Worker Environmental Awareness Plan would be developed based on final engineering designs, the results of preconstruction surveys, and mitigation measures developed by the California Public Utilities Commission (CPUC). A presentation would be prepared by the applicant and shown to all site workers prior to their start of work. A record of all trained personnel would be kept with the construction foreman. In addition to the instruction for compliance with any site specific biological or cultural resource protective measures and project mitigation measures, all construction personnel would also receive the following:

  - A list of phone numbers of the applicant's personnel (i.e., archeologist, biologist, environmental compliance coordinator, and regional spill response coordinator);

  - Instruction on the South Coast Air Quality Management District Rule 403 for control of dust;

  - Instruction on what typical cultural resources look like, and if discovered during construction, to suspend work in the vicinity of any find and contact the site foreman and archeologist or environmental compliance coordinator;

  - Instruction on washing the wheels, tracks, and underbodies of construction vehicles to minimize the spread of invasive species;

- Instruction on individual responsibilities under the CWA, the Storm Water Pollution Prevention Plan (SWPPP) for the proposed projects, site-specific Best Management Practices (BMPs), and the location of Material Safety Data Sheets for the proposed projects;

- Instructions to notify the foreman and regional spill response coordinator in case of hazardous materials spills and leaks from equipment or upon the discovery of soil or groundwater contamination;

- Instructions to follow worker safety guidelines and policies in the event of an earthquake;

- A copy of the truck routes to be used for material delivery; and

- Instruction that noncompliance with any laws, rules, regulations, or mitigation measures could result in being barred from participating in any remaining construction activities associated with the proposed projects.

- **Project Commitment D: Habitat Restoration and Revegetation Plan.** With input from the appropriate resource agencies, the applicant would develop and implement a Habitat Restoration and Revegetation Plan to restore temporarily impacted areas where construction of the projects would be unable to avoid impacts on native vegetation and sensitive resources, such as wetlands, wetland buffer areas, riparian habitat, and other sensitive natural communities. The applicant would restore all temporarily impacted areas disturbed during construction of the projects, including staging areas and pull, tension, and splicing sites, to as close to pre-construction conditions as possible, or to the conditions agreed upon between the applicant and landowner. Replanting and reseeding would be conducted under the direction of the applicant or contract biologists. If revegetation would occur on private property, revegetation conditions would be part of the agreement between the applicant and the landowner.

- **Project Commitment E: Grading Plan.** SCE shall consult with Riverside County regarding the grading plans for construction and operation of the proposed projects. Storm water improvements shall be designed to maintain a discharge of storm water runoff consistent with the characteristics of storm water runoff presently discharged from project areas including the Alberhill Substation site. Measures included in the plans shall minimize adverse effects on existing or planned storm water drainage systems. Ground surface improvements installed at the site pursuant to the plans shall be designed to minimize discharge of materials that would contribute to a violation of water quality standards or waste discharge requirements. The final grading design shall include features that would minimize erosion and siltation both onsite and offsite. In addition, the final grading (and drainage) design shall be based on the results of the geotechnical study and soil evaluation for the substation site (Project Commitment F).

4.9.5.2 Impacts Analysis (Alberhill Project)

Impact WQ-1 (ASP): Violate any water quality standards or waste discharge requirements.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction

Alberhill System Project components would cross several drainages as well as the San Jacinto River~~some rivers~~, as shown in Figure 4.9-2. Stormwater generally flows into ephemeral drainages and storm drain channels in the western portion of the project area, eventually discharging into Temescal Wash and on to the Santa Ana River. Temescal Wash and the Santa Ana River are listed as impaired under Section 303(d) of the CWA. In the eastern portion of the project area, the project would cross many drainages as well as the San Jacinto River, as shown in Figure 4.9-2.

Construction activities associated with the Alberhill Project would include activities that could result in release of hazardous materials or sediment to waterbodies and drainages. Activities associated with this proposed project include:

- Grading access roads, stringing and pulling sites, and around poles,
- Trenching for underground 115-kV subtransmission lines,
- Installing underground vaults,
- Removing wood poles,
- Excavating for pole and lattice steel tower installation,
- Staging area preparation,
- Access road construction and use,
- Grading the Alberhill Substation site, and
- Excavation of fill material from the Alberhill Substation site under Import Soil Option 1.

These activities have the potential to adversely affect water quality because they would use equipment that could release hazardous substances and would also require ground disturbance that can mobilize sediment. Acreages of soil disturbance are provided in Table 2-6 and Table 2-7. Temporary impacts would occur on up to about ~~377.3~~259.0 acres~~ if the conventional method of construction is used for the 500-kV transmission line. Temporary impacts would occur on up to about 313.8 acres if helicopter construction is used and no access roads are needed for the 500-kV transmission line.~~ Though these areas would be spread across the entire project alignment, this amount of ground disturbance in the aggregate could~~would~~ result in substantial soil erosion and could increase sedimentation. Precipitation or water flow during or soon after ground disturbing activities could exacerbate soil erosion and sedimentation impacts. The resulting sedimentation could adversely affect water quality and violate water quality standards. In addition to sedimentation, ground-disturbing activities could initiate the release of existing contaminants into waters or drainage systems. Spills of hazardous materials used during construction could also result in a discharge that could adversely impact water quality. ~~The potential for water quality and sedimentation impacts for 500-kV transmission line construction would be lower if helicopter construction methods are utilized, since no access roads would be constructed for the 500-kV transmission line. This would reduce the potential for sedimentation impacts compared to the conventional method of construction. Under both options for construction~~As a result, there ~~would~~ could be a significant impact related to water quality and sedimentation.

SCE has proposed several Project Commitments that would reduce water quality impacts. Project Commitment D requires restoration of temporarily disturbed areas to pre-construction conditions, which would reduce the long-term sedimentation impacts of grading and ground disturbance. Permanent impacts would occur on up to ~~87.9~~58.1 acres after implementation of Project Commitment D. Project Commitment B would require that workers be trained in hazardous materials spill notification procedures. Project Commitment E would require preparation of a grading plan with measures to reduce erosion and sedimentation. Impacts would still be significant, however, because there is no measure to reduce the potential for hazardous materials spills, no measure to clean up spills, no specific measures related to avoiding situations that would result in sedimentation and erosion, no specific measures related to water quality effects of blasting, and no specific measures that reduce sedimentation and erosion caused by ground disturbance. MM ~~HZ-1~~BR-15 would be implemented and would require preparation of ~~a~~ a SWPPP, which~~e~~ would include hazardous materials management, handling, transport, disposal, and emergency response plan, which would reduce the likelihood of spills and would outline cleanup procedures. Project-specific~~MM BR-15 outlines~~ BMPs would~~to~~ be provided by~~included in~~ the SWPPP and would~~to~~ minimize erosion and sedimentation. MM WQ-2 outlines procedures that shall be implemented for drainage crossings. MM WQ-3 requires implementation of methods for access road construction~~, if the conventional method of construction is used for the 500-kV transmission line,~~ that reduce erosion. MM BR-7 requires attainment of success criteria when implementing the restoration plan required under Project Commitment D. With implementation of these Project Commitments and mitigation measures, water quality impacts during construction would be less than significant.

As stated above, the~~The~~ proposed project would require construction near potential~~ly~~ jurisdictional waters, and about ~~1.4971~~1.51 acres of waters of the United States and waters of the state would be permanently impacted (Appendix G). Dewatering may also be required if the applicant encounters shallow groundwater during excavation. ~~Blasting activities may result in unintentional placement of debris in waters of the United States and waters of the state.~~ To comply with Sections 404 and 401 of the CWA and the Porter-Cologne Water Quality Control Act, prior to discharging water, fill, or other materials in waters of the United States or waters of the state, the applicant would be required to apply for permits from the USACE and RWQCB. SCE would be required to submit a preconstruction notification to the USACE, obtain 401 Water Quality Certification from the RWQCB, and adhere to all conditions and mitigation included in the permits. MM WQ-2 would require implementing measures at drainage crossings that would reduce the potential for impacts on water quality. ~~MM WQ-1 would require implementing measures to prevent blast debris from entering waters.~~ MM WQ-4 would require that any discharged water be removed from the site or discharged away from waters of the United States and/or waters of the state. Construction-related impacts on water quality would be less than significant with implementation of this mitigation.

Operation and Maintenance

Project operation and maintenance would not involve new ground disturbance that could result in substantial erosion or sedimentation or could adversely affect water quality. Occasional use of access roads constructed for the proposed project would not result in discharge of fill materials to waters of the state because such use would be infrequent and of limited intensity. Operational impacts related to water quality would be less than significant.

Mitigation Measures

MM BR-7: Habitat Restoration and Revegetation Plan Requirements.

MM BR-15: Stormwater Pollution Prevention Plan (SWPPP).

~~MM BR-15: Stormwater Pollution Prevention Plan (SWPPP) Best Management Practices (BMPs).~~

~~MM HZ-1: Hazardous Materials Management.~~

~~MM WQ-1: Blasting Plan and Best Management Practices.~~

MM WQ-2: Drainage crossing procedures and practices.

MM WQ-3: Design of access roads with erosion control measures.

MM WQ-4: Disposal of groundwater from dewatering excavations.

Impact WQ-2 (ASP): Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
LESS THAN SIGNIFICANT

Construction

Construction of the proposed Alberhill Project would require approximately 169~~120~~ acre-feet of water over a period of ~~28~~30 months, which is equivalent to water use at 72~~51~~.4 acre-feet per year. All of the water required for construction and operation of the proposed ~~Valley–Ivyglen~~ Alberhill Project would be provided by EVMWD or EMWD.

EVMWD obtains 20 percent of its water from the Elsinore Groundwater Basin. If all of the water for the proposed project came from the EVMWD, 72~~51~~.4 acre-feet per year would represent about 0.21 percent of the total water produced by EVMWD during the 2013/14 fiscal year (EVMWD 2015). Moreover, only 20 percent of the water produced by EVMWD is supplied by groundwater. Water use for the proposed project would be temporary and would not substantially deplete groundwater supplies in the Elsinore Groundwater Basin. Impacts would be less than significant.

EMWD is subject to a settlement agreement that requires certain actions to ameliorate the overdraft of the San Jacinto Groundwater Basin. EMWD would provide water in accordance with terms of the settlement agreement. Supply of water from EMWD would therefore not substantially deplete groundwater supplies in the San Jacinto Groundwater Basin. Impacts would be less than significant.

Shallow perched groundwater may be encountered during excavation for the proposed TSPs and hybrid poles installed in the southeastern area of Elsinore Basin. LWS poles would be installed at a depth of 6 to 14 feet bgs, and TSPs would be installed at a depth of 20 to 50 feet bgs in concrete foundations with diameters ranging from 5 to 8 feet. If groundwater is encountered during excavation, the applicant may dewater the hole. Dewatering activities remove a relatively small amount of water from the upper aquifer in such a case. The dewatering would not affect groundwater levels in the aquifers used for groundwater supply because the groundwater basin is a minimum of 250 feet bgs. Impacts from perched groundwater extraction would be less than significant.

Less than 1 acre of impervious surface would be created from lattice steel tower and TSP concrete foundations. This acre would be distributed in small areas over the 25-mile project alignment and would therefore not interfere with groundwater recharge. Up to ~~7.6~~5.7 acres at the Alberhill Substation would be covered by impervious concrete. However, the majority of the site would be permeable, and there is substantial open space with permeable material around the substation area. Impacts on groundwater recharge would be less than significant.

Operation and Maintenance

During operations, minimal quantities of water would be required for cleaning electrical equipment (approximately 3,000 gallons per year), watering restoration areas, worker consumption, and as-needed maintenance activities. Operational water would be supplied through a connection to EVMWD's potable water system, located within Temescal Canyon Road. Impacts on groundwater supply would be less than significant.

No additional impervious surfaces would be added during operations. Therefore, there would be no operational impacts on groundwater recharge.

Impact WQ-3 (ASP): Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction

Grading at the approximately ~~42.9~~46-acre substation site would be required to provide a flat area for substation construction. There are no substantial drainages on the site, but the site likely experiences minor water flow and ponding during and after precipitation events. Grading would require cut of about ~~91,000~~120,000 cubic yards of soil and fill about ~~80,000~~185,000 cubic yards of soil. The substation site would have a detention basin to capture surface flow and would be graded to direct surface flow into the detention basin. Excess drainage would flow off site to Temescal Wash. Grading across the approximately ~~42.9~~46-acre site could substantially change drainage patterns and potentially result in substantial erosion and sedimentation on or off site. Project Commitment A would require development and implementation of a Landscaping and Irrigation Plan for the substation site. Landscaping would help minimize erosion and sedimentation potential. Project Commitment D would require restoration and revegetation of temporarily disturbed areas, which would minimize erosion and sedimentation potential. Project Commitment E would require preparation of a grading plan that contains measures to minimize erosion and sedimentation. Impacts from erosion and siltation would be significant after implementation of these project commitments. MM WQ-7 would require designing the detention basin in accordance with the Riverside County Stormwater Quality Best Management Practice Design Handbook (Riverside County Flood Control and Water Conservation District 2006). MM BR-7 requires attainment of success criteria when implementing the restoration plan required under Project Commitment D. ~~MM BR-15 contains~~ BMPs to~~that would~~ be provided by~~included in~~ the SWPPP would~~to~~ reduce temporary erosion and sedimentation impacts. Temporary erosion and sedimentation impacts at the Alberhill Substation site would be less than significant with mitigation.

Grading and excavation required for construction of the proposed 115-kV, 500-kV, and telecommunications lines, access roads, drainage facilities, retaining walls, and staging areas could alter existing drainage patterns at project sites and cause increased erosion due to soil disturbance. The total temporary ground disturbance during construction of these components would be up to ~~377.3~~259.0 acres. ~~if the conventional construction method is used for the 500-kV transmission lines. Total disturbance would be about 313.8 acres if helicopter construction is used for 500-kV transmission lines because access roads to the 500-kV structures would not be required.~~ Even though most of the temporary disturbance would be spread throughout the project area and at structure sites, the aggregate of the disturbed area is large enough that it could result in substantial erosion or sedimentation, particularly where there are drainage crossings. This would be a significant impact. SCE has proposed several Project Commitments that would reduce erosion and sedimentation impacts. Project Commitment D requires restoration of temporarily disturbed areas to pre-construction conditions, which would reduce the long-term sedimentation impacts of grading and ground disturbance. Project Commitment E requires that grading incorporate measures to minimize erosion and sedimentation. Impacts would still be significant, however, because there are no specific measures related to avoiding situations that would result in sedimentation and erosion, and no specific measures that reduce sedimentation and erosion caused by ground disturbance. ~~MM BR-15 outlines BMPs to be included in the SWPPP to minimize erosion and sedimentation. MM WQ-2 outlines procedures that shall be implemented for drainage crossings. MM WQ-3 requires implementation of methods for access road construction that reduce erosion. MM BR-7 requires attainment of success criteria when implementing the restoration plan required under Project~~

~~Commitment D. With implementation of these mitigation measures, erosion and sedimentation impacts during construction would be less than significant.~~

Project-specific BMPs would be provided by the SWPPP and would minimize erosion and sedimentation. MM WQ-2 outlines procedures that shall be implemented for drainage crossings. MM WQ-3 requires implementation of methods for access road construction that reduce erosion. MM BR-7 requires attainment of success criteria when implementing the restoration plan required under Project Commitment D. With implementation of these mitigation measures, erosion and sedimentation impacts during construction would be less than significant.

Operation and Maintenance

Project operation and maintenance would not involve new ground disturbance that could result in substantial erosion or sedimentation and adversely affect water quality. There would be no impact.

Mitigation Measures

MM BR-7: Habitat Restoration and Revegetation Plan Requirements.

~~**MM BR-15: Stormwater Pollution Prevention Plan (SWPPP) Best Management Practices (BMPs).**~~

MM WQ-2: Drainage crossing procedures and practices.

MM WQ-3: Design of access roads with erosion control measures.

MM WQ-7: Design detention basin to adequate size. SCE shall design the detention basin on the Alberhill Substation site in accordance with the Riverside County Stormwater Quality Best Management Practice Design Handbook (Riverside County Flood Control and Water Conservation District 2006).

Impact WQ-4 (ASP): Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.
LESS THAN SIGNIFICANT WITH MITIGATION

SCE would conduct grading and excavation as part of the Alberhill System Project for 115-kV power lines, 500-kV transmission lines, access roads, drainage facilities, Alberhill Substation, and staging areas. The grading would change drainage in the area of grading. Grading associated with subtransmission and transmission structures would be distributed along the entire project area in small work areas (see Table 2-6 and Table 2-7). These small interstitial graded areas would not change the risk of flooding.

~~A 325-foot access road would be constructed along 115-kV Segment ASP5. If the conventional method of construction is used, about~~ Approximately ~~6.1~~3.4 miles of access road construction or improvement would ~~be constructed~~ be required for the 500-kV transmission lines~~; no access roads would be constructed for the 500-kV transmission line if helicopters are used for construction of the 500-kV transmission lines~~. Access roads and retaining walls would be contiguous graded areas that could increase runoff and result in flooding or ponding. Roads may also cross and alter drainages by, for example, blocking them with the roadway and associated retaining walls. This could also cause ponding and flooding on and off site. This impact would be significant. MM WQ-5 would be implemented to maintain capacity and connectivity of drainages crossed by access roads to reduce the risk of flooding. MM WQ-3 requires implementation of erosion control measures, which would also reduce the potential for stormwater to cause flooding. Impacts related to grading would be less than significant with mitigation.

115-kV Segment ASP8 would be located in the Romoland MDP area. 115-kV Segments ASP4 and ASP5 would be located in the Sedco MDP area. TSPs and LWSPs for 115-kV Segment ASP8 would be placed in close proximity to proposed storm drains. Structures for 115-kV Segments ASP4 and ASP5 would be placed in close proximity to open channels and underground storm drains. Installation of poles in these areas in a way that would threaten the function of drainage improvements or implementation of MDPs may result in flooding, which would be a significant impact. MM WQ-6 would be implemented with written confirmation from the RCFCWCD that project elements would not impede flood control functions. Impacts would be less than significant with implementation of MM WQ-6.

Grading at the approximately ~~42.9~~46-acre substation site would be required to provide a flat area for substation construction. There are no substantial drainages on the site, but the site likely experiences minor water flow and ponding during and after precipitation events. Grading would require cut of about ~~91,000~~120,000 cubic yards of soil and fill about ~~80,000~~185,000 cubic yards of soil. The substation site would have a detention basin to capture surface flow from within the substation site. The site would be graded to direct stormwater runoff to ~~the~~ two detention ~~basin~~basins, which would have a total capacity of ~~13.5~~ approximately 16 acre-feet (~~almost~~ approximately ~~4.4~~5.2 million gallons) of water. Excess drainage would flow off site to Temescal Wash. Up to ~~7.6~~5.7 acres of new impervious surface would be constructed at the Alberhill Substation site. However, the majority of the substation site would contain permeable aggregate, crushed rock, or soil. Flooding may occur if the detention basin is insufficient in size to handle runoff from the substation site. This would be a significant impact. MM WQ-7 would be implemented to ensure that the detention basin is an adequate size to capture anticipated stormwater flows. Flooding impacts would be less than significant with implementation of MM WQ-7.

Mitigation Measures

MM WQ-3: Design of access roads with erosion control measures.

MM WQ-5: Maintain capacity and connectivity of drainages.

MM WQ-6: Avoid impeding of MDP implementation and function.

MM WQ-7: Design detention basin to adequate size.

Impact WQ-5 (ASP): 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.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction

Water would be used for dust control and may also be used to maintain soil cohesiveness during excavations. Water trucks would be operated to ensure that water is applied at a rate and in amounts sufficient to infiltrate the soil. Water would not be applied in a manner that would create runoff.

Less than 1 acre of impervious surface would be created from lattice steel tower and TSP concrete foundations. This acre would be distributed in small areas over the 25-mile project alignment and would therefore not create runoff water that would exceed the capacity of stormwater drainage systems.

Up to ~~7.6~~5.7 acres of impervious surface would be constructed at the Alberhill Substation site. However, the majority of the site would be permeable aggregate, crushed rock, or soil. The substation site would also have a detention basin to capture surface flow from within the substation site. The site would be graded to drain into swales and flow into ~~the~~ two basins, which would have a total capacity of approximately ~~13.5~~16 acre-feet (~~almost~~ approximately ~~4.4~~5.2 million gallons) of water. Excess drainage would flow off site to Temescal Wash. There would be a significant impact if the detention basin and outflow to Temescal Wash were insufficient to handle runoff water from the site. MM WQ-7 would require designing the detention basin in accordance with Riverside County standards. Impacts would be less than significant with implementation of MM WQ-7.

The project would require the use of hazardous materials, which could adversely affect runoff water quality. Potential impacts on water quality related to hazardous materials use are discussed under Impact WQ-1 (ASP) and would be less than significant with mitigation.

Operation and Maintenance

Negligible quantities of water would be required for routine operations and maintenance activities, which would include potable water for workers, water for restoration areas, and water for cleaning insulators. Approximately 3,000 gallons per year of de-ionized water would be used for cleaning electrical equipment at the proposed Alberhill Substation. The only water used on the ground would be for restoration areas. For restoration, sufficient water would be applied to infiltrate soils and not create substantial runoff. Impacts would be less than significant.

Mitigation Measure

MM WQ-7: Design detention basin to adequate size.

Impact WQ-6 (ASP): Otherwise substantially degrade water quality.
LESS THAN SIGNIFICANT

During construction and operation, pesticides may be used for vegetation management activities around structures installed as part of the proposed project. Normal application would not be in sufficient quantities to result in runoff that would substantially degrade water quality. SCE would also follow industry standard BMs and all product specifications and regulations for herbicide application. Impacts would be less than significant, and no mitigation would be required.

Impact WQ-7 (ASP): Place within a 100-year flood hazard area structures which would impede or redirect flood flows.
LESS THAN SIGNIFICANT

Sections of 115-kV Segments ASP1, ASP1.5, ASP2, ASP3, and ASP4 would involve installation of TSPs and LWS poles ~~be installed~~ within or adjacent to 100-year flood hazard areas as designated by FEMA (Figure 4.9-4). ~~115-kV Segment ASP2 would not involve structure installation. The other segments would involve installation of TSPs and LWS poles.~~ LWSPs would be up to 3 feet in diameter at their bases, while TSP foundations would be up to 8 feet in diameter but would only extend up to 2 feet above the ground surface. These structures would not impede or redirect flood flows, as flood flows would go around the structures. Staging Areas ASP4, ASP7, and ~~ASP9~~ ASP12 would also be located within 100-year flood hazard areas as designated by FEMA. There would be no permanent structures in these areas; equipment and materials would be stored at staging yards. Flood flows would go through the staging area, and equipment and materials would not impede or redirect flood flows. Impacts would be less than significant.

The proposed Alberhill Substation site; 500-kV transmission lines; 115-kV Segments ASP5 through ASP8; Staging Areas ASP1, ASP2, ASP3, ASP5, ~~and~~ ASP6, ASP11, ASP14, and ASP15; and access roads would not be located within 100-year flood hazard areas. There would be no impact in these areas.

Impact WQ-8 (ASP): Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction

Sections of the proposed Alberhill Project 115-kV subtransmission line would be installed within a FEMA-designated 100-year flood hazard zone or dam failure inundation hazard area, as shown in Figure 4.9-4. Construction would be the time when the greatest number of project-associated workers would be in these areas. Dam inundation areas represent about 32 percent of the 115-kV subtransmission line and 500-kV transmission line alignments, while 100-year flood hazard zones represent about 15 percent of the 115-kV subtransmission line alignment. The Alberhill substation site is located in a dam inundation area; construction would last ~~21~~24 months. Given that construction is temporary, workers would be in these areas for a limited amount of time. It is unlikely that workers would be in the area during a flood because work would be limited during rainy periods. Although dam failure is unlikely to occur, dam failure would be a significant impact. MM HZ-4 would require development of a Fire Control and Emergency Response Plan, which would outline evacuation procedures and require training on those procedures. Impacts would be less than significant with mitigation.

Operation and Maintenance

Operation and maintenance would require occasional inspections of the substation, 115-~~kv~~kV subtransmission line, 500-kV transmission line, the Alberhill Substation, and associated structures. This would place a minimal amount of workers in flood zones and dam failure inundation areas during inspection. It is unlikely a flood would occur during inspections since they would generally not take place in inclement wet weather. In addition, the California Division of Safety of Dams (DSOD) requires all dam operators to comply with annual inspections and seismic standards that minimize the potential for a catastrophic failure of the dam. Dam inundation mapping is done under the assumption of a total catastrophic collapse in a matter of minutes, which is not how dams typically fail; however, dam inundation mapping is done in this way to simulate a worst-case scenario. As a result of the planned operation and maintenance procedures, DSOD requirements and applicable mitigation measures, impacts would be less than significant~~Although dam failure is unlikely to occur, dam failure would be a significant impact. MM HZ-4 would require development of an Emergency Response Plan, which would outline evacuation procedures and require training on those procedures. Impacts would be less than significant with mitigation~~.

Mitigation Measure

MM HZ-4: Fire Control and Emergency Response.

Impact WQ-9 (ASP): Expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow.
LESS THAN SIGNIFICANT

There is no risk of tsunami in the project area. There would be no impact related to tsunami. Lake Elsinore is the largest body of water in the proposed project area, and there is a potential for seiche on this lake. The closest Alberhill System Project components are 115-kV Segments ASP2 and ASP4. 115-kV Segment ASP2 is behind a topographic high in relation to and 0.80 miles from the shore of Lake Elsinore. The shoreline closest to 115-kV Segment ASP4 is narrow and unlikely to facilitate a large seiche; 115-kV Segment ASP4 is also 0.5 miles from the shoreline. Thus, there is no potential for inundation of the project area by seiche. There is a potential for mudflows to occur in the project region due to nearby mountains. Project components are not, however, in areas such as washes at the base of mountains where mudflows may occur and expose people or structures to a significant risk of loss, injury, or death. Impacts would be less than significant.

LAND USE AND PLANNING

Section 4.10.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As demonstrated by the revisions to the FEIR analysis that follows, no new impacts were identified and the severity of previously identified impacts have not increased.

4.10.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

Impact LU-1 (ASP): Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
NO IMPACT

Alberhill System Project components would be located in unincorporated Riverside County and the Cities of Lake Elsinore, Menifee, and Wildomar. Table 4.10-4 presents the results of a land use consistency analysis. The consistency analysis first states whether components would potentially conflict with a local policy, regulation, or ordinance meant to avoid an environmental impact. The consistency analysis also includes: (1) a discussion of the project components likely to create the conflict and (2) a summary of any environmental impacts and mitigation measures relating to the project components in potential conflict with the plan. As noted earlier, this land use consistency analysis is being undertaken for the sole purpose of identifying any environmental impacts that might result from conflicts with local land use policies and regulations. None of the land use policy conflicts disclosed in Table 4.10-2 would themselves result in an environmental impact because the conflicts would not cause a physical change in the environment. There would therefore be no impact under this criterion.

Due to the CPUC's regulatory preemption of local land use regulations, any potential inconsistency between the proposed projects and a local plan would not require plan amendments. The types of impacts of the nature that local land use policies and regulations are meant to avoid or reduce are discussed in other sections; references to applicable impacts analyses are provided in this analysis.

Impact LU-2 (ASP): Conflict with any applicable habitat conservation plan or natural community conservation plan.
LESS THAN SIGNIFICANT WITH MITIGATION

With the exception of an approximately 2-mile-long section of 115-kV Segment ASP2, each component of the proposed Alberhill Project would be constructed within the plan areas of the MSHCP and SKR HCP (Figure 4.4-2). The proposed projects' consistency with the MSHCP and SKR HCP is discussed in Impact BR-6 (ASP) in Chapter 4.4, "Biological Resources." Impacts would be less than significant with mitigation, as described in Impact BR-6 (ASP).

Table 4.10-4 Alberhill Land Use Plans, Policies, and Regulations Consistency Analysis

Plan, Policy, or Regulation	Consistency Analysis
Riverside County and City of Wildomar[a]	
LU 13.4: *Maintain at least a 50-foot setback from the edge of the right-of-way for new development adjacent to Designated and Eligible State and County Scenic Highways.*	**INCONSISTENT.** This policy is applicable to 115-kV Segments ASP1, ASP1.5, ASP2, and ASP5. Some structures and conductor would be placed within 50 feet of the ROW of Eligible State Scenic Highways (I-15 and SR-74). One structure of 115-kV Segment ASP1 may be placed within 50 feet of the I-15 ROW, conflicting with LU 13.4. 115-kV ~~segment~~ Segment ASP1.5 would come within 50 feet of I-15's ROW in unincorporated Riverside County where it runs parallel to Temescal Canyon Road 30 feet to the southwest in the existing ROW and crosses over the highway in a northwest/southeast direction, which would cause a conflict with LU 13.4. 115-kV ~~segment~~ Segment ASP2 would come within 50 feet of I-15's ROW in unincorporated Riverside County north of Lake Elsinore between Concordia Ranch Road and Billings Lane where it crosses over the highway in a southwest direction and continues south into the City of Lake Elsinore, which would result in a conflict with LU 13.4. Visual impacts to I-15 from the structures are discussed under Impact AES-2 (ASP) in Section 4.1, "Aesthetics."
LU 13.15: *Require new or relocated electric or communication distribution lines, which would be visible from Designated and Eligible State and County Scenic Highways, to be placed underground.*	**INCONSISTENT.** This policy is applicable to 115-kV Segments ASP1, ASP1.5, ASP2, ASP4, and ASP5. Some structures and conductor would be visible from Eligible State Scenic Highways (I-15 and SR-74). 115-kV Segments ASP1, ASP1.5, ASP4, and ASP5 would involve placement of new permanent structures aboveground. These structures would be visible from I-15. 115-kV Segment ASP2, which would involve placement of additional conductor on existing poles, would be visible from both I-15 and SR-74. These segments would conflict with LU 13.5. Visual impacts to I-15 and SR-74 from the structures are discussed under Impact AES-2 (ASP) in Section 4.1, "Aesthetics."
LU 14.7: *Ensure that no structures or activities encroach upon or adversely affect the use of navigable airspace*.	**POTENTIALLY CONSISTENT.** This policy is applicable to 115-kV Segments ASP1, ASP1.5, ASP2, ASP4, and ASP5, 500-kV transmission lines, and the Alberhill Substation. Tall structures may present a risk to navigable airspace, which would conflict with LU 14.7. Potential aviation hazards are discussed in Section 4.15, "Traffic". Potential hazards would be addressed through compliance with Project Commitment G which require consultation with the FAA and a finding of no hazard. With mitigation, construction of these structures would not conflict with this policy.

Plan, Policy, or Regulation	Consistency Analysis
LU 17.1 *Require that grading be designed to blend with undeveloped natural contours of the site and avoid an unvaried, unnatural, or manufactured appearance.*	**INCONSISTENT.** This policy is applicable to 115-kV Segments ASP2 and ASP5, and Staging Area ASP1. 115-kV Segment ASP2 would involve adding conductor, crossarms, anchors, and insulators to existing poles but would not require grading. 115-kV Segment ASP2 would not conflict with LU 17.1. 115-kV Segment ASP5 would involve replacing existing wood poles with new, taller TSPs. Grading may be required for pole foundations, which may result in areas that look unnatural; this would conflict with LU 17.1. Staging Area ASP1 may require minor grading, which may result in a conflict with LU 17.1. Visual impacts from grading are discussed under Impact AES-2 (ASP) and Impact AES-3 (ASP) in Section 4.1, "Aesthetics."
LU 17.3 *Ensure that development does not adversely impact the open space and rural character of the surrounding area.*	**INCONSISTENT.** This policy is applicable to 115-kV Segments ASP2 and ASP5, and Staging Area ASP1. 115-kV Segment ASP2 would involve adding conductor, crossarms, anchors, and insulators to existing poles. This would adversely impact open space characteristics of the area, causing a conflict with LU 17.3. 115-kV Segment ASP5 would involve replacing existing wood poles with new, taller LWS poles, H-frame structures, and TSPs. This would adversely impact semi-rural characteristics of the area, causing a conflict with LU 17.3. Staging Area ASP1 would not involve new development but would be temporarily disturbed, which would adversely impact semi-rural characteristics of the area, causing a potential conflict with LU 17.3. Impacts to visual character are discussed under Impact AES-2 (ASP) and Impact AES-3 (ASP) in Section 4.1, "Aesthetics."
LU 18.1 *Require that structures be designed to maintain the environmental character in which they are located.*	**INCONSISTENT.** This policy is applicable to 115-kV Segment ASP5. 115-kV Segment ASP5 would involve replacing existing wood poles with new, taller LWS poles, H-frame structures, and TSPs, which would result in a visual change that may conflict with LU 18.1. Impacts to visual character are discussed under Impact AES-2 (ASP) and Impact AES-3 (ASP) in Section 4.1, "Aesthetics."
LU 20.1 *Require that structures be designed to maintain the environmental character in which they are located.*	**INCONSISTENT.** This policy is applicable to 500-kV transmission lines SA and VA, and 115-kV Segment ASP2. The 500-kV transmission lines would be visible from several Key Viewpoints in the area and would not be designed to match the open space area in which they are located. This would result in a conflict with LU 20.1. 115-kV Segment ASP2 would involve adding conductor, crossarms, anchors, and insulators to existing poles. These components would not be designed to match the open space area in which they are located, which would result in a conflict with LU 20.1. Impacts to visual character are discussed under Impact AES-2 (ASP) and Impact AES-3 (ASP) in Section 4.1, "Aesthetics."

Plan, Policy, or Regulation	Consistency Analysis
LU 20.2 *Require that development be designed to blend with undeveloped natural contours of the site and avoid an unvaried, unnatural, or manufactured appearance.*	**INCONSISTENT.** This policy is applicable to 500-kV transmission lines SA and VA, and 115-kV Segment ASP2. The 500-kV transmission lines would not blend with the undeveloped surroundings and would look manufactured, which would result in a conflict with LU 20.2. 115-kV Segment ASP2 would involve adding conductor, crossarms, anchors, and insulators to existing poles. These components would not blend with undeveloped surroundings and would look manufactured, which would result in a conflict with LU 20.2. Impacts to visual character are discussed under Impact AES-2 (ASP) and Impact AES-3 (ASP) in Section 4.1, "Aesthetics."
LU 20.4 *Ensure that development does not adversely impact the open space and rural character of the surrounding area.*	**INCONSISTENT.** This policy is applicable to 500-kV transmission lines SA and VA, and 115-kV Segment ASP2. The 500-kV transmission lines would adversely affect the rural character of the surrounding area, which would result in a conflict with LU 20.4. 115-kV Segment ASP2 would involve adding conductor, crossarms, anchors, and insulators to existing poles. These components would not blend in with the rural character of the surrounding area, which would result in a potential conflict with LU 20.4. Impacts to visual character are discussed under Impact AES-2 (ASP) and Impact AES-3 (ASP) in Section 4.1, "Aesthetics."
C 25.2: *Locate new and relocated utilities underground when possible. All remaining utilities shall be located or screened in a manner that reduces their visibility to the public.*	**INCONSISTENT.** This policy is applicable to 500-kV transmission lines SA and VA, 115-kV Segments ASP1, ASP1.5, ASP2, ASP4, and ASP5, and the Alberhill Substation. The 500-kV transmission lines, 115-kV Segments ASP1 and ASP1.5, and the Alberhill Substation would be installed aboveground, which would conflict with C 25.2. 115-kV Segments ASP2, ASP4, and ASP5 would involve replacing poles or adding infrastructure to existing poles aboveground, which would conflict with C 25.2. Impacts to visual character are discussed under Impact AES-2 (ASP) and Impact AES-3 (ASP) in Section 4.1, "Aesthetics."
ELAP 13.1 *Protect Interstate 15 and State Route 74 from change that would diminish the aesthetic value of adjacent properties through adherence to the Scenic Corridors sections of the General Plan Land Use and Circulation Elements.*	**INCONSISTENT.** This policy is applicable to 500-kV transmission lines SA and VA, 115-kV Segments ASP1, ASP1.5 and ASP2, and the Alberhill Substation. The 500-kV transmission lines, 115-kV Segments ASP1 and ASP1.5, and the Alberhill Substation would be visible from I-15 and would diminish the aesthetic value of adjacent properties, which would conflict with ELAP 13.1. 115-kV Segment ASP2 would be visible from both I-15 and SR-74, which would conflict with ELAP 13.1. Impacts to visual character are discussed under Impact AES-2 (ASP) in Section 4.1, "Aesthetics."
Lake Elsinore	
Community Form Policy 1.1: *Promote innovative site design, and encourage the preservation of unique natural features, such as steep slopes, watercourses, canyons, ridgelines, rock formations, and open space with recreational opportunities.*	**CONSISTENT.** This policy is applicable to the 500-kV transmission lines, 115-kV Segments ASP2 through ASP4, and Staging Areas ASP2, ASP4, and ASP~~8~~12. These components would not result in destruction of a unique natural feature or open space recreational opportunities. There would be no conflict with Community Form Policy 1.1.

Plan, Policy, or Regulation	Consistency Analysis
Public Safety and Welfare Policy 3.3: *Encourage the safe disposal of hazardous materials with County agencies to protect the City against a hazardous materials incident.*	**CONSISTENT.** This policy is applicable to the 500-kV transmission lines, 115-kV Segments ASP2 through ASP4, and Staging Areas ASP2, ASP4, and ASP~~8~~12. Disposal of hazardous materials is discussed in Section 4.8, "Hazards and Hazardous Materials," under Impact HZ-1 (ASP). The applicant would comply with applicable federal, state, and location regulations as well as implement MM HZ-1, which outlines requirements for hazardous materials management. There would be no conflict with Public Safety and Welfare Policy 3.3.
Public Safety and Welfare Policy 4.1: *Require on-going brush clearance and establish low fuel landscaping policies to reduce combustible vegetation along the urban/wildland interface boundary.*	**CONSISTENT.** This policy is applicable to the 500-kV transmission lines and 115-kV Segments ASP2 through ASP4. As explained in Section 4.8.2, the California Public Resources Code contains requirements related to vegetation management around transmission and subtransmission structures, including a 10-foot firebreak around certain structures. There would be no conflict with Public Safety and Welfare Policy 4.1.
Public Safety and Welfare Policy 5.1: *Continue to ensure that new construction in floodways and floodplains conforms to all applicable provisions of the National Flood Insurance Program in order to protect buildings and property from flooding.*	**CONSISTENT.** This policy is applicable to the 500-kV transmission lines and 115-kV Segments ASP2 through ASP4. Structures would be designed to withstand flooding, as discussed under Impact WQ-7 (ASP) and Impact WQ-8 (ASP) in Chapter 4.9, "Hydrology and Water Quality." There would be no conflict with Public Safety and Welfare Policy 5.1.
Public Safety and Welfare Policy 6.2: *Continue to require Alquist-Priolo and other seismic analyses be conducted for new development to identify the potential for ground shaking, liquefaction, slope failure, seismically induced landslides, expansion and settlement of soils, and other related geologic hazards for areas of new development in accordance with the Fault Rupture Hazard Overlay District adopted by the City of Lake Elsinore Zoning Code. The City may require site-specific remediation measure during permit review that may be implemented to minimize impacts in these areas.*	**CONSISTENT.** This policy is applicable to the 500-kV transmission lines and 115-kV Segments ASP2 through ASP4. The applicant would perform geotechnical analyses for the proposed project, as described in Section 4.6.5.1, "Project Commitments (Alberhill Project)," Project Commitment F. The proposed project would not conflict with Public Safety and Welfare Policy 6.2.
Resource Protection Policy 1.4: *Encourage revegetation with native plants compatible with surrounding habitat where soils have been disturbed during construction, and discourage plants identified in the MSHCP as unsuitable for conservation areas.*	**CONSISTENT.** This policy is applicable to the 500-kV transmission lines, 115-kV Segments ASP2 through ASP4, Staging Area ASP2, ASP4, and ASP~~8~~12. The applicant would revegetate temporarily disturbed areas as described in Section 4.4.5.1, "Project Commitments (Alberhill Project)," Project Commitment D. The proposed project would not conflict with Resource Protection Policy 1.4.

Plan, Policy, or Regulation	Consistency Analysis
Resource Protection Policy 2.2: *Development or modification shall be discouraged in areas containing riparian habitat of high functions and values or corridors with 80% or more of natural native habitat that link larger patches of natural habitat containing 80% or more native plant species. Further, development in areas described for conservation, including areas planned for riparian/riverine restoration included in the MSHCP, shall also be discouraged.*	**INCONSISTENT.** This policy is applicable to the 500-kV transmission lines and 115-kV Segments ASP2 through ASP4. Construction of these segments could impact riparian habitat, causing a potential conflict with Resource Protection Policy 2.2. Impacts to riparian habitat are discussed in Impact BR-2 (ASP) and Impact BR-3 (ASP) in Chapter 4.4, "Biological Resources."
Resource Protection Policy 3.4: *Preserve the City's visual character, in particular the surrounding hillsides, which topographically define the lake region.*	**CONSISTENT.** This policy is applicable to the 500-kV transmission lines, 115-kV Segments ASP2 through ASP4, and Staging Areas ASP2, ASP4, and ASP~~8~~12. These segments are not located on topographically significant areas of Lake Elsinore, and substantial grading would not be conducted. The proposed project would not conflict with Resource Protection Policy 3.4.
Resource Protection Policy 4.3: R*equire Best Management Practices through project conditions of approval for development to meet the Federal NPDES permit requirements.*	**CONSISTENT.** This policy is applicable to the 500-kV transmission lines, 115-kV Segments ASP2 through ASP4, and Staging Areas ASP2, ASP4, and ASP~~8~~12. The applicant would be required to adhere to Best Management Practices as a condition of the NPDES permit requirements, as described in Impact WQ-1 (ASP) in Section 4.9, "Hydrology and Water Quality." The proposed project therefore would not conflict with Resource Protection Policy 4.3.
Resource Protection Policy 6.1: *Encourage the preservation of significant archeological, historical, and other cultural resources located within the City.*	**POTENTIALLY CONSISTENT.** This policy is applicable to the 500-kV transmission lines, 115-kV Segments ASP2 through ASP4, and Staging Areas ASP2, ASP4, and ASP~~8~~12. Cultural and historical resources are known along the project alignment; there is a potential for unanticipated finds in these areas, as well. Damage to these resources would conflict with Resource Protection Policy 6.1. As discussed in Impact CR-1 (ASP) in Chapter 4.5., "Cultural Resources." Project Commitment B, MM CR-1a, MM CR-1b, MM CR-2, and MM CR-3 would eliminate the conflict.

Plan, Policy, or Regulation	Consistency Analysis
Resource Protection Policy 6.3: *When significant cultural/archeological sites or artifacts are discovered on a site, coordination with professional archeologists, relevant state and, if applicable, federal agencies, and the appropriate Native American tribes regarding preservation of sites or professional retrieval and preservation of artifacts or by other means of protection, prior to development of the site shall be required. Because ceremonial items and items of cultural patrimony reflect traditional religious beliefs and practices, developers shall waive any and all claims to ownership and agree to return all Native American ceremonial items and items of cultural patrimony that may be found on a project site to the appropriate tribe for treatment. It is understood by all parties that unless otherwise required by law, the site of any reburial of Native American human remains or cultural artifacts shall not be disclosed and shall not be governed by public disclosure requirements of the California Public Records Act.*	**CONSISTENT.** This policy is applicable to the 500-kV transmission lines, 115-kV Segments ASP2 through ASP4, and Staging Areas ASP2, ASP4, and ASP~~8~~12. There is a potential for impacts to undiscovered resources, as discussed in Impact CR-1 (ASP) in Chapter 4.5., "Cultural Resources." Impacts to undiscovered resources could result in a conflict with Resource Protection Policy 6.3. Project Commitment B, MM CR-1a, MM CR-1b, MM CR-2, MM CR-3, and MM CR-6 would eliminate the conflict.
Resource Protection Policy 8.1: *For development in areas delineated as "High" or "Undetermined" potential sensitivity for paleontological resources, require the project applicant to hire a certified paleontologist, who must perform a literature search and/or survey and apply the relevant treatment for the site as recommended by the Society for Vertebrate Paleontology.*	**INCONSISTENT.** This policy is applicable to the 500-kV transmission lines, 115-kV Segments ASP2 through ASP4, and Staging Areas ASP2, ASP4, and ASP~~8~~12. A literature search was completed for the Alberhill Project, but a survey was not completed, which would cause a conflict with Resource Protection Policy 8.1. Impacts to paleontological resources are discussed in Impact CR-2 (ASP) in Chapter 4.5, "Cultural Resources."
Resource Protection Policy 11.6: *Coordinate with agencies to screen, landscape and otherwise obscure or integrate public utility facilities, including electric power substations, domestic water and irrigation wells, switching and control facilities.*	**INCONSISTENT.** This policy is applicable to the 500-kV transmission lines and 115-kV Segments ASP2 through ASP4. These segments would be placed overhead and would not be obscured or integrated into the existing environment. The proposed project would therefore conflict with Resource Protection Policy 11.6. Impacts to visual character are discussed under Impact AES-2 (ASP) and Impact AES-3 (ASP) in Section 4.1, "Aesthetics."
Resource Protection Policy 14.1: *By 2020, the City will reduce greenhouse gas emissions from within its boundaries to 1990 levels consistent with AB32.*	**CONSISTENT.** This policy is applicable to the 500-kV transmission lines, 115-kV Segments ASP2 through ASP4, and Staging Areas ASP2, ASP4, and ASP~~8~~12. As described in Impact GHG-2 (ASP) in Chapter 4.7, "Greenhouse Gases," the proposed project would be consistent with AB32. There would be no conflict with Resource Protection Policy 14.1.

Plan, Policy, or Regulation	Consistency Analysis
Section 17.204.030.H (General Provisions and standards for a specific plan district): *All electrical and telephone facilities, fire alarm conduits, streetlight wiring, cable television, and other wiring, conduits or facilities shall, where feasible, be placed underground. Electric and telephone facilities shall be installed in accordance with standard specifications of the serving utilities.*	**INCONSISTENT.** This regulation would apply to 115-kV Segment ASP2. This segment would be placed overhead, which would conflict with Section 17.204.030.H, which applies in the Alberhill Ranch and Murdock Alberhill Ranch Specific plan areas. Visual impacts from 115-kV Segment ASP2 are discussed in Impact AES-2 (ASP).
Menifee	
Policy LU-3.5: *Facilitate the shared use of right-of-way, transmission corridors, and other appropriate measures to minimize the visual impact of utilities infrastructure throughout Menifee.*	**CONSISTENT.** This policy would apply to 115-kV Segments ASP5 through ASP8. In Menifee, these segments would be located in the same corridor as existing utilities. The proposed project would not conflict with Policy LU-3.5.

Key:
AB32 = Assembly Bill 32
ASP = Alberhill System Project
FAA = Federal Aviation Administration
I-15 = Interstate 15
kV = kilovolt
MM = Mitigation Measure
ROW = right-of-way
SR-74 = State Route 74
TSP = tubular steel pole
Note:
[a] At the time of preparation of this document, the City of Wildomar had not adopted a general plan; it was incorporated in 2008 and adopted all County of Riverside ordinances at that time, which remain in effect until the City enacts ordinances to supersede them.

Mitigation Measures

MM BR-2: Preconstruction Surveys.

MM BR-3: Biological Monitoring During Construction.

MM BR-6: Oak tree protection measures.

MM BR-7: Habitat Restoration and Revegetation Plan Requirements.

MM BR-8: Special Status Plant Avoidance and Mitigation Measures.

MM BR-9: Invasive Plant Control Measures.

MM BR-11: Migratory Birds and Raptors Impact Reduction Measures.

MM BR-12: Burrowing Owl Impact Reduction Measures.

MM BR-16: Stephens' Kangaroo Rat Take Avoidance within Core Reserve.

NOISE AND VIBRATION

Section 4.11.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As demonstrated by the revisions to the FEIR analysis that follows, no new impacts were identified and the severity of previously identified impacts have not increased.

4.11.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

4.11.5.1 Project Commitments (Alberhill Project)

The applicant has committed to the following as part of the design of the proposed Alberhill Project. See Section 2.6, "Project Commitments," for a complete description of each project commitment.

- **Project Commitment H: Noise Control**
  - All construction and general maintenance activities, except in an emergency or within enclosed structures which reduce the noise to less than significant, shall be limited to the hours of 7:00 a.m. to 7:00 p.m. and prohibited on Sundays ~~and all legally proclaimed~~ and holidays recognized by local jurisdictions. In the event~~. If the California Independent System Operator (CAISO) and/or Caltrans require~~ that construction activities are necessary ~~conductor stringing over freeways or highways occur after 7:00 p.m., or~~ on days or hours outside of what is specified by the local ordinance ~~a Sunday~~, SCE would provide advance notification, including a general description of the work to be performed, location and hours of construction anticipated, to the CPUC, the local jurisdiction, and residents within 300 feet of the anticipated work. ~~obtain variances from all applicable jurisdictions.~~
  - Construction equipment shall use noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.
  - Construction traffic shall be routed away from residences and schools where feasible.
  - Unnecessary construction vehicle use and idling time shall be minimized to the extent feasible. The ability to limit construction vehicle idling time is dependent upon the sequence of construction activities and when and where vehicles are needed or staged. A "common sense" approach to vehicle use shall be applied; if a vehicle is not required for use immediately or continuously for construction activities, its engine should be shut off. Note: certain equipment, such as large diesel-powered vehicles require extended idling for warm-up and repetitive construction tasks.
  - The Applicant will notify all receptors within 300~~500~~ feet of construction of the potential to experience significant noise levels during construction.
  - During construction, the Applicant will use a temporary noise barrier between the construction area and the residence~~sound walls, noise-reduction blankets, or other noise reduction measures prior to developing the project site~~ in areas where sensitive receptors would be subjected to significant noise impacts.
  - The applicant would shield small stationary equipment with portable barriers within 100 feet of residences, where feasible.

- The applicant would minimize engine idling and turn off engines when not in use.

4.11.5.2 Overview of Alberhill Project Construction and Operations Impacts

4.11.5.3 Impacts Analysis (Alberhill Project)

Impact NV-1 (ASP): Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
LESS THAN SIGNIFICANT WITH MITIGATION

The ~~proposed Alberhill~~Proposed Project would occur in the cities of Lake Elsinore, Wildomar and Menifee, and in portions of unincorporated Riverside County. For the purposes of analyzing noise impacts, the jurisdiction of the closest sensitive receptor was used to be most conservative.

Construction

Construction of the proposed Alberhill Substation, transmission lines, subtransmission line segments and telecommunication components would be temporary, occurring over a total period of ~~28~~ 30 months (transmission, subtransmission and telecommunication lines installation would occur in 28~~1712~~-month periods). The ~~Alberhill~~ Proposed Project construction activities would cause noise on a temporary basis at every proposed location, primarily from on-road heavy construction equipment, grading and foundation installation, helicopter use for wire stringing operations in the 500-kV transmission line, vehicles for worker commute, trucks needed to bring materials to the construction sites, and wire stringing operations and telecommunication installation. The overhead telecommunication line construction would also require the use of bucket truck and several crew trucks.

Alberhill Substation~~,~~; 500-kV Transmission Lines~~,~~; 115-kV Segments ASP1 through ASP2; Staging Areas ASP1, ~~and~~ ASP3, and ASP11; and Ivyglen Substation

Proposed Project activities associated with ~~T~~the Alberhill Substation~~,~~; 500-kV transmission lines~~,~~; ~~and~~ 115-kV Segments ASP1 through ASP2 (partial); Staging Areas ASP1, ASP3, and ASP11; and activities at Ivyglen Substation would be located in unincorporated Riverside County. Riverside County exempts private construction projects from the general sound level standards as long as they are located 0.25 miles or more from an inhabited dwelling. For project construction occurring within 0.25 miles of an inhabited dwelling, the County exempts construction noise from the general sound level standards as long as they occur between 6:00 a.m. and 6:00 p.m. from June through September and between 7:00 a.m. and 6:00 p.m. from October through May. When construction activities would take place outside of allowable hours, noise levels should comply with the Riverside County general sound level standards and result in a significant impact, unless a construction-related exception is filed. Project Commitment H would limit construction activities from 7:00 a.m. to 7:00 p.m. and require the applicant to and obtain variances from all applicable jurisdictions when construction work would occur outside allowed hours. Section 7 of the Riverside County Ordinance No. 847 provides construction-related exceptions for activities subject to the general sound level standards. Implementation of Commitment H would reduce impacts to less than significant.

115-kV Segments ASP2 through ASP4~~,~~; Staging Areas ASP2, ASP4, and ASP12; and Fogarty Substation

Proposed Project activities associated with a portion of 115-kV Segment~~s~~ ASP2 ~~(partial)~~;-115-kV Segments ASP3 and~~through~~ ASP4; ~~and~~ Staging Areas ASP2, ~~and~~ ASP4, and ASP12; and activities at Fogarty Substation~~)~~ would be located in Lake Elsinore. Construction is prohibited in Lake Elsinore on weekdays between the hours of 7:00 p.m. and 7:00 a.m. or at any time on weekends and holidays. Further, the city requires mitigating noise to certain noise levels where feasible, as described in Table 4.11-6. The predicted noise levels at the nearest sensitive receptors to these ~~project~~ Proposed Project segments are listed in Table 4.11-17.

Table 4.11-17 Noise Levels at Closest Sensitive Receptors in Lake Elsinore (Alberhill Project)

Project Component	Closest Receptor	Receptor Distance (feet)	Predicted Noise Level (dBA)	Lake Elsinore Noise Standard	Exceeds standard?
115-kV Segment ASP2	Residences on Baker Street	37	89	75	**Yes**
115-kV Segment ASP3	Residences on Collier Avenue and 2nd Street	181	75	75	No
115-kV Segment ASP4	Residences on E. Hill Street, E. Pottery Street, Casino Drive, Malaga Road, and Mission Trail	20	94	75	**Yes**
Staging Area ASP2	None identified (within 0.25-mile radius)	N/A	N/A	N/A	No
Staging Area ASP~~8~~4	Closest residence to staging area	~~531~~80	~~65~~80	75	~~No~~**Yes**
Staging Area ASP12	Closest residence to staging area	185	73	75	No

Note: Modifications to SCE's existing Fogarty Substation would be limited to work conducted inside the existing control building. As a result, it has not been included in Table 4.11-17.
Key:
dBA = A-weighted decibel
kV = kilovolt

As shown in Table 4.11-17, the Lake Elsinore numeric standards would be exceeded in several locations during construction. Construction may take place outside of allowed times and may exceed the numeric thresholds, causing a significant impact. Project Commitment H would limit construction activities from 7:00 a.m. to 7:00 p.m. and require the applicant to ~~and~~ obtain variances from all applicable jurisdictions when construction work would occur outside allowed hours. Implementation of Project Commitment H may~~would~~ lead to ~~the following~~ noise reduction factors if the following are used as noise barriers:

- Mufflers and engine shrouds in combustion engines: 8 dBA[2];
- Sound walls and noise reduction blankets surrounding equipment: 5 dBA[3]; and
- Enclosures in small stationary equipment: 8 dBA[4].

Cumulatively, noise would be reduced by about 8 dBA due to implementation of Project Commitment H. Project Commitment H would reduce impacts related to the timing of construction to less than significant. However, impacts related to the noise level would remain significant since the highest noise level generated would be 78 dBA. MM NV-1 would require the applicant to implement noise-reduction strategies, such as limiting heavy-duty equipment use duration and reducing the number of pieces of equipment operating concurrently to reduce noise to that required under Lake Elsinore's construction

[2] Minimal transmission loss (decibels) reported for reactive silencers or mufflers in industrial applications (Ray 2013).
[3] Value recommended by FHWA for calculating shielding from heavy vinyl noise curtain materials (FHWA 2006).
[4] Value recommended by FHWA for calculating shielding from noise sources completely enclosed, or completely shielded with a solid barrier located closed to the source.

noise ordinance or to the extent technologically and economically feasible. Implementation of MM NV-1 would reduce noise to levels that are in compliance with the noise ordinance. Impacts on noise standards in Lake Elsinore would be less than significant after mitigation.

115-kV Segment ASP5; Staging Areas ASP5 and ASP6 and Skylark and Tenaja Substations

Proposed Project activities associated with 115-kV Segment ASP5~~ would be constructed in Wildomar~~; Staging Areas ASP5 and ASP6 and activities at Skylark and Tenaja Substations would be located in Wildomar. Wildomar applies Riverside County's noise ordinance, as previously described. Riverside County exempts private construction projects from the general sound level standards as long as they are located 0.25 miles or more from an inhabited dwelling. For project construction occurring within 0.25 miles of an inhabited dwelling, the County exempts construction noise from the general sound level standards as long as they occur between 6:00 a.m. and 6:00 p.m. from June through September and between 7:00 a.m. and 6:00 p.m. from October through May. When construction activities would take place outside of allowable hours, noise levels should comply with the Riverside County general sound level standards and result in a significant impact, unless a construction-related exception is filed. Project Commitment H would limit construction activities from 7:00 a.m. to 7:00 p.m. and require the applicant to obtain variances from all applicable jurisdictions when construction work would occur outside allowed hours. Section 7 of the Riverside County Ordinance No. 847 provides construction-related exceptions for activities subject to the general sound level standards. Implementation of Commitment H would reduce impacts to less than significant.

115-kV Segment ASP6 through ASP8~~,~~; Fiber Optic Lines on 115-kV Segments ASP6 through ASP8~~,~~; and Staging Areas ASP7, ASP14, and ASP15; and Valley and Newcomb Substations

Proposed Project activities associated with 115-kV Segments ASP6 through ASP8; ~~and~~ fiber optic lines on 115-kV Segments ASP1 and ASP5 through ASP7; ~~and~~ Staging Areas ASP7, ASP14, and ASP15; and activities at Valley and Newcomb Substations would be located in the City of Menifee. The City of Menifee Municipal Code exempts construction activities that occur more than 0.25 miles from an inhabited dwelling or if construction occurs within 0.25 miles of an inhabited dwelling and construction does not occur between 6:00 p.m. and 6:00 a.m. from June through September and between 6:00 p.m. and 7:00 a.m. from October through May. Also, Section 9.09.030 of the City of Menifee Municipal Code allows for construction-related exceptions. Project Commitment H would limit construction activities from 7:00 a.m. to 7:00 p.m. and require the applicant to obtain variances from all applicable jurisdictions when construction works would occur outside allowed hours. This would reduce impacts to less than significant.

Serrano Substation

The proposed installation of microwave telecommunications dish antennas and telecommunications equipment at the existing Serrano Substation would occur within the City of Orange. The City of Orange Municipal Code exempts construction from exterior noise standards if it occurs between 7:00 a.m. and 8:00 p.m. on days other than Sundays or federal holidays. All other noise is subject to standards outlined in Table 4.11-12. Project Commitment H would limit construction activities from 7:00 a.m. to 7:00 p.m. Impacts on noise standards in the City of Orange would be less than significant.

Santiago Peak Communication Site

The proposed installation of microwave telecommunications dish antennas at the existing Santiago Peak Communication Site would occur in the Cleveland National Forest, under the United States Forest Service's (USFS's) jurisdiction. The USFS enforces a maximum level of 101 dBA for activities not related to project construction. However, it is anticipated that noise from equipment used for microwave dish antenna installation would be in the range of 85 dBA, below the USFS enforceable standard. Impacts on noise standards in the Cleveland National Forest would be less than significant.

Operation and Maintenance

Alberhill Substation

Operation of the Alberhill Substation would create noise due to equipment running at the substation. Continuous operation of the Alberhill Substation would also increase ambient noise levels as a result of transformer "hum" and cooling fan noise. A noise modeling study conducted for the project predicts that the noise contribution from the two 500/115-kV 560 megavolt-ampere (MVA) transformers would be about 94 dBA at a distance of 3 feet from the transformer, being perceived at a level of 38 dBA at the closest sensitive receptor. The substation perimeter wall surrounding the transformer and switching equipment would attenuate noise by 10 dBA. Therefore, projected operational noise levels for the proposed substation would not exceed the nighttime worst-case levels set by ~~Policy N4.1 of the Noise Element of the~~ Riverside County Noise Ordinance 847 for LI (light industrial) properties (55~~General Plan (45~~ dBA L_{max} ~~10-minute L_{eq}~~). With the proposed 2-transformer configuration, potential impacts from operational noise at the proposed Alberhill Substation would be less than significant.

~~Future expansion to a 1,680 MVA substation could occur at some future date depending on need, as described in Chapter 2, "Project Description." Such expansion would require one additional transformer for a total of three. The addition of one identical source of noise have the potential to result in cumulative noise levels above the nighttime levels set by Policy N4.1 of the Noise Element of the Riverside County Noise Ordinance 847 (55General Plan (45 dBA). PotentialWith implementation of MM NV-3, potential impacts from operational noise at the expanded Alberhill Substation would be reduced to less than significant.~~

500-kV Transmission Lines

The 500-kV transmission lines would emit corona noise during operation. Audible noise from the 500-kV lines at the edge of the ROW would be in the range of 54 to 61 dBA during wet weather conditions, and 48 to 49 dBA during fair weather conditions. The 500-kV line would be outfitted with polymer insulators that minimize the accumulation of surface contaminants and therefore reduce the potential for corona noise to be generated at the insulators. Actual corona noise reduction levels from the use of this insulation equipment are unknown.

Riverside County Noise Ordinance 847 states: "No person shall create any sound, or allow the creation of any sound, on any property that causes the exterior sound level on any other occupied property to exceed the sound level standards set forth in Table 1." Table 1 lists a max db level of 55 for LI properties between 10 pm and 7 am. After construction, the ~~The~~ closest receptor ~~is~~ would be over 300~~23~~ feet from the ~~location of~~ Transmission Line VA right-of-way, at which distance~~, and there is a potential for~~ the audible noise levels would not~~to~~ exceed the nighttime standard set ~~by Policy N4.1 of the Noise Element of the Riverside County General Plan. The policy prohibits facility-related noise levels, received by any sensitive use, from exceeding a standard of 45 dBA 10-minute L_{eq} between 10:00 p.m. and 7:00 a.m. This would be a significant impact. MM NV-4 would require the applicant to use additional insulation equipment to reduce corona noise to levels in compliance with~~ by Riverside County Noise Ordinance 847~~General Plan Policy N4.1~~. Impacts on noise standards from the operation of the 500-kV transmission lines would be less than significant ~~with implementation of MM NV-4~~.

115-kV Subtransmission Line

Audible noise levels from the 115-kV subtransmission line segments are expected to be relatively low, generally less than 34 dBA in rainy condition directly below the conductor. Corona noise would not be perceptible against applicable stationary source noise standards in Riverside County (55 dBA Lmax from 10:00 p.m. to 7:00 a.m.) and City of Menifee (45 dBA-10-minute L_{eq} from 10:00 p.m. to 7:00 a.m.). In addition, noise from vehicles used during routine maintenance activities would be infrequent would not result in a noticeable increase in noise. ~~Noise from these sources would be limited and short-term, but have the potential to exceed noise standards in the City of Lake Elsinore, for those activities occurring within 50 feet from sensitive receptors. Implementation of MM NV-1 would reduce noise from maintenance activities to levels that are in compliance with the applicable noise ordinances.~~ Therefore, operation and maintenance noise impacts would be less than significant after mitigation.

Serrano Substation and Santiago Peak Communications Site

Operation of the proposed microwave dish antennas at the existing Serrano Substation and Santiago Peak Communication site would generate minimal noise, as this type of equipment generally produces very little background noise in the air compared to those used in terrestrial communications. The City of Orange establishes a maximum exterior noise standard of 70 dBA between 7:00 a.m. and 10:00 p.m. and 65 dBA from 10:00 p.m. to 7:00 a.m. The Cleveland National Forest enforces a noise limit of 100 dBA within its jurisdiction. Operation of the proposed microwave antennas would be below limits established by the City of Orange and Forest Service. Therefore, noise from microwave dish antennas would not result in exposure to persons or generation of noise above applicable standards. Impacts would be less than significant.

Additional Substation Modifications

The additional substation modifications described in Section 2.3.3.6 would occur at existing SCE substations and would not contribute to the operational noise at these locations. Therefore, noise from the operation of these modifications would not result in exposures of persons or generation of noise above applicable standards. No impact would occur.

Mitigation Measures

MM NV-1 Construction and Maintenance Noise Reduction Measures.

~~**MM NV-3 Low-Noise Substation Equipment and Noise Barriers.** The applicant shall ensure that the Alberhill Substation operational noise levels will not exceed 45 dBA-10-minute L_{eq} at the closest sensitive receptor, as specified in Riverside County General Plan Policy N4.1. This shall be achieved either through use of low-noise substation equipment or installation of noise barriers or both. The applicant shall conduct monitoring and reporting of operational noise levels at the substation according to the specifications in the Riverside County General Plan Appendix I and the Riverside County Department of Public Health "Requirement for Determining and Mitigating Non-Transportation Noise Source Impacts to Residential Properties."~~

~~**MM NV-4 Corona Noise Reduction Insulators.** The applicant shall ensure that the Alberhill System 500-kV transmission line corona audible noise levels will not exceed 45 dBA-10-minute L_{eq} at the closest sensitive receptor, as specified in Riverside County General Plan Policy N4.1. This shall be achieved by the use of additional insulation equipment and additional technological solutions to reduce corona noise levels during rainy and fair weather conditions. To verify the efficiency of the corona noise reduction equipment, the applicant will measure operational noise levels at the closest sensitive residential receptors from the Alberhill Substation during three rain events during the first two rainy seasons when the substation is operating. Monitoring reports shall indicate the existing ambient noise levels and weather conditions during measurements. The applicant shall conduct noise level measurements in compliance with the County of Riverside requirements, as applicable. The applicant will submit results of the monitoring to the CPUC annually. If the monitoring reports determine that the corona noise levels exceed~~

~~45 dBA at sensitive residential receptors, the applicant will implement additional technological solutions and installation equipment and will repeat the measuring of operational noise levels at the closest sensitive residential receptors from the Alberhill Substation during three rain events during the subsequent two rainy seasons, until the 45 dBA threshold is no longer exceeded during rain events.~~

Impact NV-2 (ASP): Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
LESS THAN SIGNIFICANT

Construction

Construction of the proposed Alberhill Project would create perceptible groundborne vibration from use of heavy-duty construction equipment (e.g., trucks, backhoes, excavators, loaders, and cranes), the tamping or compacting of ground surfaces, the passing of trucks on uneven surfaces, and the excavation of trenches.

Vehicle and heavy duty truck use during the proposed Alberhill Project construction would generate a continuous but relatively low level of vibration. Typical vibration levels generated by construction equipment are shown in Table 4.11-18.

Table 4.11-18 Vibration levels from typical construction equipment (Alberhill Project)

Vibration Source	Reported Vibration Level at 25 feet (VdB)	Estimated Vibration Level at 50 feet (VdB)
Large bulldozer	87	78
Loaded trucks	86	77
Jackhammer	79	70
Small bulldozer	58	49
Criteria of residential annoyance for infrequent vibration events (FTA)	**80**	**80**
Exceeds threshold?	**Yes**	**No**

Sources: FTA 2006.
Key:
FTA = Federal Transit Administration
VdB = decibels of vibration velocity

As shown in Table 4.11-18, the estimated groundborne vibration levels from construction equipment would be below the FTA criteria for residential annoyance at receptors located at a minimum distance of 50 feet from heavy duty equipment. Certain residential receptors in Lake Elsinore, Wildomar, ~~Menfiee~~Menifee, and unincorporated Riverside County would be within 25 feet of construction sites, as shown in Table 4.11-3, resulting in the potential to exceed thresholds of groundborne vibration at sensitive receptors. Construction in these areas would occur during daytime hours, when residences are least sensitive. Construction in these areas would also be temporary, and vibration would be intermittent. Vibration impacts during construction would be less than significant.

Operation and Maintenance

Operation and maintenance activities would involve routine maintenance and emergency repairs. These activities would generate minimal groundborne vibration through use of trucks and potentially heavy equipment. Maintenance activities would be infrequent and temporary. Impacts would be less than significant.

Impact NV-3 (ASP): Substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
LESS THAN SIGNIFICANT

A substantial noise increase is defined as 10 dBA for the sake of this analysis because an increase of 10 dBA is perceived as a doubling in loudness. The average ambient noise level in the project area is 65 dBA. An increase would therefore be substantial if it increased ambient noise levels to 75 dBA.

Construction

Construction of the proposed Alberhill Project would be temporary (a maximum period of ~~28~~30 months) and would be transient along the transmission and subtransmission line segments. Construction noise would not be permanent and therefore would not cause a permanent increase in ambient noise levels in the project vicinity. Construction of the proposed Alberhill Project would have no impact under this criterion.

Operation and Maintenance

Alberhill Substation

Operation of the Alberhill Substation would create noise due to equipment running at the substation. Continuous operation of the Alberhill Substation would also increase ambient noise levels as a result of transformer “hum” and cooling fan noise. A noise modeling study conducted for the project predicts that the noise contribution from the two 500/115-kV 560 MVA transformers would be about 94 dBA at a distance of 3 feet from the transformer and at the closest sensitive receptor would being perceived at a level of 38 dBA. The substation perimeter wall surrounding the transformer and switching equipment would attenuate noise by 10 dBA. A noise level of 38 dBA would not be perceptible against the existing noise environment, which is about 60 dBA in the vicinity of the Alberhill Substation. Operation of the proposed Alberhill Substation would have a less than significant impact on permanent ambient noise levels.

500-kV Transmission Lines

The 500-kV transmission lines would emit corona noise during operation. Audible noise from the 500-kV lines at the edge of the ROW would be in the range of 54 to 61 dBA during wet weather conditions, and 48 to 49 dBA during fair weather conditions. The 500-kV line would be outfitted with polymer insulators that minimize the accumulation of surface contaminants and therefore reduce the potential for corona noise to be generated at the insulators; however, the actual corona noise reduction levels from the use of this insulation equipment are unknown. After construction, ~~T~~the nearest sensitive receptor to the proposed 500-kV transmission VA Line would be located more than ~~23~~300 feet from the ROW. Near this location, daytime ambient noise levels range from 60 to 67 dBA, and from 50 to 55 dBA during nighttime hours (Table 4.11-1). As explained above, a substantial noise increase is generally defined as 10 dBA or higher. Audible noise from the 500-kV transmission VA Line would be perceived at the nearest receptor during wet weather conditions; however, the estimated increase over existing ambient noise levels would be below 10 dBA. Operation of the proposed 500-kV lines would have a less than significant impact on permanent ambient noise levels.

115-kV Subtransmission Lines

The ~~proposed project~~Proposed Project would generate corona noise during operation. Corona noise associated with operation of the 115-kV subtransmission line segments is not anticipated to be generally audible in the ~~Alberhill~~Proposed Project vicinity. Corona noise levels would be approximately 34 dBA directly below the conductor. Existing noise levels in the ~~project~~Proposed Project area range from 60 to 66 dBA. Corona noise would not be perceptible against the higher ambient noise levels. In addition, noise from vehicles used during routine maintenance activities would be infrequent and would not result in a permanent increase to ambient noise levels. Operation of the proposed 115-kV subtransmission lines would have a less than significant impact on permanent ambient noise levels.

Serrano Substation and Santiago Peak Communications Site

Operation of the proposed microwave dish antennas at the existing Serrano Substation and Santiago Peak Communication site would generate minimal noise, as this type of equipment generally produces very little background noise in the air compared to those used in terrestrial communications. Therefore, noise from microwave dish antennas would not result in a noticeable increase in noise. Operation of the microwave dish antennas would have a less than significant impact on permanent ambient noise levels.

Additional Substation Modifications

The additional substation modifications described in Section 2.3.3.6 would occur at existing SCE substations and would not contribute to the operational noise at these locations. Therefore, noise from the operation of these modifications would not result in a permanent increase to ambient noise levels and no impact would occur.

Noise from vehicles and equipment used during routine maintenance activities would be infrequent and would not result in a permanent increase to ambient noise levels.

Impact NV-4 (ASP): Substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
SIGNIFICANT AND UNAVOIDABLE

A substantial noise increase is defined as 10 dBA for the sake of this analysis because an increase of 10 dBA is perceived as a doubling in loudness. The average ambient noise level in the project area is 65 dBA. An increase would therefore be substantial if it increased ambient noise levels to 75 dBA.

Construction

Noise generated from construction equipment and vehicle and helicopter use would result in temporary contributions to the ambient noise levels in the project vicinity during the overall ~~28~~30-month construction period. As shown in Tables 4.11-19, potential noise levels during the ~~proposed Alberhill~~ Proposed Project's construction would exceed reported ambient noise levels presented in Table 4.11-1 at closest sensitive receptors.

Alberhill Substation

Construction activities at the Alberhill Substation property would generate noise of up to 63 dBA (under either soil import option) at the closest residence to the proposed substation site, as shown in Table 4.11-19. This would not be a substantial increase in noise and at many times would not be perceptible against the existing noise environment. Construction of the proposed Alberhill Substation would have a less than significant impact on temporary ambient noise levels.

Table 4.11-19 Alberhill Project Unmitigated Construction Noise Levels at Closest Sensitive Receptors[a]

Project Component	Closest Sensitive Receptor	Distance from Project Component (feet)	Predicted Construction Noise Levels at Receptor (dBA)	Exceeds threshold (75 dBA)?	Amount Exceeded (dBA)
Alberhill Substation					
~~42.9~~Approximately 46-acre site ~~acres~~ within a 124-acre property	Closest residence to proposed substation site	1,126	65	No	N/A
	Closest residence to substation transformers' bank location	2,874	57	No	N/A
	Closest residence to proposed borrow site (Soil Import Option 1)	1,200	59	No	N/A
	Closest residence to soil haul truck route (Soil Import Option 2)	3,125	44	No	N/A
500-kV Transmission Lines					
Line SA 1.6 miles long, 200-foot wide ROW	Closest residence to ROW [b]	~~338~~845	~~71~~64	~~**Yes**~~No	~~12~~N/A
	Closest residence to Tower SA-1	~~1,197~~1,455	~~60~~59	No	N/A
	Closest residence to Tower SA-2	~~900~~860	~~63~~64	No	N/A
	Closest residence to Tower SA-3	~~691~~1,340	~~65~~60	No	N/A
	Closest residence to Tower SA-4	~~2,096~~2,340	~~56~~55	No	N/A
Line VA 1.7 miles long, 200-foot wide ROW	Closest residence to ROW [b]	~~23~~580	~~95~~67	~~**Yes**~~No	~~20~~N/A
	Closest residence to Tower VA-1	~~1,110~~1,410	~~61~~59	No	N/A
	Closest residence to Tower VA-2	~~736~~625	~~65~~66	No	N/A
	Closest residence to Tower VA-3	~~668~~1,200	~~65~~61	No	N/A
	Closest residence to Tower VA-4	~~2,132~~2,260	55	No	N/A
VA2 Access Road	Closest residence	~~322~~340	72	No	N/A
VA3 Access Road	Closest residence	~~266~~770	~~73~~64	No	N/A

Project Component	Closest Sensitive Receptor	Distance from Project Component (feet)	Predicted Construction Noise Levels at Receptor (dBA)	Exceeds threshold (75 dBA)?	Amount Exceeded (dBA)
~~Potential~~ Helicopter Platforms ~~Location~~ (500-kV transmission Line ~~Helicopter Construction Method~~)					
~~Helipad~~Helicopter Platform 1 (Tower SA3)	Residence northeast of Black Powder Road (northeast of proposed Alberhill Substation site)	~~70~~1,425	~~59~~53	No	N/A
~~Helipad~~Helicopter Platform 2 (Tower SA4)	Same as ~~Helipad~~Helicopter Platform 1 [b]	~~567~~2,300	~~61~~49	No	N/A
~~Helipad~~Helicopter Platform 3 (Tower VA4)	Same as ~~Helipad~~Helicopter Platform 1 [b]	~~1,978~~2,195	~~50~~49	No	N/A
~~Helipad 4~~	~~Same as Helipad 1~~	~~2,020~~	~~50~~	~~No~~	~~N/A~~
~~Helipad 5~~	~~Same as Helipad 1~~	~~3,410~~	~~45~~	~~No~~	~~N/A~~
Subtransmission Lines					
115-kV Segments ASP1 and ASP1.5	Residence on Hostettler Road	813	69	No	N/A
115-kV Segment ASP2	Residences on Baker Street	37	89	**Yes**	**14**
115-kV Segment ASP3	Residences on Collier Avenue and 2nd Street	181	75	No	N/A
115-kV Segment ASP4	Residences on E Hill Street, E Pottery Street, Casino Drive, Malaga Road, and Mission Trail	20	94	**Yes**	**19**
115-kV Segment ASP5	Residences on Waite Street, Lemon Street, Lost Road, Beverly Street, and Bundy Canyon Road	35	89	**Yes**	**14**
115-kV Segment ASP6	Residences on Murrieta Road	55	85	**Yes**	**10**
115-kV Segment ASP7	Residences on Murrieta Road (near Newcomb Substation)	398	68	No	N/A
115-kV Segment ASP8	Residences Murrieta Road (with McLaughin Road)	20	94	**Yes**	**19**
Telecommunications					
New microwave tower at Alberhill Substation	Closest residence to substation property line	1,126	59	No	N/A

Project Component	Closest Sensitive Receptor	Distance from Project Component (feet)	Predicted Construction Noise Levels at Receptor (dBA)	Exceeds threshold (75 dBA)?	Amount Exceeded (dBA)
New fiber optic telecommunication line installed on 115-kV Segments ASP1, ASP 1.5, ASP5, ASP6, and ASP7	Residences near to underground construction sites	20	94	**Yes**	**19**
New microwave dishes	Residence close to Serrano Substation	753	62	No	N/A
	Santiago Peak Communication Site	>100	N/A	N/A	N/A
Additional Substation Modifications[c, d, e]					
Valley Substation	None identified (within 0.25-mile radius)	None	N/A	N/A	N/A
Newcomb Substation	Closest residence to substation	300	72	No	N/A
Skylark Substation	Closest residence to substation	280	73	No	N/A
Staging Areas					
Staging Area ASP1	Residence on Concordia Property	1,356	55	No	N/A
Staging Area ASP2	None identified (within 0.25-mile radius)	None	N/A	N/A	N/A
Staging Area ASP3	Closest residence to staging area	~~237~~95	78~~0~~	~~No~~**Yes**	~~N/A~~3
Staging Area ASP4	Closest residence to staging area	~~338~~80	~~67~~80	~~No~~**Yes**	~~N/A~~5
Staging Area ASP5	Mission Valley Medical School	370	67	No	N/A
	Closest residence to staging area	~~365~~245	~~67~~70	No	N/A
Staging Area ASP6	Closest residence to staging area	~~655~~300	~~62~~68	No	N/A
Staging Area ASP7	Closest residence to staging area	531	63	No	N/A
~~Staging Area ASP8~~	~~Closest residence to staging area~~	~~237~~	~~70~~	~~No~~	~~N/A~~
Staging Area ASP11 (Concordia)	Closest residence to staging area	148	75	No	N/A
Staging Area ASP12 (Chaney Yard)	Closest residence to staging area	185	73	No	N/A

Project Component	Closest Sensitive Receptor	Distance from Project Component (feet)	Predicted Construction Noise Levels at Receptor (dBA)	Exceeds threshold (75 dBA)?	Amount Exceeded (dBA)
Staging Area ASP14 (ST-A5)	Closest residence to staging area	< 50	84	**Yes**	9
Staging Area ASP15 (ST-A4)	Closest residence to staging area	150	75	No	N/A

Sources: E & E 2015b, ~~SCE 2011b,~~ FHWA 2006.

Notes:

[a] Construction noise at staging areas assumes helicopter landing and takeoff as the main source of noise.

[b] One existing residence is located within the proposed new 500-kV transmission line ROW. The applicant intends to enter into an agreement with the landowner to purchase the property; therefore, it has been excluded from this analysis.

[c] Work at Ivyglen, Fogarty, and Tenaja Substations would occur within the existing control building. As a result, work at these substations have been omitted from this analysis.

[d] Distances were measured from the approximate work location within the substation to the property line of the nearest noise-sensitive receptor.

[e] Due to the limited scope of work at these locations, noise levels were assumed to be similar to those for subtransmission line construction.

Key:

dBA = A-weighted decibel

kV = kilovolt

N/A = not applicable

500-kV Transmission Lines

Construction of the 500-kV transmission lines would generate noise between ~~of up to~~ 83 and 77~~95~~ dBA at the closest sensitive receptor (approximately 320 feet from access road construction), as shown in Table 4.11-20. This would be a substantial temporary increase in ambient noise levels at the sensitive receptor, which would result in a significant impact. To address potential impacts from temporary increases of ambient noise levels during construction, the applicant would implement Project Commitment H, which would reduce noise at the nearest noise-sensitive receptor to below the applicable threshold~~s located in the proximity of construction sites~~.

Table 4.11-20 Alberhill 500-kV Transmission Lines Project Construction Noise Scenarios

Construction Scenario	Estimated Construction Noise (dBA, Leq) at Different Receptor Distances (feet)								
	20	40	50	100	200	400	800	1000	1500
Unmitigated Construction	103	97	95	89	83	77	71	69	65
With Project Commitment H	95	89	87	81	75	69	63	61	57
Threshold	75	75	75	75	75	75	75	75	75
Exceeds threshold?	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**	**No**	**No**

Key:
dBA = A-weighted decibel
kV = kilovolt
L_{eq} = Sound Equivalent Level

~~Temporary significant increases in ambient noise levels for those receptors located within about 200 feet from construction along the 500-kV lines would still occur after implementation of Project Commitment H. MM NV-1 would require the applicant to implement noise control measures during construction, such as limiting timeframes for use of heavy-duty equipment and reducing the number of pieces of equipment operating concurrently. Implementation of MM NV-1 would further reduce short-term significant increases of ambient noise levels, but not to a level of less than significant.~~

For all sections of the 500-kV transmission lines, the applicant would also use a light-duty helicopter for *sock-line threading*—the stringing of a lightweight pilot line (a sock line) between power line structures. For the purposes of this EIR, the applicant has indicated that a small single-rotor helicopter such as the Hughes 500E (also known as 369E) would be used. This type of helicopter produces a maximum sound level of 80.7 dBA measured directly under the flight path and 82.3 dBA, at a level fly over of 500 feet and 130 mph (FAA 1977).

The applicant ~~may~~ would use a heavy-duty helicopter to facilitate construction at three of ~~in lieu of constructing new access roads or where~~ the proposed 500-kV transmission line towers ~~would be located on terrain on which a crane could not be used or some of the required equipment and materials could not be delivered by truck~~ (refer to Section 2.4.5.5). ~~If a heavy-duty or medium-duty helicopter is required for construction of the proposed 500-kV transmission lines as part of the Alberhill Project because of rough terrain, the~~ The following or similar models of heavy- or medium-duty helicopters would be used for up to five days (up to 12 hours per day or in accordance with all applicable noise ordinances):

- Sikorsky S64 Skycrane twin-engine heavy-lift helicopter with Pratt and Whitney T73-P-1 engines (heavy-duty); or
- Kaman K-MAX helicopter with a Lycoming T53 engine (medium-duty helicopter); or
- Hughes 500-530 helicopter.

Noise levels from the heavy-duty and medium-duty helicopters are generally higher than those reported for light-duty, single rotor helicopters. For the purposes of this EIR, noise from heavy-duty and medium-duty helicopters would be above 82.3 dBA at flyovers of 500 feet and 130 mph.

Helicopter takeoff and landing may also occur adjacent to wire stringing sites along the 500-kV transmission line routes during wire-stringing activities or for materials delivery, adjacent to tower sites for micropile foundation construction activities and tower erection, and at Staging Areas ASP1, ASP2, ~~and~~ ASP3, and ASP11. Helicopter fueling may also occur at the proposed Alberhill Substation site or at Staging Areas ASP1, ~~or~~ ASP3, or ASP11.

Temporary landing areas within staging areas, at wire-stringing sites, or along the 500-kV transmission line routes would be approximately 100 feet wide by 100 feet long. In addition, permanent helicopter platforms would be installed at three of the new 500-kV transmission towers. Each platform would be approximately 25 feet wide by 25 feet long. The helicopter contractors selected by the applicant for construction of the proposed projects may select helicopter operations facilities or airports other than those listed in this document, which could result in the need for additional evaluation pursuant to California Environmental Quality Act Guidelines. Helicopters would remain at local airports, or the applicant's or helicopter contractor's air operations facilities, at night or when not in use.

Helicopter takeoff and landing areas would be limited to established helicopter landing areas (e.g., facilities at Skylark Field Airport) or at Staging Areas ASP1 or ASP3. The applicant would use best management practices to minimize impacts caused by the use of helicopters including: maximize ~~using helicopters with low-emitting engines to~~ the efficient use of ~~extent practical; efficiently maximizing~~ flight times; designating flight paths away from residential areas; identifying sensitive receptors that might be disturbed by construction noise; and providing ~~proving~~ advance notice of upcoming work.~~; and obtaining variances to local noise ordinances as required.~~ The helicopters would be used only during daylight hours consistent with applicable laws and regulations; however, helicopters would increase ambient noise levels in 10 dBA or more during landing/take-off operations at staging areas, and when flying over residential areas at a height of 500 feet. Impacts from helicopters would be temporary, but significant and unavoidable.

115-kV Subtransmission Lines

Construction of the subtransmission lines would generate noise levels up to 86 dBA at immediately adjacent residential areas and would result in a substantial temporary increase in noise along all segments other than 115-kV Segments ASP1 and ASP1.5. As shown in Table 4.11-21, the substantial temporary increase would be significant. To address potential impacts from temporary increases of ambient noise levels during construction, the applicant would implement Project Commitment H, which would reduce noise at sensitive receptors located in the proximity of construction sites.

Temporary significant increases in ambient noise levels for those receptors located within about 200 feet from construction along the 115-kV subtransmission lines would still occur after implementation of Project Commitment H. MM NV-1 would require the applicant to implement noise control measures during construction, such as limiting timeframes for use of heavy-duty equipment and reducing the number of pieces of equipment operating concurrently. Implementation of MM NV-1 would further reduce short-term significant increases of ambient noise levels, but not to a level of less than significant.

Table 4.11-21 Alberhill 115-kV Subtransmission Lines Project Construction Noise Scenarios

Construction Scenario	Estimated Construction Noise (dBA, Leq) at Different Receptor Distances (feet)								
	20	40	50	100	200	400	800	1000	1500
Unmitigated Construction	94	88	96	80	74	68	62	60	56
With Project Commitment H	86	80	78	72	66	60	54	52	48
Threshold	75	75	75	75	75	75	75	75	75
Exceeds threshold?	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**	**No**	**No**	**No**

Key:
dBA = A-weighted decibel
kV = kilovolt
L_{eq} = Sound Equivalent Level

Helicopters would be used for stringing a portion of 115-kV Segment ASP5. Noise impacts related to helicopter use for 115-kV line stringing on 115-kV Segment ASP5 would be the same as described for the 500-kV Transmission Lines. The applicant would use a small single-rotor helicopter such as the Hughes 500C. This type of helicopter produces a maximum noise emission level of 80.7 dBA measured directly under the flight path and 82.3 dBA measured at 150 meters (45.7 feet) from the flight path[5] (FAA 1977). Impacts due to helicopter noise would be temporary, but significant and unavoidable under this criterion.

Telecommunications

Construction of underground telecommunications components would require the use of a backhoe, which would create noise levels of 85 dBA at 50 feet, resulting in a temporary increase of approximately 20 dBA above ambient noise levels at nearest sensitive receptors (residences located within 20 feet from underground construction sites). The applicant would implement Project Commitment H to reduce noise at the nearest sensitive receptors, resulting in an overall 8 dBA reduction. However, temporary increases of noise would remain above 10 dBA compared to ambient noise levels. Therefore, impacts would be significant and unavoidable under this criterion.

Staging Areas, Serrano Substation, and Santiago Peak Communications Site

Noise impacts ~~at staging areas,~~ Serrano Substation, Santiago Peak Communications Site, and fiber optic lines would not result in a substantial temporary periodic increase in noise during construction, as shown in Table 4.11-19. Use of heavy equipment at Staging Areas ASP3, ASP4, and ASP14 would create unmitigated noise levels at surrounding noise-sensitive receptors in excess of 75 dBA. The implementation of Project Commitment H would reduce noise levels at these receptors by approximately 8 dBA. With this reduction, the temporary increases at the nearest noise-sensitive receptors to Staging Areas ASP3 and ASP4 would be reduced to less than 75 dBA. At Staging Area ASP14, the implementation of Project Commitment H would reduce noise levels to approximately 76 dBA, resulting in temporary increases of noise above 10 dBA compared to ambient noise levels. Therefore, impacts would be significant and unavoidable under this criterion for Staging Area ASP14. ~~Impacts would be less than significant.~~

[5] Maximum noise emission levels reported by the Federal Aviation Administration during a Hughes 500C helicopter level flyover at 500 feet and 130 miles per hour.

Additional Substation Modifications

Noise impacts at Valley, Skylar, Ivyglen, Newcomb, Tenaja, and Fogarty Substations would not result in a substantial temporary periodic increase in noise during construction, as shown in Table 4.11-19. Therefore, impacts would be less than significant under this criterion.

Operation and Maintenance

Operation of the proposed Alberhill Project would not result in any short-term increases to ambient noise levels. However, maintenance activities would have similar impacts on short-term increases to ambient noise levels as construction activities. Although maintenance activities would occur infrequently, impacts would be significant and unavoidable after the implementation of MM NV-1.

Mitigation Measure

MM NV-1 Construction and Maintenance Noise Reduction Measures.

Impact NV-5 (ASP): **Exposure of people residing or working in the project area to excessive noise levels within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport.**
LESS THAN SIGNIFICANT

Perris Valley Airport is a public use facility located approximately 1.5 miles north of 115-kV Segment ASP8. Construction and maintenance activities would be temporary in this location. This location is also 1.5 miles from the airport, which falls in Compatibility Zone E in the Riverside County Airport Land Use Compatibility Plan for the Perris Valley Airport. Noise contours reflecting the ultimate activity levels on an average day for Compatibility Zone E indicate a noise level of 55 dB CNEL (RCALUC 2004). Finally, the airport is primarily used by lighter aircraft, which emit less noise. Therefore, the proposed Alberhill Project would not expose workers to excessive noise levels from nearby airport operation. Impacts would be less than significant under this criterion.

Impact NV-6 (ASP): **Exposure of people residing or working in the project area to excessive noise levels within the vicinity of a private airstrip.**
LESS THAN SIGNIFICANT

Skylark Field Airport is a private airport located approximately 1,000 feet from proposed 115-kV Segments ASP4 and ASP5. This airport provides gliding and skydiving services to the community and visitors. During construction of the proposed Alberhill Project, the Skylark Field Airport would also be used as the helicopter staging and fueling area.

Although noise from light aircraft operations at the Skylark Field Airport could exist during construction, the temporary nature of construction work along 115-kV Segment ASP4 would limit the amount of noise exposure to workers. In addition, the expected routine maintenance and emergency repair activities would only require the presence of personnel at the site on an infrequent basis. For all construction and operations and maintenance activities, it is assumed that workers would utilize the appropriate noise safety gear while at the subtransmission line sites and helicopter staging areas, in compliance with state and federal occupational health regulations.

Given the transient nature of the construction and maintenance activities in the proximity of the Skylark Field Airport, the temporary helicopter use anticipated for the 500-kV construction line, the small air traffic capacity existing at this airstrip, and proper compliance of workers hearing protection, impacts would be less than significant.

POPULATION AND HOUSING

Section 4.12.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As demonstrated by the revisions to the FEIR analysis that follows, no new impacts were identified and the severity of previously identified impacts have not increased.

4.12.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

Impact PH-1 (ASP): **Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).**
LESS THAN SIGNIFICANT

Construction

The proposed Alberhill Project would not include long-term staffing increases or construction of new homes or businesses. The proposed project would be constructed to meet existing and projected electrical needs in the proposed project area (Chapter 1, "Introduction"). As shown in Table 4.12-1, the population unincorporated Riverside County and cities within the proposed Alberhill Project area are projected to grow by approximately 30 to 70 percent by 2035.

The applicant anticipates that most, if not all, construction workers for the proposed Alberhill Project (up to 200 per day) would come from the applicant's Menifee or Wildomar Service Centers, which are located within the proposed project area (SCE 2011). Depending on availability of the applicant's local construction crews, outside contractors may also be used. In the event that a non-local contractor provided all 200 construction workers, the population of local cities would increase by a total of approximately 0.04 percent compared to 2014 population data (SCAG 2014). Based on the current vacancy rates of up to 14.2 percent, the project area has enough temporary housing to accommodate the 200 construction workers during the ~~28~~30-month construction period (Table 4.12-2). Therefore, construction of the proposed Alberhill Project would have a less than significant impact on direct population growth.

Operation and Maintenance

During operation, the components of the proposed Alberhill Project would be un-staffed and existing local SCE staff would be adequate to conduct the occasional maintenance or emergency repairs (SCE 2014). Therefore, operation and maintenance of the proposed Alberhill Project would have no direct impact on population.

Space would be available at the proposed Alberhill Substation for the installation of ~~up to two~~ one additional spare 560-MVA transformer~~s~~. ~~i~~If future load growth in the area exceeds the capacity of the initial load-serving 560 MVA transformer and the spare transformer~~,~~ installed upon initial construction, a third transformer would be installed as the required on-site spare.is redesignated as a load-serving transformer. Should that occur, a third transformer would be installed as the required on-site spare.~~needed in the future; however, the applicant does not anticipate that future expansion would be required until 2024.~~ Any expansion of the proposed substation would be conducted in response to future growth rather than as an inducement to it (Section 7.1.2, "Growth from the Provision of Additional Electric Power"). Therefore, operation and maintenance of the proposed Alberhill Project would have a less than significant indirect impact on population. Growth-inducing impacts are further discussed in Section 7.1, "Other CEQA Considerations."

Impact PH-2 (ASP): Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.
NO IMPACT

The proposed new and modified 115-kV subtransmission lines would be located primarily within or along the applicant's existing ROW. In locations where a ROW is not currently held by the applicant, the proposed 115-kV subtransmission line routes would not displace existing housing units or necessitate the construction of replacement housing elsewhere. One existing residence is located within the proposed new 500-kV transmission line ROW, approximately 650 feet southwest of Tower VA3. The applicant intends to acquire the necessary land rights and enter into an agreement with the landowner to construct the 500-kV transmission line. While this would displace one residence, it would not necessitate the construction of replacement housing as there is existing housing surrounding the Proposed Project. There would be no impact.

PUBLIC SERVICES AND UTILITIES

Section 4.13.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As demonstrated by the revisions to the FEIR analysis that follows, no new impacts were identified and the severity of previously identified impacts have not increased.

4.13.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

4.13.5.1 Project Commitments (Alberhill Project)

The applicant has committed to the following as part of the design of the proposed Alberhill Project. See Section 2.6, "Project Commitments," for a complete description of this project's commitments.

- **Project Commitment E: Grading Plan:** SCE shall consult with Riverside County regarding the grading plans for construction and operation of the proposed projects. Storm water improvements shall be designed to maintain a discharge of storm water runoff consistent with the characteristics of storm water runoff presently discharged from project areas including the Alberhill Substation site. Measures included in the plans shall minimize adverse effects on existing or planned storm water drainage systems. Ground surface improvements installed at the site pursuant to the plans shall be designed to minimize discharge of materials that would contribute to a violation of water quality standards or waste discharge requirements. The final grading design shall include features that would minimize erosion and siltation both onsite and offsite. In addition, the final grading (and drainage) design shall be based on the results of the geotechnical study and soil evaluation for the substation site (Project Commitment F).

- **Project Commitment F: Geotechnical Study, Soil Testing, and Seismic Design Standards:** Prior to the start of construction, the applicant shall conduct geotechnical and hydrologic studies and field investigations of the Alberhill Substation site, 500-kV transmission line routes, all 115-kV subtransmission line routes, and all telecommunications line routes. The studies shall include an evaluation of the depth to the water table, liquefaction potential, physical properties of subsurface soils, soil resistivity, and slope stability (landslide susceptibility). The studies shall include soil boring and laboratory testing to determine the engineering properties of soils, would characterize soils and underlying bedrock units, characterize groundwater conditions, and evaluate faulting and seismicity risk. ~~Based on the results of a Phase 1 study, s~~Soil samples shall be collected and analyzed for common contaminants and the presence of hazardous materials, if indicated by the Phase 1 results. If chemicals are detected in the soil samples at concentrations above acceptable threshold levels, the applicant shall avoid the above threshold soil or work with the property owner to remove the above threshold soil. The results of this study shall be applied to final engineering designs for the projects. The information collected shall be used to determine final tubular steel pole foundation designs. In addition, the applicant shall design Alberhill Substation consistent with the applicable federal, state, and local codes, including the Institute of Electrical and Electronic Engineers 693 Standard, *Recommended Practices for Seismic Design of Substations*.

4.13.5.2 Impacts Analysis (Alberhill Project)

Impact PS-1 (ASP): Result in substantial adverse physical impacts on governmental facilities or from the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following: (1) fire protection, (2) police protection, (3) schools, (4) parks, or (5) other public facilities.
LESS THAN SIGNIFICANT WITH MITIGATION

Fire, Police, and Emergency Services. Construction could increase the risk of fire caused by vehicle, helicopter, or construction equipment use or electrical discharge. Fires could be started during refueling, vehicle and equipment use, welding, vegetation clearing, worker cigarette smoking, contact between electrical lines and the ground, and power surges. There is also the potential for vandalism of components of the proposed Alberhill System Project during construction when equipment is left at staging areas overnight. Increased demand on emergency service providers could occur in the event of traffic- or equipment-related accidents, vandalism, or fires. The applicant would incorporate the following into the design of the proposed Alberhill System Project to reduce the impact to public services:

- MSDS or equivalent documentation for all hazardous materials in use at the construction site would be made available to all site workers (OSHA 2012);
- A temporary chain-link fence would be installed around the proposed Alberhill Substation site until the permanent perimeter wall would be constructed—a minimum 8-foot-high perimeter wall of concrete panels or decorative block that would surround the proposed Alberhill Substation with barbed wire and/or a top guard (e.g., barbed wire or spiked strips) would be affixed to the perimeter of the wall (SCE 2015);
- Vegetation management per California Public Resources Code Sections 4291-4299.

The potential for vandalism of the site would remain at areas outside of the substation area. The increases in vandalism would not require the construction of new policing facilities and would therefore not be significant. Potential impacts from fire and other hazard risks would remain significant, as vegetation management and MSDS availability alone would not substantially reduce these risks. Implementation of MM HZ-4 (Fire Control and Emergency Response) would require the applicant to develop and implement site-specific fire control and emergency response plans to address the risk of fire or other emergencies during construction, operations, and maintenance of the proposed Alberhill Project. Implementation of MM HZ-4 would reduce potential impacts on fire, police, and emergency service ratios to less than significant levels.

Schools, Libraries, Parks and Other Public Facilities. As discussed in Section 2.4.1 "Schedule, Equipment, and Personnel," up to 100 workers per day would be required to construct the proposed Alberhill Project. The applicant anticipates that most, if not all, workers would come from the applicant's Menifee or Wildomar Service Centers; both of which are located in close proximity to the proposed project area. Depending on availability of the applicant's local construction crews, outside contractors may also be used. In the event that only non-local contractors are hired for construction of the proposed Alberhill Project, it is possible that a maximum of 100 workers could temporarily relocate to the proposed area for the duration of construction, approximately ~~28~~30 months. The relocated construction workers could cause a minor increase in the service ratios of schools, libraries, and other public facilities. However, the number and variety of facilities in the vicinity of the proposed project area would be adequate to accommodate a temporary increase in use by construction workers without causing a significant impact to service ratios.

Construction and operation of the proposed Alberhill Project would not physically alter schools, libraries or public facilities in the proposed project area. Two microwave dish antennas would be installed at the existing Santiago Peak Communications Site in the Cleveland National Forest. A bucket truck would be used to install the microwave dish antenna on an existing tower at the Santiago Peak Communications site, and no trail or road closures are expected. Impacts on the existing service ratios of parks would be less than significant and no mitigation would be required.

Mitigation Measure

MM HZ-4: Fire Control and Emergency Response.

Impact PS-2 (ASP): Require or result in the construction of new water treatment facilities or expansion of existing facilities.
LESS THAN SIGNIFICANT

All water needed for construction and operation of the proposed Alberhill Project would be supplied by local water agencies. The increase in demand on local water agencies for construction and operation of the proposed Alberhill Project would not require new water treatment facilities or the expansion of existing facilities. Impacts from water use during construction and operation of the proposed Alberhill Project are further discussed under Impact PS-4 (ASP) below. The permanent restroom to be constructed at the proposed Alberhill Substation would discharge to an onsite septic system. Portable restroom facilities would be used during construction. No new or expanded connections to water treatment facilities would be constructed as part of the proposed project.

Construction of the proposed Alberhill Substation would require relocation of an existing 27-inch agricultural water pipeline. The pipeline, which is owned and operated by the EVMWD, traverses the middle of the proposed Alberhill Substation site. The pipeline would be relocated to the perimeter of the proposed Alberhill Substation site prior to construction of the substation. Currently, the water pipeline is not in use (Krishnamurthy 2015). If needed, it is available for local agricultural and industrial uses. The EVMWD anticipates that the line would be out of service for one workday, approximately eight hours, and no more than two days (Baiyasi 2011). Given that the water pipeline is not currently in use and that it would be out of service for less than two days, impacts on potential users of the pipeline or the water facilities that serve the pipeline would be less than significant. Therefore, impacts under this criterion would be less than significant.

Impact PS-3 (ASP): Require or result in the construction of new storm water drainage facilities or expansion of existing facilities.
LESS THAN SIGNIFICANT WITH MITIGATION

Two detention basins with a total capacity of approximately 16~~A 13.5~~ acre-~~foot~~ feet ~~detention basin~~ within the proposed Alberhill Substation site and a drainage channel external to the proposed Alberhill Substation would be constructed. If the applicant excavates a 5.2-acre area to provide imported soil, then additional drainage detention basins would be constructed. Drainage facilities would be installed along access roads and as described in Chapter 2, “Project Description.” All drainage facilities would be installed as determined during final engineering. The applicant would consult with Riverside County prior to finalizing drainage designs (Project Commitment E). Appropriate best management practices (BMPs) (e.g., the installation of silt fencing and covering of spoil piles) would be developed to minimize impacts associated with storm water runoff. Implementation of MM BR-1 (Limit Construction to Designated Areas) would further reduce impacts that may be associated with storm water.

The applicant would construct all drainage facilities in accordance with NPDES and grading permits and as directed by the Santa Ana Regional Water Quality Control Board, Riverside County Flood Control and Water Conservation District, and Riverside County Planning Department. New public storm water drainage facilities or the expansion of existing public facilities would not be required. Therefore, impacts under this criterion would be less than significant.

Impacts associated with storm water are also discussed in Section 4.9, "Hydrology and Water Quality."

Mitigation Measures

MM BR-1: Limit Construction to Designated Areas and Avoid Riparian, Aquatic, and Wetland Areas.

Impact PS-4 (ASP): Insufficient water supplies available to serve the project from existing entitlements and resources or new or expanded entitlements required. *LESS THAN SIGNIFICANT*

During construction of the proposed Alberhill Substation, the applicant would use approximately 250,000 gallons of water per day for earth-moving activities (dust control) and moisture conditioning of soils for compaction purposes. Combined, it is estimated that the applicant would use approximately 37.5 million gallons of water for these activities (250,000 gallons of water per day for 150 days), which equates to approximately 115 acre-feet. In addition, ~~if the conventional method is used to construct the 500-kV transmission lines and115-kV subtransmission lines then~~ approximately 17.5 million gallons of water would be required to control fugitive dust during construction of the 500-kV transmission lines and 115-kV subtransmission lines. ~~The applicant may use a heavy-duty helicopter to facilitate construction in lieu of constructing new access roads or where the proposed 500-kV transmission line towers would be located on terrain that prohibits access from trucks or the use of cranes. If helicopters are used, fewer earth moving activities would occur and less water would be used than the conventional method.~~ In total, up to 120 acre-feet of water could be required for construction of the proposed Alberhill Project. The volume of water required for up to five months during construction would be temporary, and new wells would not be drilled.

During construction of the Alberhill Substation a single-source meter would be established and a stand tank would be delivered to the site. Construction of the 500-kV transmission line would also utilize water from the stand tank. EVMWD currently has adequate supplies to provide the water required for construction and operation of the proposed Alberhill Project (Dickenson 2015). EVMWD operates wells north of the substation site that will be able to supply the non-potable water necessary for construction.

For construction outside of the EVMWD's boundary, the EMWD currently has sufficient water to serve the proposed Alberhill Project (Sigwalt 2015). Prior to construction of the 115-kV line the applicant will submit applications for temporary floating meters to connect to water district fire hydrants.

During operations, approximately 3,000 gallons per year of de-ionized water would be used for cleaning electrical equipment at the proposed Alberhill Substation. The water, which would be provided by the EMWD and then de-ionized at Valley Substation, would be transported during a single truck trip from the applicant's Valley Substation to the proposed Alberhill Substation once per year (SCE 2011). During operation, minimal quantities of water would also be required for worker consumption, and routine and emergency maintenance activities as needed. The applicant would connect to EVMWD's potable water system located within Temescal Canyon Road for use during operation of the Alberhill Substation. Therefore, impacts under this criterion would be less than significant.

Impact PS-5 (ASP): Served by a landfill without sufficient permitted capacity to accommodate the project's solid waste disposal needs.
LESS THAN SIGNIFICANT

The proposed Alberhill Project would generate approximately 40 tons of solid waste during construction that would be recycled or salvaged. Additionally, approximately 142,070 tons of solid waste would be generated during construction of the proposed Alberhill Project that could not be reused or recycled but would be disposed of at a waste management facility in the proposed project area (Section 2.4.3.9, "Waste Disposal and Recycling").

Landfills located within 30 miles of the components of the proposed Alberhill Project have sufficient remaining permitted capacity to accept the amount of non-hazardous solid waste estimated to be generated by construction and operation of the proposed Alberhill Project (Table 4.13-3).

The proposed Alberhill Substation would be unstaffed, and very small volumes of waste are expected to be generated by routine operations and maintenance activities associated with the proposed transmission and subtransmission lines. For more extensive maintenance activities that may be required (e.g., electrical structure replacement due to accident or unplanned natural events), local waste management facilities would be open and have adequate capacity to accept solid waste that could not be recycled or salvaged. Therefore, impacts under this criterion would be less than significant.

Hazardous waste generated by construction and operation of the proposed Alberhill Project and disposal, including treated wood poles, is discussed in Section 4.8, "Hazards and Hazardous Materials."

Impact PS-6 (ASP): Noncompliance with federal, state, or local statutes and regulations related to solid waste.
LESS THAN SIGNIFICANT

Construction and operation of the proposed Alberhill Project would require limited use of hazardous materials (e.g., fuels, lubricants, and cleaning solvents). The applicant would dispose of hazardous waste at a licensed facility. Hazardous waste generated by construction and operation of the proposed Alberhill Project and disposal are further discussed in Section 4.8, "Hazards and Hazardous Materials." The transport and recycling of transformer oil and disposal of chemically treated wood poles are also discussed in Section 4.8, "Hazards and Hazardous Materials."

Construction and operation of the proposed Alberhill Project would also result in the generation of various non-hazardous solid wastes (e.g., wood, soil, vegetation, and sanitary waste). Items that may be salvaged or recycled include steel (e.g., electrical towers, support beams, nuts, bolts, and washers), conductor wire, and other hardware (e.g., shackles, clevises, yoke plates, links, or other connectors used to support conductor wire). The applicant would use local waste management facilities with permitted capacity for the disposal of construction waste that cannot be salvaged or recycled as described under Impact PS-5 (ASP). The applicant would comply with all federal, state, and local statutes and regulations related to solid waste during construction and operation of the proposed Alberhill Project, and, therefore, impacts under this criterion would be less than significant.

RECREATION

Section 4.14.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As demonstrated by the revisions to the FEIR analysis that follows, no new impacts were identified and the severity of previously identified impacts have not increased.

4.14.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

Impact RE-1 (ASP): Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
LESS THAN SIGNIFICANT

Construction

As discussed in Section 2.4.1 "Schedule, Equipment, and Personnel," up to 100 workers per day would be required to construct the proposed Alberhill Project. The applicant anticipates that most, if not all, workers would come from the applicant's Menifee or Wildomar Service Centers; both of which are located in close proximity to the proposed project area. Depending on availability of the applicant's local construction crews, outside contractors may also be used. In the event that only non-local contractors are hired for construction of the proposed Alberhill Project, it is possible that a maximum of 100 workers could temporarily relocate to the proposed area for the duration of construction, approximately ~~28~~30 months. The relocated construction workers could cause a minor increase in the use of existing neighborhood and regional parks or other recreational facilities. However, the number and variety of recreational facilities in the vicinity of the proposed project area (Figure 4.14-1 and Tables 4.14-1 and 4.14-2) would be adequate to accommodate a temporary increase in use by construction workers without experiencing significant accelerated physical deterioration.

As part of the proposed Alberhill Project, two microwave dish antennas would be installed at the existing Santiago Peak Communications Site in the Cleveland National Forest. A bucket truck would be used to install the microwave dish antennas on an existing tower at the Santiago Peak Communications Site, and no trail or road closures are expected. Impacts on the existing use of recreational facilities would be less than significant and no mitigation would be required.

Operation and Maintenance

During operations, the proposed Alberhill Substation would be unstaffed. Electrical equipment within the proposed substation would be remotely monitored and controlled by an automated system from the applicant's existing Valley Substation Regional Control Center. The applicant's existing staff would be sufficient for the operation and maintenance of the proposed Alberhill Project. Therefore, operation and maintenance of the proposed Alberhill Project would have no impact on the existing use of recreational facilities.

TRANSPORTATION AND TRAFFIC

Section 4.15.5 Environmental Impacts and Mitigation Measures (Alberhill Project) from the FEIR has been included below and modified with additions in green underline and deletions in ~~red strikeout~~ to reflect any changes associated with the incorporation of the design modification and additional engineering refinements. As demonstrated by the revisions to the FEIR analysis that follows, no new impacts were identified and the severity of previously identified impacts have not increased.

4.15.5 Environmental Impacts and Mitigation Measures (Alberhill Project)

4.15.5.1 Project Commitments (Alberhill Project)

The applicant has committed to the following as part of the design of the proposed Alberhill Project. See Section 2.6, "Project Commitments," for a complete description of each project commitment.

- **Project Commitment B: Worker Environmental Awareness Plan.** Prior to construction of the proposed projects, a Worker Environmental Awareness Plan would be developed based on final engineering designs, the results of preconstruction surveys, project commitments, and mitigation measures imposed by the California Public Utilities Commission. A presentation would be prepared by the applicant and shown to all site workers prior to their start of work. A record of all trained personnel would be kept with the construction foreman. In addition to the instruction for compliance with any site-specific biological or cultural resource protective measures and project mitigation measures, all construction personnel would also receive the following:

  - A list of phone numbers of the applicant's personnel with the (archeologist, biologist, environmental coordinator, and regional spill response coordinator);

  - Instruction on the South Coast Air Quality Management District Rule 403 for control of dust;

  - Instruction on what typical cultural resources look like, and if discovered during construction, to suspend work in the vicinity of any find and contact the site foreman and archeologist or environmental coordinator;

  - Instruction on individual responsibilities under the Clean Water Act, the Storm Water Pollution Prevention Plan for the projects, site-specific Best Management Practices, and the location of Material Safety Data Sheets for the projects;

  - Instructions to notify the foreman and regional spill response coordinator in case of hazardous materials spills and leaks from equipment or upon the discovery of soil or groundwater contamination;

  - A copy of the truck routes to be used for material delivery; and

  - Instruction that noncompliance with any laws, rules, regulations, or mitigation measures could result in being barred from participating in any remaining construction activities associated with the projects.

- **Project Commitment G: Aircraft Flight Path Safety Provisions and Consultations.** Prior to construction, the applicant shall consult with the Federal Aviation Administration and ensure the filing of forms and associated specifications per the requirements of Federal Aviation Regulations Part 77 (Objects Affecting Navigable Airspace). The applicant shall review all recommendations and/or determinations from the FAA and mark and/or light the FAA recommended components where the applicant finds they are reasonable and feasible.

- **Project Commitment H: Noise Control.** The applicant shall implement the following noise control measures for the proposed projects:

  - All construction and general maintenance activities, except in an emergency or within enclosed structures which reduce the noise to less than significant, shall be limited to the hours of 7 a.m. to 7 p.m. and prohibited on Sundays and ~~all legally proclaimed~~ holidays recognized by the~~. SCE will obtain all relevant ministerial or non-discretionary noise permits from~~ local jurisdictions. In the event that construction activities are necessary on days or hours outside of what is specified by the local ordinance, SCE would provide advance~~five-day advanced~~ notification, including a general description of the work to be performed, location and hours of construction anticipated, to the CPUC, the local jurisdiction, and residents within 300 feet of the anticipated work~~, as well route all construction traffic away from residences, schools and recreational facilities to the extent feasible~~.

  - Construction equipment shall use noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.

  - Construction traffic shall be routed away from residences and schools, where feasible.

  - Unnecessary construction vehicle use and idling time shall be minimized to the extent feasible. The ability to limit construction vehicle idling time is dependent upon the sequence of construction activities and when and where vehicles are needed or staged. A "common sense" approach to vehicle use shall be applied: if a vehicle is not required for use immediately or continuously for construction activities, its engine should be shut off. Note: certain equipment, such as large diesel-powered vehicles require extended idling for warm-up and repetitive construction tasks.

  - The applicant will notify all receptors within 300~~500~~ feet of construction of the potential to experience significant noise levels during construction.

  - During construction, the applicant will use a temporary noise barrier ~~that blocks the line of sight~~ between the construction area and the residence in areas where sensitive receptors would be subjected to significant noise impacts.

  - The applicant would shield small stationary equipment with portable barriers within 100 feet of residences, where feasible.

  - The applicant would minimize engine idling and turn off engines when not in use.

  - Where blasting is required ~~for the Alberhill system Project~~, the applicant would conduct additional pre-blast notification and coordination with residents, utilities, and others that may be affected by blasting operations.

4.15.5.2 Impacts Analysis (Alberhill Project)

Impact TT-1 (ASP): Conflict with an applicable plan, ordinance or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and nonmotorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.
LESS THAN SIGNIFICANT WITH MITIGATION

The analysis presented in this section focuses on the LOS based on the evaluation presented in the traffic impact analysis of existing conditions plus project build-out conditions as described in the methodology section above. Impacts that may occur on public transit, bikeways, or pedestrian facilities are discussed under Impact TT-6 (ASP). Impacts to CMP intersections are discussed under Impact TT-2 (ASP).

Construction

Traffic impacts related to construction of the proposed 115-kV subtransmission line segments, 500-kV transmission lines, Alberhill Substation, ~~and~~ telecommunication infrastructure, and additional substation modifications would be comparable in most cases and are discussed together except where impacts would be specific to a particular component of the ~~proposed Alberhill~~Proposed Project. Construction of the ~~proposed Alberhill~~Proposed Project would result in a temporary increase in traffic volumes on the regional and local roadways that provide access to the construction areas. A temporary increase in traffic is also expected during construction of the proposed Alberhill Substation, the site of which would also serve as one of the primary staging areas for the ~~proposed Alberhill~~Proposed Project. Traffic would be generated by construction worker commute trips and material deliveries. Hauling materials, such as poles, concrete, conductor, excavation spoils, and removed poles, would temporarily increase existing traffic volumes along the proposed 115-kV subtransmission line segments.

The applicant estimates that, during the ~~28~~30-month construction period, the daily workforce would include as many as 200 workers on a peak day of construction (i.e., if multiple components of the ~~proposed Alberhill~~Proposed Project were being constructed simultaneously). The Alberhill Substation site would be used as a reporting location for workers, vehicle and equipment parking, and material storage. It is anticipated that most personnel would drive to a staging area at the beginning of each workday and depart from the staging area at the end of the day (7:00 a.m. to 7:00 p.m., Monday through Saturday; Project Commitment H). Throughout the day, some personnel would travel between staging areas and worksites (Figures 2-2a to 2-2m~~i~~). Throughout the construction period, material delivery to staging areas would vary. As stated in Chapter 2 (“Project Description”) delivery activities requiring extensive street use would be scheduled to occur during the off-peak hours to the extent feasible and in accordance with applicable local ordinances. Since construction of the various ~~project~~ Proposed Project components would occur over a dispersed area, different local roads along the route would be impacted at different times during construction.

Construction trip generation estimates for the ~~proposed Alberhill~~Proposed Project are presented in Table 4.15-14 for Import Soil Option 2. With implementation of Soil Import Option 1, soil would be obtained from an import area immediately adjacent to the proposed substation site. Soil borrow trucks would not use public streets for the hauling activities. Therefore, this option would not add trips to the local street system beyond those included in Table 4.15-14, and trips generated in Zone 4 would not occur. The analysis assumes that construction in each zone would occur concurrently and would require the maximum number of construction workers and heavy vehicles. However, as stated above, the applicant assumes a maximum number of 200 construction workers on a peak day of construction; therefore, peak day construction trip generation for the project is expected to be similar to construction trips for Zone 1.

Table 4.15-14 Construction Trip Generation (Alberhill Project)

Project Component	Vehicles Per Day	PCE Factor	Passenger Car Equivalent		
			Daily Trips	AM Peak Hour	PM Peak Hour
Zone 1 Alberhill Substation					
Construction Worker Vehicle	100	1.0	200	0[1]	100
Heavy Vehicles	93	2.5	465	93	93
Subtotal	**193**		**665**	**93**	**193**
Zone 1 Staging Area					
Construction Worker Vehicles	100	1.0	200	0[1]	100
Heavy Vehicles	40	2.5	200	40	40
Subtotal	**~~145~~140**		**400**	**40**	**140**
Zone 2 and 3 Staging Areas					
Construction Worker Vehicles	45	1.0	90	0[1]	45
Heavy Vehicles	40	2.5	200	40	40
Subtotal	**85**		**290**	**40**	**85**
Zone 4 Quarry					
Construction Worker Vehicles	10	1.0	20	0[1]	10
Heavy Vehicles	72	2.5	360	72	72
Subtotal	**82**		**380**	**72**	**82**

Source: LLG 2016a
Note~~s~~:
(1) Construction workers assumed to arrive before the AM peak hour (defined as 7:00 to 9:00 a.m.) and leave during the PM peak hour (defined as 4:00 to 6:00 p.m.).
Key:
PCE Passenger Car Equivalent

Acceptable roadway LOS ranges from LOS C to LOC E depending on the jurisdiction. The impacts of ~~project~~Proposed Project-related construction traffic during the AM peak hour (7:00 to 9:00 a.m.) and the PM peak hour (4:00 to 6:00 p.m.) were evaluated based on analysis of existing traffic conditions plus ~~project~~ Proposed Project build out traffic conditions at the 12 key intersections. Results are shown in Table 4.15-15.

As demonstrated in Table 4.15-15, no intersection LOS would be significantly impacted as a result of construction of the ~~proposed Alberhill~~Proposed Project. Impacts would be less than significant, and no mitigation would be required.

Installation of the proposed ~~Alberhill Project~~ 115-kV subtransmission lines would also require roadway crossings during installation of the proposed overhead lines, and temporary structure installation, cable pulling, and wire stringing activities would occur along roadways, as described in Section 2.4.4.4, "Traffic Control and Lane Closure." Roadways with potential temporary lane closures along with reduction in traffic capacity is presented in Table 4.15-16. Installation of these segments would require temporary lane closures between two and four days. Underground conduits for subtransmission and telecommunication lines and relocation of the Elsinore Valley Municipal Water District pipeline would also require temporary lane or road closures. These activities would reduce the traffic capacity of the roadways by 17 to 50 percent and could temporarily disrupt automobile traffic patterns. This could result in a significant impact. MM TT-1 would require development of a Traffic Management and Control Plan. Impacts would be less than significant with mitigation.

Operation and Maintenance

Operational impacts would be negligible because the proposed Alberhill Substation would be unstaffed.

Inspection activities for the transmission and subtransmission lines would occur on a yearly basis. Routine maintenance activities for the substation and telecommunications system would not be anticipated to require more than a few vehicles and, therefore, would have a less than significant impact during operation of the project.

Mitigation Measure

MM TT-1: Traffic Management and Control Plan.

Impact TT-2 (ASP): Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction

The analysis presented in this section focuses on the LOS based on the Riverside County CMP's minimum acceptable LOS E. The approach for analyzing impacts to CMP intersections is as described for Impact TT-1 (VIG). Results of the analysis are shown in Table 4.15-17. The impacts of project-related construction traffic during the AM peak hour (7:00 to 9:00 a.m.) and the PM peak hour (4:00 to 6:00 p.m.) were evaluated based on analysis of near-term traffic conditions plus project construction traffic conditions at the 14 key CMP intersections.

Table 4.15-15 Peak Hour Intersection Operation During Construction (Alberhill Substation)

No.	Intersection	AM				PM			
		Near-Term LOS	LOS During Construction	Acceptable LOS	Significant?	Near-Term LOS	LOS During Construction	Acceptable LOS	Significant?
Zone 1 Alberhill Substation and 500-kV Transmission Lines									
1	Indian Truck Trail at Temescal Canyon Road	D	D	D	No	D	D	D	No
4	Campbell Ranch Road/De Palma Road at Indian Truck Trail	D	D	D	No	D	D	D	No
5	Horsethief Canyon Road at Temescal Canyon Road	B	B	C	No	B	C	C	No
6	Horsethief Canyon Road at De Palma Road	A	A	C	No	B	B	C	No
7	Concordia Ranch Road at Temescal Canyon Road	A	A	C	No	A	B	C	No
10	Lake Street at Temescal Canyon Road	A	A	D	No	B	C	D	No
Zone 2 115-kV Subtransmission Lines and Staging Areas									
13	Diamond Drive at Lakeshore Drive/Mission Trail	D	D	D	No	D	D	D	No
14	Mission Trail at Lemon Street	A	A	D	No	A	A	D	No
15	Mission Trail at Bundy Canyon Road	B	B	D	No	B	B	D	No
Zone 3 115-kV Subtransmission Lines and Confirmed Staging Area									
22	McCall Blvd at Menifee Road	D	D	D	No	C	C	D	No

No.	Intersection	AM				PM			
		Near-Term LOS	LOS During Construction	Acceptable LOS	Significant?	Near-Term LOS	LOS During Construction	Acceptable LOS	Significant?
Zone 4 Corona Quarry (Corona Rock and Asphalt)									
25	El Camino Avenue/Downs Way at Magnolia Avenue	D	D	D	No	C	D	D	No
26	Sherborn Street at Magnolia Avenue	B	B	D	No	C	C	D	No

Source: LLG 2016b

Key

kV kilovolt,

LOS Level of Service

Table 4.15-16 Reduction in Road Capacity due to Temporary Lane Closure (Alberhill Project)

Road	Existing Number of Lanes	Temporary Percent Reduction in Capacity	Associated Project Components
Temescal Canyon Road	2	50	ASP-1, ASP-1.5, ASP-2
Lake Street, Nichols Road, Baker Street, 3rd Street	2	50	ASP-2
Pasadena Street	2 to 3	33 to 50	ASP-2
Collier Avenue	2 to 3	33 to 50	ASP-3
East Hill Street, Pottery Street, Avenue 6, Malaga Road	2	50	ASP-4
Auto Center Drive, Casino Drive	2 to 4	25 to 50	ASP-4
Mission Trail	4 to 6	17 to 25	ASP-4
Waite Street, Almond Street, Lemon Street, Lost Road, Beverly Street, Bundy Canyon Road	2	50	ASP-5
Murrieta Road	2 to 4	33 to 50	ASP-6, ASP-7
Concordia Ranch Road	2	50	Elsinore Valley Municipal Water District pipeline

Table 4.15-17 Peak Hour Congestion Management Program Intersection Operation During Construction (Alberhill Project)

No.	Intersection	AM			PM		
		Existing LOS	LOS During Construction	Significant?[2]	Existing LOS	LOS During Construction	Significant?[2]
Zone 1 Alberhill Substation and 500-kV Transmission Lines							
2	Indian Truck Trail at I-15 Northbound Ramps	D	D	No	C	D	No
3	Indian Truck Trail at I-15 Southbound Ramps	C	C	No	C	C	No
8	Lake Street at I-15 Northbound Ramps	F	F	**Yes**	C	C	No
9	Lake Street at I-15 Southbound Ramps	C	C	No	D	D	No
Zone 2 115-kV Subtransmission Lines and Staging Areas							
11	I-15 Northbound Ramps at Railroad Canyon Road	C	C	No	C	C	No
12	I-15 Southbound Ramps at Diamond Drive	D	D	No	D	D	No
16	I-15 Southbound Ramps at Bundy Canyon Road	C	C	No	C	C	No
17	I-15 Northbound Ramps at Bundy Canyon Road	C	C	No	C	D	No
Zone 3 115-kV Subtransmission Lines and Confirmed Staging Area							
18	I-215 Northbound Ramps at Matthews Road (SR-74)	A	A	No	A	A	No
19	Menifee Road at Pinacate Road (SR-74)	F	F	No[1]	D	E	Yes
20	McCall Blvd at I-215 Southbound Ramps	D	D	No	D	D	No

No.	Intersection	AM			PM		
		Existing LOS	LOS During Construction	Significant?(2)	Existing LOS	LOS During Construction	Significant?(2)
21	McCall Blvd at I-215 Northbound Ramps	C	C	No	D	D	No
Zone 4 Corona Quarry (Corona Rock and Asphalt)							
23	I-15 Southbound Ramps at Magnolia Avenue	D	D	No	D	D	No
24	I-15 Northbound Ramps at Magnolia Avenue	C	C	No	C	C	No

Source: LLG 2016b

Notes:

(1) No change in seconds of vehicle delay would occur.

(2) See Table 8-1 in Appendix J-2.

Key:

[bold text] sub-standard LOS

kV kilovolt

I-15 Interstate 15

I-215 Interstate 215

LOS Level of Service

SR-74 state route

As demonstrated in Table 4.15-17, implementation of the ~~proposed Alberhill~~Proposed Project would cause the intersection of Lake Street at the I-15 Northbound Ramps and Menifee Road at Pinacate Rd (SR-74) intersections to operate below the minimum acceptable LOS (LOS D).

Impacts to LOS at these intersections would be significant. MM TT-2 would require the applicant to avoid use of the Lake Street and I-15 northbound ramp for all heavy truck traffic during the AM peak hour and construction traffic for the project at the Menifee Road and SR-74 intersection during the PM peak hour. Implementation of MM TT-2 would return the LOS at these intersections to existing condition levels. Impacts would be less than significant with mitigation, since no intersections would operate below the minimum acceptable CMP LOS as a result of the project.

Installation of the proposed ~~Alberhill Project~~ 115-kV subtransmission lines would also require roadway crossings during installation of the proposed overhead lines and temporary structure installation, cable pulling, and wire stringing activities would occur along CMP roadways I-15 and SR-74. These activities could temporarily disrupt automobile traffic patterns and increase delays for vehicles. Closure of one lane of SR-74 would reduce the road's capacity by 50 percent. This could result in a significant impact. ~~MM TT-3 would require preparation of a plan to schedule closure of Caltrans-managed roadways. Impacts would be less than significant with mitigation.~~

Operation and Maintenance

Operational impacts would be negligible because the proposed Alberhill Substation would be unstaffed. Inspection activities for the transmission and subtransmission lines would occur on a yearly basis. Routine maintenance activities for the substation and telecommunications system would not be anticipated to require more than a few vehicles and, therefore, would have a less than significant impact during operation of the ~~project~~Proposed Project.

Mitigation Measures

MM TT-2: Heavy Vehicle Traffic Restrictions.

~~**MM TT-3: Highway Closure Plan.**~~

Impact TT-3 (ASP): Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction

Helicopter Operation

Helicopters would be used for construction work associated with footings, assembly, and erection of 500-kV structures that are inaccessible from access roads. Helicopters would be used for wire stringing activities along all sections of the 500-kV transmission line routes and one section of 115-kV Segment ASP5 between Lost Road and Bundy Canyon Road (Appendix J-2; Figure 7-6). Helicopter fueling, takeoff, and landing areas would be limited to established helicopter landing areas (e.g., facilities at Skylark Field Airport), the proposed Alberhill Substation site, Staging Area ASP1, ~~or~~ Staging Area ASP3, or Staging Area ASP11 (Figure 2-2a to 2-2~~i~~n). During stringing activities, the helicopter would take off and land adjacent to pull sites along the 500-kV transmission line routes (including Staging Area ASP2). Staging Areas ASP4 through ~~ASP7~~ ASP15 would not be accessed by helicopter. ~~There would be more helicopter use if SCE uses the helicopter construction approach instead of the conventional method of construction for the 500-kV transmission lines.~~

Helicopters would be used in accordance with the applicant's specifications, which are similar to the methods detailed in Institute of Electrical and Electronic Engineers 951-1996 standard, *Guide to the Assembly and Erection of Metal Transmission Structures*, Section 9, Helicopter Methods of Construction. The applicant may need to submit a Congested Area Plan to the FAA 30 to 60 days prior to start of construction for helicopter external-load operations over populated areas or areas congested with structures or objects. The FAA requires that all pilots, crewmembers, and helicopters involved with external-load operations (e.g., lattice steel tower erection and wire stringing) be certified pursuant to 14 CFR 133 (External-Load Operations). Pursuant to FAA and OSHA requirements, briefings must be completed prior to each day of helicopter operation regarding the plan of operation for the pilot and all ground personnel. Additionally, cargo hooks used for securing helicopter external loads must be tested electrically and mechanically prior to each day of operation. Accidents and incidents associated with helicopter use must be reported immediately to the National Transportation Safety Board. Flights in close proximity to residences or congested areas may result in significant safety impacts. MM TT-4 would require submittal of a Helicopter Lift Plan to the FAA prior to such operations. Implementation of MM-4 would reduce impacts on air traffic patterns to less than significant.

Height of Structures and Equipment

The applicant would notify and consult with the FAA if any structure or equipment (e.g., crane) were to exceed 200 feet in height or to exceed the imaginary slope extending from runways as described in 14 CFR 77 (see Section 4.15.2.1, "Federal").

Construction activities on the power lines and at the substation may involve equipment that is over 200 feet in height, triggering FAA notification under 14 CFR 77. 115-kV Segments ASP~~-~~4 and ASP~~-~~5 would be located approximately 1,000 feet of the Skylark Field Airport.

Construction equipment greater than 20 feet tall located approximately 1,000 feet from the Skylark Field Airport runway would overlap with the Skylark Field Airport's imaginary slope; the slope increases an additional vertical foot for every additional 50 horizontal feet from the runway (up to 10,000 feet from the runway). Equipment exceeding this imaginary slope may pose a safety hazard to air traffic, which would be a significant impact. MM TT-5, which would require ~~SCE~~ the applicant to obtain a no hazard determination from the FAA when notification under 14 CFR 77 is required, would be implemented to reduce impacts to less than significant.

Operation and Maintenance

Proposed 115-kV Segments ASP1 though ASP3, ASP6, and ASP7 would be less than 200 feet tall (Table 2-2 in Chapter 2, "Project Description") and would not overlap with Skylark Field Airport's imaginary slope; therefore, notification and consultation with the FAA would not be required for these segments. Impacts from 115-kV Segments ASP1 though ASP3, ASP6, and ASP7 would be less than significant.

115-kV Segments ASP~~-~~4 and ASP~~-~~5 would be located approximately 1,000 ~~(~~feet from the Skylark Field Airport. Poles greater than 20 feet tall located approximately 1,000 feet from the Skylark Field Airport would overlap with the Skylark Field Airport's imaginary slope; the slope increases an additional vertical foot for every additional 50 horizontal feet from the airport (up to 10,000 feet from the runway).

Prior to construction, the applicant would consult with the FAA and ensure the required forms are filed and applicable requirements under Federal Aviation Regulations Part 77, Objects Affecting Navigable Airspace (Project Commitment G) are met. Impacts would still be significant because Project Commitment G does not require that the applicant implement any measures to reduce hazards. MM TT-5 would be implemented to reduce airspace hazards from encroachment of structures. Impacts would be less than significant with mitigation.

Helicopters would be used to inspect transmission and subtransmission lines once per year and would not be expected to impact air traffic. Flights in close proximity to residences or congested areas may result in significant safety impacts. MM TT-4 would require submittal of a Helicopter Lift Plan to the FAA prior to such operations. Impacts would be less than significant with mitigation.

Mitigation Measures

Mitigation Measure TT-4: Helicopter Lift Plan

Mitigation Measure TT-5. FAA No-Hazard Determination.

Impact TT-4 (ASP): Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
LESS THAN SIGNIFICANT WITH MITIGATION

Construction

Access Roads

Most of the access roads constructed to accommodate construction of the ~~proposed project~~Proposed Project would be left in place for maintenance access and are not expected to be accessible to the public. Love Lane would be relocated 130 to 180 feet west of its existing location. The relocated section of road would be paved, 36 feet wide, and extend approximately 250 feet north of Temescal Canyon Road. To the north, the section of relocated road would be unpaved and join the existing, unpaved Love Lane, approximately 400 feet north of the proposed substation access driveway. Construction of the relocated road would take place prior to closing the existing segments. In addition, existing access roads may be improved as necessary to support construction activities. Access roads within the Lake Mathews/Estelle Mountain Reserve would not be improved outside of the existing road prism. The improvement of any existing access roads would not introduce any new design features. Roads would be designed to avoid hazardous features for the safety of operation and maintenance crews, as described in Section 2.4.5.1 "Access Road Construction." The relocated Love Lane design would be approved by Riverside County. Impacts would be less than significant.

Driveway

To provide access to the substation site during substation construction activities, the applicant would construct a new 30-foot-wide driveway off of Temescal Canyon Road to the east of the relocated Love Lane. Additional driveways would be located within the substation site and would be between 30 and 45 feet wide. Safety issues may occur as large, slow trucks enter and exit the substation site into faster traffic on Temescal Canyon Road. In addition, trucks accessing staging areas could result in similar safety issues. This could cause significant hazards impacts. MM TT-1 would require posting warning signs so that motorists can be prepared for slow trucks. Impacts would be less than significant with the implementation of MM TT-1.

Road Damage

Construction of the ~~proposed project~~Proposed Project would require the use of overweight or oversized vehicles for the delivery of construction equipment and materials. Oversized vehicles can shorten the life of the pavement and eventually lead to rutting and cracking. Damage to the roadway would result in a significant impact. MM TT-6 would require that SCE repair private road damage caused directly as a result of ~~project~~Proposed Project vehicle traffic and activities. Public roads would be repaired in accordance with local franchise agreements.

Work in Roadways

Installation of the proposed ~~Alberhill Project~~ 115-kV subtransmission lines would require roadway crossings during installation of the proposed overhead lines and temporary structure installation, cable pulling, and wire stringing activities would occur along roadways as discussed in Section 2.4.4.4. "Traffic Control and Lane Closure." These activities could temporarily cause safety impacts to motorists, bicyclists, and pedestrians. Prior to stringing conductor across roads, the applicant would ensure that safety devices such as traveling grounds, guard structures, and radio-equipped roving, public safety vehicles, and linemen would be in place prior to the initiation of wire-stringing activities. Additionally, as described in Section 2.4.5.6, "Wire Stringing," one or more of the following methods would be employed to protect the public: erection of a highway net and guard structure system to prevent a conductor from falling into traffic; detour of all traffic off a highway at the crossing position; implementation of a controlled continuous traffic break while stringing operations are performed; or strategic placement of special line trucks with extension booms on the highway deck. Depending on the permitting agency, the use of a secondary safety take-out sling at highway crossings may be required. Safety impacts may be significant, depending on how these measures are implemented. Mitigation Measure TT-1 would require development of a Traffic Management and Control Plan prior to commencement of construction activities to reduce potential safety hazards. Impacts would be less than significant with mitigation.

Operation and Maintenance

Proposed Project operation would not require construction of roads or driveways. SCE would adhere to safety precautions if any line stringing is needed for repairs. Some slow trucks may exit from the substation site, but the volume of trucks would be negligible. Heavy truck traffic would be limited such that it would not cause a noticeable acceleration in pavement degradation. Safety impacts would be less than significant.

Mitigation Measures

MM TT-1: Traffic Management and Control Plan.

MM TT-6: Road Damage Repair.

Impact TT-5 (ASP): Result in inadequate emergency access.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction

Relocation of the agricultural water pipeline from beneath the Alberhill Substation site and places where the components of the ~~proposed Alberhill~~Proposed Project span a road or require a lane closure may result in impeded emergency access along those roadways. This would be a significant impact. MM TT-7 would require coordination with local emergency services providers so that the local emergency service providers can anticipate road closures. Impacts would be less than significant with mitigation.

Operation and Maintenance

The ~~project~~Proposed Project would not result in the permanent closure of any roads or lanes and no temporary road or lane closures are planned during operations. Maintenance activities that would occur outside access roads or structure pads or require disturbance of public roadways would be infrequent. However, any such activities would be coordinated with local jurisdictions, and access for emergency vehicles would be maintained as required under MM TT-7. Impacts would be less than significant with mitigation.

Mitigation Measure

MM TT-7: Emergency Service Provider Notification.

Impact TT-6 (ASP): Conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decrease the performance or safety of such facilities.
LESS THAN SIGNIFICANT WITH MITIGATION

Construction

Construction activities and construction traffic would take place on roads that are also used by public transit routes, bicyclists (including on designated bike lanes), and pedestrians. Public transit, pedestrian, and bicycle circulation may temporarily be affected by construction activities, including utility pole installation and wire stringing. Temporary impacts may also occur in or near residential areas where roads that may be used by pedestrians or bicyclists would be temporarily blocked during construction.

Bikeway and trail segments are located adjacent to the proposed Alberhill Substation site and parallel 115-kV Segments ASP1 through ASP5. Access roads and staging areas in proximity to the proposed site for 500-kV Tower SA6 would intersect a regional trail identified in the City of Lake Elsinore General Plan. 115-kV Segment ASP2 would cross a Lake Elsinore Historic Trail; Lake Elsinore Lake, River, Levee Regional Trail; Regional Trail; County Combination Trail; and County Community Trail. 115-kV Segment ASP~~-~~4 would cross Lake Elsinore Lake, River, Levee Regional Trail; County Community Trail, and County Combination Trail. 115-kV Segment ASP~~-~~5 would cross a County Community Trail and County Regional Trail.

Construction activities are not expected to impede pedestrian or bicyclist movement such that no suitable alternative routes would be available. Effects would occur for a relatively short period at any one location as utility structures are installed incrementally along the proposed routes. However, as previously discussed, work near roadways could result in a safety hazard for bicyclists and pedestrians, which is a significant impact. MM TT-1 would require development of a Traffic Management and Control Plan prior to commencement of construction activities to reduce potential safety hazards. Impacts would be less than significant with mitigation.

Several bus routes parallel the proposed 115-kV segments (Table 4.15-1). Staging of equipment during construction may require the temporary closure of existing bus stops along the following roadways:

- Collier Avenue (ASP~~-~~3)
- Casino Drive (ASP~~-~~4)
- Mission Trail (ASP~~-~~4)
- Murrieta Drive (ASP~~-~~7)

Bus stop closure would be a temporary condition and would not conflict with adopted policies, plans, or programs regarding public transit or otherwise substantially decrease the performance or safety of such facilities. Therefore, impacts under this criterion would be less than significant.

Operation and Maintenance

Operational impacts would be negligible because the ~~proposed project~~Proposed Project would not result in the permanent closure of bicycle, pedestrian, or public transit facilities. Inspection activities for the transmission and subtransmission lines would occur on a yearly basis. Routine maintenance activities for the substation and telecommunications system would not be anticipated to require more than a few vehicles and, therefore, would have a less than significant impact during operation of the ~~project~~Proposed Project.

Mitigation Measure

MM TT-1: Traffic Management and Control Plan.

Impact TT-7 (ASP): Result in inadequate parking that would result in a significant impact on the environment.
LESS THAN SIGNIFICANT

Construction

Construction of ~~project~~Proposed Project components would not require on-street parking. On-site vehicle parking for construction workers and construction equipment would be accommodated within staging areas or the ROW for the transmission, subtransmission, distribution, and telecommunications. Installation of the proposed Alberhill Project 115-kV lines would require roadway crossings and wire stringing activities along roadways that may require lane closures that could temporarily limit on-street parking in Riverside County and the City of Lake Elsinore. A minimal number of parking spots would be unavailable at any given time, given that most streets are not extensively used for parking. Impacts would be less than significant.

Stringing of 115-kV Segment ASP4 could result in the temporary closure of the car dealership parking lot on Auto Center Road, and parking lots for businesses located along Malaga Road. Extensive closure of parking lots in a commercial area would not result in a significant impact on the environment. Impacts under this criterion would be less than significant.

Operation and Maintenance

The ~~proposed project~~Proposed Project would not result in any impacts to parking during operation. Construction of the ~~project~~Proposed Project would not result in the permanent removal of any on-street parking spaces. Operation of the ~~proposed project~~Proposed Project would utilize parking at the proposed substation. Maintenance activities that would occur outside access roads or structure pads or that would require disturbance of public roadways would be infrequent and temporary such that parking impacts would be negligible. Impacts under this criterion would be less than significant.

APPENDIX G, TABLE 4 ALBERHILL PROJECT POTENTIAL IMPACTS ON FEDERAL AND STATE JURISDICTIONAL WATERS

This page intentionally left blank

Table 4: Alberhill Project Potential Impacts on Federal and State Jurisdictional Waters

Feature	Location	Feature Type	Habitat Type	USACE Impacts (acres/linear feet)[a, b, d]		RWQCB Impacts (acres/linear feet)[a, b, d]		CDFW Impacts (acres/linear feet)[a, b, d]		Avoidance of jurisdictional features being considered, but contingent upon final engineering
				Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	
115kV Alignment										
ASP-1	Murrieta Road	Other Waters	Unvegetated Channel/Vegetated Swale Feature	-	-	<0.01[c]/~~6~~31	~~0.38/660~~ 0.53/848	<0.01[c]/~~6~~31	~~0.38/666~~ 0.53/848	
ASP-2	Bundy Canyon and Murrieta Road (Laydown Yard ST-4)	Other Waters	Unvegetated Channel/Swale Feature	-	-	-	~~0.04/419~~ 0.01/278	-	-	
ASP-3	Bundy Canyon and Edwards Street	Other Waters	Unvegetated Channel	-	0.01/~~28~~69	-	0.01/~~28~~69	-	0.01/~~28~~69	
		Riparian	Southern Coast Live Oak Woodland	-	-	-	-	-	~~0.10~~0.19	
Feature Impact Subtotal				*-*	*0.01/~~28~~69*	*-*	*0.01/~~28~~69*	*-*	*~~0.01/28~~ 0.20/69*	
ASP-4	Lost Road and Gafford Road	Other Waters	Unvegetated Channel	-	<0.01/~~3~~26	-	<0.01/~~3~~26	-	<0.01/~~3~~26	X
ASP-5	Laydown Yard ST-3	Other Waters	Unvegetated Channel	-	0.01/~~151~~154	-	0.01/~~151~~154	-	0.04/~~151~~154	X
ASP-6	Auto Center Drive	Other Waters	Unvegetated Channel	-	~~<0.01/15~~ 1.02/537	-	~~<0.01/15~~ 1.02/537	-	~~0.12/229~~ 2.21/537	
ASP-7	Camino Del Norte	Other Waters	Unvegetated Channel/Swale Feature	-	-	-	0.04/~~77~~97	-	0.04/~~77~~97	
Substation/500kV Alignment										
ASP-8	R13 Access Road	Wetland	Disturbed Wetland	~~0.01/30~~0.02	~~0.01/5~~-	~~0.01/30~~0.02	~~0.01/5~~-	~~0.02/30~~0.03	~~<0.01/5~~-	
		Riparian	Southern Riparian Woodland	-	-	-	-	~~0.03~~0.04	~~0.08~~-	
		Other Waters	Unvegetated Channel	~~0.02/165~~ 0.03/199	~~0.02/205~~-	~~0.02/165~~ 0.03/199	~~0.02/205~~-	~~0.03/165~~ 0.03/199	~~0.03/205~~-	
Feature Impact Subtotal				*~~0.03/195~~ 0.05/199*	*~~0.03/210~~-*	*~~0.03/195~~ 0.05/199*	*~~0.03/210~~-*	*~~0.08/195~~ 0.10/199*	*~~0.07/210~~-*	
ASP-9	Laydown Yard BP-1	Other Waters	Unvegetated Channel	-	0.28/~~1,007~~ 1,008	-	0.28/~~1,007~~ 1,008	-	~~0.63/1,007~~ 0.62/1,008	X
~~ASP-10~~	~~Between R7 and R8~~	~~Other Waters~~	~~Unvegetated Channel~~	~~-~~	~~0.08/290~~-	~~-~~	~~0.08/290~~	~~-~~	~~0.14/290~~	
ASP-11	At R5	Other Waters	Unvegetated Channel/Swale Feature	-	-	0.06/~~325~~305	~~0.03/157~~ 0.01/60	-	-	
~~ASP-12~~	~~Black Powder Road~~	~~Other Waters~~	~~Culvert~~	~~-~~	~~<0.01/15~~-	~~-~~	~~<0.1/15~~	~~-~~	~~<0.1/15~~	
ASP-13	Substation Pond	Wetlands	Southern Willow Scrub	0.20	-	0.20	-	0.63	-	
		Wetlands	Coastal and Valley Freshwater Marsh	0.08	-	0.08	-	0.08	-	
Feature Impact Subtotal				*0.28*	*-*	*0.28*	*-*	*0.71*	*-*	

Feature	Location	Feature Type	Habitat Type	USACE Impacts (acres/linear feet)[a, b, d]		RWQCB Impacts (acres/linear feet)[a, b, d]		CDFW Impacts (acres/linear feet)[a, b, d]		Avoidance of jurisdictional features being considered, but contingent upon final engineering
				Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	
ASP-14	South of Alberhill Substation	Wetland	Southern Willow Scrub	~~-~~0.01	~~0.09~~0.94	~~-~~0.01	~~0.09~~0.94	~~-~~0.01	~~0.10~~1.03	
		Other Waters	Unvegetated Channel	~~-~~0.01/63	~~0.01/148~~88	~~-~~0.01/63	~~0.01/148~~88	~~-~~0.01/63	0.01/~~148~~88	
Feature Impact Subtotal				~~-~~*0.02/63*	~~*0.01/148*~~ *0.95/88*	-	~~*0.01/148*~~ *0.95/88*	~~-~~*0.02/63*	~~*0.11/148*~~ *1.04/88*	
Grand Total of Impacts on Jurisdictional Waters				~~**0.31/195**~~ **0.34/262**	~~**0.54/1,867**~~ **2.27/1,947**	~~**0.38/526**~~ **0.41/598**	~~**1.03/3,180**~~ **2.86/3,230**	~~**0.80/201**~~ **0.85/325**	~~**1.71/2,824**~~ **4.70/2,892**	

~~Source: SCE 2013, 2014~~

APPENDIX P: REVISED AIR QUALITY AND GHG CALCULATIONS

This page intentionally left blank

INTRODUCTION

This appendix documents the revisions that have been made to the air quality and greenhouse gas (GHG) analysis to incorporate the technical design modification and additional engineering refinements that have been made to the Alberhill System Project (Proposed Project or ASP) since the time of the original ASP (i.e., the project design documented in the Final Environmental Impact Report [FEIR] published in 2017 or Original Project). Appendix M: Revised Project Description provides a detailed description of the changes to the Proposed Project.

This revised air quality and GHG analysis takes the conventional construction method calculations from Appendix B of the FEIR and modifies them to include the:

- Site development changes associated with converting the 500 kV switchrack at the proposed Alberhill Substation from a gas-insulated switchgear design to air-insulated switchgear design;
- More defined use of conventional construction methods for the installation of nine new 500 kV towers;
- More defined use of helicopter construction methods for the installation of three new 500 kV towers;
- Installation of underground 115 kV components along Segments ASP2 and ASP8;
- Addition of substation modifications at Southern California Edison’s existing Valley, Newcomb, Skylark, Ivyglen, Fogarty, and Tenaja Substations; and
- Construction sequence changes.

Additional minor modifications to the assumptions have been made to accommodate refinements to the Proposed Project design and the on- and off-road equipment emission factors have been revised to account for construction starting in 2025.

Revisions to the air quality and GHG calculations have been noted as follows:

- Changes to the modeling inputs have been noted in a purple fill with a purple dashed outline
- New modeling inputs/tables have been noted in an orange fill with an orange dashed outline

Due to the changes to the emission factors and other modeling inputs, changes to the resulting outputs have not been marked in the resulting model output. The anticipated emissions from the following four scenarios have been presented:

- Soil Import Option 1 without Project Commitment J,
- Soil Import Option 1 with Project Commitment J,
- Soil Import Option 2 without Project Commitment J, and
- Soil Import Option 2 with Project Commitment J.

This page intentionally left blank

SOIL IMPORT OPTION 1 WITHOUT PROJECT COMMITMENT J

This page intentionally left blank

AIR QUALITY CALCULATIONS

Construction Emissions
The following emissions were calculated for construction activities:

1. Peak daily criteria pollutant emissions for comparison with the South Coast Air Quality Management District (SCAQMD) mass daily emissions CEQA significance thresholds. The following steps were used to calculate these emissions:

    a. Daily emissions were calculated for each construction phase for each Proposed Project Component.
    These calculations are in Table 7 through Table 50.
    Total daily emissions, including both on-site and off-site sources, are summarized by construction phase in Table 1.

    Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.
    The exhaust emission factors are in Table 53 through Table 55.

    Emission factors for fugitive PM10 and PM2.5 from vehicle travel on paved and unpaved roads were calculated using emission factor equations from AP-42 Sections 13.2.1and 13.2.2.
    These emission factors are in Table 56.

    PM10 and PM2.5 emission factors for earth moving and soil handling were calculated from AP-42 sections and from the SCAQMD CEQA Handbook.
    These emission factors are in Table 57.

    b. The construction phases for each Proposed Project component that could overlap were identified, and daily emissions from overlapping phases were added together. The highest emissions that could occur on a single day during construction of each Proposed Project component were then identified. These emissions are summarized in Table 2.

    c. Since construction of all of the Proposed Project components could occur at the same time, the maximum daily emissions during construction of the components were added together to estimate peak daily construction emissions. However, since substation site demolition and water line relocation activities would be completed prior to the start of any other construction, they were not included in the peak daily emissions calculation. The peak daily construction emissions are in Table 2.

2. Maximum daily on-site emissions during construction of each Proposed Project component for use in a Localized Significance Threshold (LST) analysis using the look-up table in Appendix C to the SCAQMD's Localized Significance Methodology. The following steps were used to calculate these emissions and to conduct the LST analysis.

    a. Daily on-site emissions were calculated for each construction phase for each Proposed Project Component. On-site emissions for substation construction were defined as emissions that would occur on the substation site. On-site emissions for 500 kV transmission line and 115 kV subtransmission line construction were defined as emissions that would occur at a single 500 kV lattice tower or a 115 kV pole

location.
These calculations are in Table 9 through Table 50.
On-site daily emissions by construction phase are summarized in Table 3.

The same emission factors used to calculate total daily emission were used to calculate on-site daily emissions.

b. Since multiple construction phases could occur at the same time at the substation site, daily on-site emissions from overlapping phases were added together to identify maximum on-site daily emissions during substation construction. Maximum daily on-site emissions during telecommunications construction were added to the maximum daily emissions during substation construction, since telecommunications construction will occur at the substation site.
Maximum daily on-site emissions Table 4.

c. Since only one construction phase could occur at a 500 kV transmission line tower location or 115 kV subtransmission line pole location, emissions from overlapping phases were not added together to calculate maximum daily on-site emissions. Maximum daily on-site emissions during 500 kV transmission line and 115 kV subtransmission line construction are in Table 4.

d. Distances to the closest receptors were determined for the LST analysis. For the substation site, the distance to the closest commercial receptor was used for analyses for CO and NO2, since the air quality thresholds are for short-term averaging periods. The distance to the closest residential receptor was used for the PM10 and PM2.5 analyses, since the air quality thresholds are for 24-hour averaging periods, and an individual would probably not be located at a commercial location for 24 hours.
The closest receptor to a 500 kV transmission tower location is a residence.
A distance of 25 meters was assumed for the receptor distance for the analysis for 115 kV subtransmission line construction.

e. The look-up table values for the Lake Elsinore source/receptor area were were used for the LST analyses.

f. The maximum construction area in the look-up tables of 5 acres was used for the LST analysis for the substation site, and the minimum area of 1 acre was used for the 500 kV transmission line tower and 115 kV subtransmission line pole analyses.

g. The maximum allowable daily on-site emissions for the analyses for the substation and 500 kV transmission line towers were calculated using linear interpolation with receptor distance of the emissions in the look-up tables to calculate allowable emissions for the actual receptor distances. Interpolation was not used for the LST analyses for the 115 kV subtransmission line analyses, since the receptor distance was assumed to be 25 meters. The LST analyses are in Table 5.

3. Total greenhouse gas (GHG) emissions during construction. The following steps were used to calculate these emissions:

a. Total GHG emissions were calculated for each construction phase for Each Proposed Project Component.
These calculations are in Table 9 through Table 50.
Total GHG emissions, including both on-site and off-site sources, are summarized by construction phase in Table 6.

Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.
The exhaust emission factors are in Table 53 through Table 55.

b. Total GHG emissions during each construction phase were added together to calculate total GHG emissions during construction.
These emissions are summarized in Table 6.

Operational Emissions
The following emissions were calculated for operational activities:

1. Peak daily criteria pollutant emissions for comparison with the South Coast Air Quality Management District (SCAQMD) mass daily emissions CEQA significance thresholds. The following steps were used to calculate these emissions:

    a. Daily emissions were calculated for each operational activity, including 500 kV transmission line inspections, 115 kV subtransmission line inspections and visits to the substation site.
    These calculations are in Table 52.

    Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.
    The exhaust emission factors are in Table 53 through Table 55.

    Emission factors for fugitive PM10 and PM2.5 from vehicle travel on paved and unpaved roads were calculated using emission factor equations from AP-42 Sections 13.2.1and 13.2.2.
    These emission factors are in Table 56.

    b. It was conservatively assumed that the transmission line inspections would both occur on the same day as a visit to the substation site, and daily emissions from these three activities were added together to peak daily operational emissions.
    These emissions are in Table 52.

2. Annual greenhouse gas (GHG) emissions during operation. The following steps were used to calculate these emissions:

    a. Annual emissions were calculated for each operational activity, including 500 kV transmission line inspections, 115 kV subtransmission line inspections and visits to the substation site.
    These calculations are in Table 52.

    Emission factors for off-road construction equipment and motor vehicle exhaust are from the SCAQMD CEQA Handbook webpage for calendar year 2025.

AIR QUALITY CALCULATIONS

The exhaust emission factors are in Table 53 through Table 55.

b. Annual emissions from leakage of sulfur hexafluoride (SF6) from gas-insulated switch gear (GIS) were calculated by multiplying the total amount of SF6 in new GIS by the estimated annual leakage rate. The annual SF6 leakage rate was then multiplied by the SF6 global warming potential to calculate annual CO2-equivalent emissions from SF6 leakage. These calculations are in Table 52.

c. Annual GHG emissions from the operational activities and from SF6 leakage were added together to calculate Annual operational GHG emissions.
These emissions are summarized in Table 52.

Table 1
Construction Emissions Summary
Total Daily Criteria Pollutant Emissions by Construction Phase

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Substation Site Demolition	3.42	23.90	30.16	0.12	25.15	3.40
Substation Site Water Line Relocation	0.65	6.60	2.80	0.01	39.81	4.08
Substation Construction						
Survey	0.11	0.86	0.07	0.00	12.58	1.25
Grading	8.99	55.86	53.28	0.21	281.43	33.56
Fencing	0.42	4.32	1.30	0.01	35.20	3.52
Civil	2.90	31.01	20.07	0.10	49.97	5.53
Control Building	0.17	1.32	0.20	0.00	32.50	3.24
Electrical	1.26	12.43	6.41	0.03	38.15	4.00
Wiring	0.28	2.25	0.63	0.01	25.18	2.52
Transformers	0.66	6.27	2.25	0.01	46.81	4.74
Maintenance Crew Equipment Check	0.12	0.94	0.19	0.00	34.00	3.40
Testing	0.11	0.87	0.07	0.00	18.77	1.87
Asphalting	2.41	11.86	12.23	0.05	51.66	5.51
Landscaping	1.72	11.07	15.40	0.07	43.25	4.68
500 kV Transmission Line Construction						
Survey	0.11	0.89	0.08	0.00	20.45	2.04
Marshalling Yard	0.63	4.65	2.81	0.02	31.55	3.22
Roads and Landing Work	2.37	19.00	10.34	0.05	54.71	6.83
Install Helicopter Platforms	0.16	1.23	0.10	0.00	0.32	0.02
Tower Removal	1.02	6.57	4.56	0.02	105.34	10.67
Foundation Removal	0.61	6.89	2.73	0.01	49.41	5.03
Tower Foundations Installation	2.01	15.93	6.66	0.06	107.57	10.97
Install Micropile Foundations	0.16	1.23	0.10	0.00	0.32	0.02
Tower Steel Haul	0.31	3.62	0.90	0.01	55.51	5.57
Tower Steel Assembly	0.98	8.03	3.96	0.02	33.29	3.44
Tower Erection	1.46	8.84	6.22	0.03	83.50	8.52
Tower Erection (Helicopter) Ground Support	0.82	6.98	2.35	0.02	94.04	9.44
Tower Helicopter Operations	46.71	56.80	577.42	32.18	12.02	12.02
Wire Stringing	20.27	61.08	38.52	1.51	383.75	39.37
Restoration	1.08	8.31	4.75	0.03	47.70	5.20
115 kV Subtransmission Line Construction						
Survey	0.12	0.96	0.08	0.00	0.25	0.02
Marshalling Yard	0.36	3.35	1.16	0.01	23.35	2.36
Roads and Landing Work	1.79	14.07	8.05	0.04	6.40	1.31
Guard Structure Installation	1.61	10.08	7.33	0.05	0.69	0.27
Remove Existing Wood H-Frames and Poles	1.07	7.58	4.97	0.02	0.60	0.20
Remove Existing Tubular Steel/Light Weight Steel Poles	0.98	5.99	4.23	0.02	0.69	0.18
Install Tubular Steel Pole Foundations	1.41	11.32	5.50	0.05	2.83	0.44
Steel Pole Haul	0.70	3.43	3.10	0.02	0.41	0.12
Steel Pole Assembly	0.98	5.99	4.23	0.02	0.69	0.18
Steel Pole Erection	0.98	5.99	4.23	0.02	0.69	0.18
Wire Stringing	5.07	29.37	24.43	0.15	2.08	0.80
Vault Installation	2.63	17.58	10.62	0.07	2.43	0.60
Duct Bank Installation	1.39	13.75	6.11	0.04	2.84	0.59
Install Underground Cable	3.51	19.09	13.63	0.09	1.50	0.50
Guard Structure Removal	1.50	9.66	7.71	0.04	0.69	0.29
Restoration	1.22	9.85	5.55	0.03	7.12	0.88
Telecommunications Construction						
Tower Foundation	0.71	8.05	4.31	0.02	0.93	0.25
Tower Construction	0.99	5.82	4.82	0.02	0.45	0.18
Dish Installation	0.27	2.81	1.45	0.01	0.30	0.07
Control Building	0.54	3.56	3.15	0.02	0.23	0.09
Overhead Communications Installation	0.60	3.97	3.18	0.02	0.33	0.10
Substation Telecommunications Equipment Installation	0.08	0.62	0.05	0.00	0.16	0.01
Santiago Peak Communication Site	0.45	2.87	1.50	0.01	35.67	3.60
Additional Substation Construction						

Table 1
Construction Emissions Summary
Total Daily Criteria Pollutant Emissions by Construction Phase

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Civil	1.16	12.41	6.30	0.03	11.38	1.32
Electrical	1.41	13.32	7.68	0.03	0.84	0.31
Wiring	0.44	3.97	1.56	0.01	0.59	0.09
Testing	0.11	0.83	0.07	0.00	0.22	0.02
Civil - Demo	0.58	5.75	3.19	0.02	11.35	1.22

Table 2
Construction Emissions Summary
Total Daily Criteria Pollutant Emissions for Overlapping Construction Phases

Group[a]	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Substation Construction						
Survey	0.11	0.86	0.07	0.00	12.58	1.25
Grading	8.99	55.86	53.28	0.21	281.43	33.56
Fencing, Control Building, Electrical, Wiring, Transformers, Maintenance Crew Equipment Check, Testing, Asphalting	5.43	40.28	23.30	0.12	282.27	28.80
Civil	2.90	31.01	20.07	0.10	49.97	5.53
Landscaping	1.72	11.07	15.40	0.07	43.25	4.68
Maximum	**8.99**	**55.86**	**53.28**	**0.21**	**282.27**	**33.56**
500 kV Transmission Line Construction						
Survey	0.11	0.89	0.08	0.00	20.45	2.04
Marshalling Yard, Road and Landing Work, Install Helicopter Platforms	3.15	24.89	13.25	0.07	86.59	10.07
Marshalling Yard, Tower Removal, Tower Foundations Installation, Install Micropile Foundations, Tower Steel Haul, Tower Steel Assembly, Tower Erection, Tower Erection (Helicopter) Ground Support, Tower Helicopter Operations	54.09	112.65	604.98	32.37	523.14	63.88
Marshalling Yard, Foundation Removal	1.24	11.55	5.54	0.03	80.96	8.26
Marshalling Yard, Wire Stringing	20.89	65.73	41.33	1.52	415.30	42.59
Restoration	1.08	8.31	4.75	0.03	47.70	5.20
Maximum	**54.09**	**112.65**	**604.98**	**32.37**	**523.14**	**63.88**
115 kV Subtransmission Line Construction						
Survey	0.12	0.96	0.08	0.00	0.25	0.02
Marshalling Yard, Roads and Landing Work, Guard Structure Installation, Remove Existing Wood H-Frames and Poles, Remove Existing Tubular Steel/Light Weight Steel Poles, Install Tubular Steel Pole Foundations, Steel Pole Haul, Steel Pole Assembly, Steel Pole Erection, Wire Stringing, Guard Structure Removal, Vault Installation, Duct Bank Installation, Install Underground Cable	23.99	157.27	105.30	0.64	45.89	8.02
Restoration	1.22	9.85	5.55	0.03	7.12	0.88
Maximum	**23.99**	**157.27**	**105.30**	**0.64**	**45.89**	**8.02**
Telecommunications Construction						
Tower Foundation	0.71	8.05	4.31	0.02	0.93	0.25
Tower Construction	0.99	5.82	4.82	0.02	0.45	0.18
Dish Installation, Control Building, Overhead Communications Installation, Substation Telecommunications Equipment Installation	1.49	10.96	7.83	0.05	1.02	0.28
Santiago Peak Communication Site	0.45	2.87	1.50	0.01	35.67	3.60
Maximum	**1.49**	**10.96**	**7.83**	**0.05**	**35.67**	**3.60**
Additional Substation Construction						
Civil, Electrical, Wiring, Testing, Civil - Demo	3.68	36.28	18.80	0.09	24.38	2.95
Maximum	**3.68**	**36.28**	**18.80**	**0.09**	**24.38**	**2.95**
PEAK DAILY[b]	**92.24**	**373.02**	**790.18**	**33.35**	**911.34**	**112.01**

[a] The construction phases within a group could all occur at the same time.
[b] Peak daily emissions are the sum of the maximum daily emissions during construction of the substation, the 500 kV transmission lines, the 115 kV subtransmission lines, the telecommunications facilities, and additional substation construction.

Table 3
Construction Emissions Summary
Onsite Daily Criteria Pollutant Emissions by Construction Phase

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Substation Site Demolition	1.39	12.73	7.70	0.02	21.85	2.51
Substation Site Water Line Relocation	0.47	5.16	2.68	0.01	39.43	4.05
Substation Construction						
Survey	0.00	0.03	0.00	0.00	12.37	1.24
Grading	7.77	48.63	41.91	0.15	279.35	33.09
Fencing	0.16	2.27	1.13	0.00	34.66	3.48
Civil	1.69	23.53	10.30	0.04	48.67	5.11
Control Building	0.01	0.09	0.09	0.00	32.18	3.22
Electrical	0.87	9.35	6.16	0.02	37.35	3.94
Wiring	0.08	0.61	0.49	0.00	24.75	2.49
Transformers	0.40	4.21	2.08	0.01	46.27	4.70
Maintenance Crew Equipment Check	0.02	0.12	0.12	0.00	33.79	3.38
Testing	0.01	0.05	0.00	0.00	18.55	1.86
Asphalting	1.52	6.44	4.79	0.01	50.12	5.19
Landscaping	0.30	2.81	1.80	0.00	40.86	4.12
500 kV Transmission Line Construction						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.43	3.24	1.93	0.01	31.20	3.18
Roads and Landing Work	2.09	16.82	9.96	0.05	9.63	2.33
Install Helicopter Platforms	1.15	15.80	7.68	0.03	1.62	0.51
Tower Removal	0.75	4.54	3.93	0.02	0.16	0.15
Foundation Removal	0.48	5.92	2.51	0.01	0.11	0.10
Tower Foundations Installation	2.01	15.93	6.66	0.06	107.57	10.97
Install Micropile Foundations	1.15	15.80	7.68	0.03	0.24	0.22
Tower Steel Haul	0.18	2.65	0.59	0.01	0.02	0.02
Tower Steel Assembly	0.70	5.79	3.60	0.02	0.14	0.13
Tower Erection	1.07	5.93	5.55	0.02	0.21	0.20
Tower Erection (Helicopter) Ground Support	0.00	0.00	0.00	0.00	0.00	0.00
Tower Helicopter Operations	0.00	0.00	0.00	0.00	0.00	0.00
Wire Stringing	5.93	32.28	29.00	0.15	1.00	0.92
Restoration	0.87	6.75	4.42	0.02	2.77	0.71
115 kV Subtransmission Line Construction						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.26	2.53	1.09	0.01	23.13	2.35
Roads and Landing Work	1.60	12.73	7.50	0.04	6.06	1.27
Guard Structure Installation	1.35	8.18	6.39	0.04	0.23	0.22
Remove Existing Wood H-Frames and Poles	0.84	5.86	4.22	0.02	0.17	0.16
Remove Existing Tubular Steel/Light Weight Steel Poles	0.66	3.63	3.35	0.01	0.13	0.12
Install Tubular Steel Pole Foundations	1.11	9.18	4.07	0.03	2.34	0.37
Steel Pole Haul	0.51	2.12	2.39	0.01	0.09	0.08
Steel Pole Assembly	0.66	3.63	3.35	0.01	0.13	0.12
Steel Pole Erection	0.66	3.63	3.35	0.01	0.13	0.12
Wire Stringing	4.34	23.98	22.32	0.13	0.72	0.66
Vault Installation	1.92	12.58	7.81	0.05	1.09	0.43
Duct Bank Installation	0.71	8.86	3.54	0.02	1.53	0.43
Install Underground Cable	2.99	15.06	12.75	0.08	0.44	0.40
Guard Structure Removal	1.27	7.94	6.96	0.03	0.27	0.25
Restoration	0.96	7.93	4.78	0.02	6.64	0.83
Telecommunications Construction						
Tower Foundation	0.53	6.74	3.59	0.01	0.61	0.21
Tower Construction	0.83	4.64	4.38	0.02	0.17	0.15
Dish Installation	0.14	1.81	1.20	0.00	0.05	0.05
Control Building	0.46	2.97	2.93	0.02	0.09	0.08
Overhead Communications Installation	0.46	2.97	2.93	0.02	0.09	0.08
Substation Telecommunications Equipment Installation	0.00	0.00	0.00	0.00	0.00	0.00
Santiago Peak Communication Site	0.35	2.05	1.43	0.01	35.45	3.58
Additional Substation Construction						

Table 3
Construction Emissions Summary
Onsite Daily Criteria Pollutant Emissions by Construction Phase

Phase	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Civil	0.78	9.93	3.94	0.02	10.89	1.20
Electrical	1.15	11.27	7.51	0.02	0.30	0.27
Wiring	0.17	1.92	1.39	0.00	0.06	0.05
Testing	0.00	0.00	0.00	0.00	0.00	0.00
Civil - Demo	0.30	3.79	1.95	0.01	10.92	1.15

Table 4
Construction Emissions Summary
Total Daily Onsite Criteria Pollutant Emissions for Overlapping Construction Phases

Group[a]	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Substation Site Demolition	1.39	12.73	7.70	0.02	21.85	2.51
Substation Site Water Line Relocation	0.47	5.16	2.68	0.01	39.43	4.05
Substation and Telecommunications Construction						
Survey	0.00	0.03	0.00	0.00	12.37	1.24
Grading	7.77	48.63	41.91	0.15	279.35	33.09
Fencing, Control Building, Electrical, Wiring, Transformers, Maintenance Crew Equipment Check, Testing, Asphalting	3.05	23.14	14.86	0.04	277.65	28.26
Civil	1.69	23.53	10.30	0.04	48.67	5.11
Landscaping	0.30	2.81	1.80	0.00	40.86	4.12
Maximum Substation Construction	**7.77**	**48.63**	**41.91**	**0.15**	**279.35**	**33.09**
Maxim Substation plus Telecommunications	**8.60**	**55.37**	**46.29**	**0.17**	**314.81**	**36.67**
500 kV Transmission Line Construction						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.43	3.24	1.93	0.01	31.20	3.18
Roads and Landing Work	2.09	16.82	9.96	0.05	9.63	2.33
Install Helicopter Platforms	1.15	15.80	7.68	0.03	1.62	0.51
Tower Removal	0.75	4.54	3.93	0.02	0.16	0.15
Foundation Removal	0.48	5.92	2.51	0.01	0.11	0.10
Tower Foundations Installation	2.01	15.93	6.66	0.06	107.57	10.97
Install Micropile Foundations	1.15	15.80	7.68	0.03	0.24	0.22
Tower Steel Haul	0.18	2.65	0.59	0.01	0.02	0.02
Tower Steel Assembly	0.70	5.79	3.60	0.02	0.14	0.13
Tower Erection	1.07	5.93	5.55	0.02	0.21	0.20
Tower Erection (Helicopter) Ground Support	0.00	0.00	0.00	0.00	0.00	0.00
Tower Helicopter Operations	0.00	0.00	0.00	0.00	0.00	0.00
Wire Stringing	5.93	32.28	29.00	0.15	1.00	0.92
Restoration	0.87	6.75	4.42	0.02	2.77	0.71
Maximum	**5.93**	**32.28**	**29.00**	**0.15**	**107.57**	**10.97**
115 kV Subtransmission Line Construction						
Survey	0.00	0.00	0.00	0.00	0.00	0.00
Marshalling Yard	0.26	2.53	1.09	0.01	23.13	2.35
Roads and Landing Work	1.60	12.73	7.50	0.04	6.06	1.27
Guard Structure Installation	1.35	8.18	6.39	0.04	0.23	0.22
Remove Existing Wood H-Frames and Poles	0.84	5.86	4.22	0.02	0.17	0.16
Remove Existing Tubular Steel/Light Weight Steel Poles	0.66	3.63	3.35	0.01	0.13	0.12
Install Tubular Steel Pole Foundations	1.11	9.18	4.07	0.03	2.34	0.37
Steel Pole Haul	0.51	2.12	2.39	0.01	0.09	0.08
Steel Pole Assembly	0.66	3.63	3.35	0.01	0.13	0.12
Steel Pole Erection	0.66	3.63	3.35	0.01	0.13	0.12
Wire Stringing	4.34	23.98	22.32	0.13	0.72	0.66
Vault Installation	1.92	12.58	7.81	0.05	1.09	0.43
Duct Bank Installation	0.71	8.86	3.54	0.02	1.53	0.43
Install Underground Cable	2.99	15.06	12.75	0.08	0.44	0.40
Guard Structure Removal	1.27	7.94	6.96	0.03	0.27	0.25
Restoration	0.96	7.93	4.78	0.02	6.64	0.83
Maximum	**4.34**	**23.98**	**22.32**	**0.13**	**23.13**	**2.35**
Telecommunications Construction						
Tower Foundation	0.53	6.74	3.59	0.01	0.61	0.21
Tower Construction	0.83	4.64	4.38	0.02	0.17	0.15
Dish Installation	0.14	1.81	1.20	0.00	0.05	0.05
Control Building	0.46	2.97	2.93	0.02	0.09	0.08
Overhead Communications Installation	0.46	2.97	2.93	0.02	0.09	0.08
Substation Telecommunications Equipment Installation	0.00	0.00	0.00	0.00	0.00	0.00
Santiago Peak Communication Site	0.35	2.05	1.43	0.01	35.45	3.58
Maximum	**0.83**	**6.74**	**4.38**	**0.02**	**35.45**	**3.58**
Additional Substation Construction						

Table 4
Construction Emissions Summary
Total Daily Onsite Criteria Pollutant Emissions for Overlapping Construction Phases

Group[a]	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)
Civil	0.78	9.93	3.94	0.02	10.89	1.20
Electrical	1.15	11.27	7.51	0.02	0.30	0.27
Wiring	0.17	1.92	1.39	0.00	0.06	0.05
Testing	0.00	0.00	0.00	0.00	0.00	0.00
Civil - Demo	0.30	3.79	1.95	0.01	10.92	1.15
Maximum	**1.15**	**11.27**	**7.51**	**0.02**	**10.92**	**1.20**

[a] The construction phases within a group could all occur at the same time at the same location.

The following 115 kV Subtransmission Line construction activity emissions were divided by the following number of locations:

Roads and Landing Work: 6 structure pads per day
Guard Structure Installation: 4 structures per day
Remove Existing H-Frames and Poles: 15 poles per day
Remove Existing Tubular Steel/Light Weight Steel Poles: 2 poles per day
Steel Pole Assembly: 2 poles per day
Steel Pole Erection: 2 poles per day
Guard Structure Removal: 6 structures per day
Restoration: 6 structure pads per day

Table 5
Construction Emissions
Localized Significance Threshold Analysis

Pollutant	Maximum Daily Onsite Emissions	Receptor Distance (m)	Allowable Emissions Interpolation[a]					
			Distance 1 (m)	Emissions 1 (lb/day)	Distance 2 (m)	Emissions 2 (lb/day)	Interpolated Emissions (lb/day)[b]	Allowable Exceeded?
Demolition[c,d]								
CO	13	270	200	7,535	500	25,792	11,795	No
NOx	8	270	200	672	500	1,072	765	No
PM10	22	420	200	96	500	207	177	No
PM2.5	3	420	200	31	500	105	85	No
Water Line Relocation[c,e]								
CO	5	270	200	4,850	500	21,040	8,628	No
NOx	3	270	200	460	500	896	562	No
PM10	39	420	200	67	500	178	148	No
PM2.5	4	420	200	20	500	86	68	No
Substation and Telecommunications Construction[c]								
CO	55	270	200	7,535	500	25,792	11,795	No
NOx	46	270	200	672	500	1,072	765	No
PM10	315	420	200	96	500	207	177	Yes
PM2.5	37	420	200	31	500	105	85	No
500 kV Transmission Line Construction[f]								
CO	32	93	50	974	100	1,918	1,786	No
NOx	29	93	50	203	100	292	280	No
PM10	108	93	50	12	100	30	27	Yes
PM2.5	11	93	50	4	100	8	7	Yes
115 kV Subtransmission Line Construction[g]								
CO	24	25	25	661	25	661	661	No
NOx	22	25	25	162	25	162	162	No
PM10	23	25	25	13	25	13	13	Yes
PM2.5	2	25	25	3	25	3	3	No

[a] Allowable emissions are from Appendix C to Final Localized Significance Methodology, SCAQMD, revised July 2008, downloaded from http://www.aqmd.gov/ceqa/handbook/LST/LST.html

[b] Interpolated emissions = Emissions 1 + (Receptor distance - Distance 1) x (Emissions 2 - Emissions 1) / (Distance 2 - Distance 1)

[c] CO and NOx receptor distances are closest commercial receptor; PM10 and PM2.5 are closest residential receptor. Allowable emissions are for a 5 acre site.

[d] Allowable emissions are for a 5 acre site.

[e] Allowable emissions are for a 1 acre site.

[f] Closest receptor to a transmission tower base is a residence at approximately 93 meters. Allowable emissions are for a 1 acre site.

[g] Allowable emissions for CO, NOx and PM2.5 are for a 1-acre site to represent construction at a pole location. Maximum PM10 emissions occur at the marshalling yard, so allowable emissions are for a 5-acre site

Table 6
Construction Emissions Summary
Total Greenhouse Gas Emissions by Construction Phase

Phase	CO2e (MT)
Substation Site Demolition	283.31
Substation Site Water Line Relocation	11.84
Substation Construction	
Survey	1.89
Grading	557.62
Fencing	7.31
Civil	375.00
Control Building	4.02
Electrical	346.90
Wiring	71.94
Transformers	57.20
Maintenance Crew Equipment Check	8.83
Testing	25.71
Asphalting	66.81
Landscaping	144.94
500 kV Transmission Line Construction	
Survey	0.52
Marshalling Yard	87.79
Roads and Landing Work	53.15
Install Helicopter Platforms	32.89
Tower Removal	4.03
Foundation Removal	1.46
Tower Foundations Installation	63.63
Install Micropile Foundations	122.15
Tower Steel Haul	3.76
Tower Steel Assembly	38.82
Tower Erection	32.96
Tower Erection (Helicopter) Ground Support	6.40
Tower Helicopter Operations	1,626.43
Wire Stringing	18.53
Restoration	4.27
115 kV Subtransmission Line Construction	
Survey	2.54
Marshalling Yard	145.31
Roads and Landing Work	128.76
Guard Structure Installation	52.96
Remove Existing Wood H-Frames and Poles	24.84
Remove Existing Tubular Steel/Light Weight Steel Poles	4.98
Install Tubular Steel Pole Foundations	159.88
Steel Pole Haul	95.64
Steel Pole Assembly	254.01
Steel Pole Erection	254.01
Wire Stringing	541.72
Vault Installation	15.31
Duct Bank Installation	17.61
Install Underground Cable	94.21
Guard Structure Removal	29.04
Restoration	22.66
Telecommunications Construction	
Tower Foundation	3.69

Table 6
Construction Emissions Summary
Total Greenhouse Gas Emissions by Construction Phase

Phase	CO2e (MT)
Tower Construction	29.76
Dish Installation	2.99
Control Building	21.81
Overhead Communications Installation	28.92
Substation Telecommunications Equipment Installation	0.91
Santiago Peak Communication Site	18.85
Additional Substation Construction	
Civil	11.89
Electrical	24.70
Wiring	12.80
Testing	2.43
Civil - Demo	6.67
Total	**6,069.00**

Table 7
Substation Site Demolition Emissions

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.39	12.69	7.61	0.02	0.39	0.36	47.9
Onsite Motor Vehicle Exhaust	0.01	0.04	0.09	0.00	0.00	0.00	1.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	21.45	2.14	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**1.39**	**12.73**	**7.70**	**0.02**	**21.85**	**2.51**	**48.9**
Offsite Motor Vehicle Exhaust	2.03	11.17	22.45	0.10	1.19	0.89	234.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	2.11	0.00	
Offsite Total	**2.03**	**11.17**	**22.45**	**0.10**	**3.30**	**0.89**	**234.4**
Total	**3.42**	**23.90**	**30.16**	**0.12**	**25.15**	**3.40**	**283.3**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Track Loader	148	2	50	8
Bobcat	75	1	50	4

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Track Loader	148	0.082	0.727	0.445	0.001	0.024	0.022	121.188	0.007	Crawler Tractors
Bobcat	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Track Loader	1.32	11.62	7.11	0.02	0.39	0.35
Bobcat	0.07	1.07	0.50	0.00	0.01	0.01
Total	**1.39**	**12.69**	**7.61**	**0.02**	**0.39**	**0.36**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Track Loader	44.0	0.0	44.0
Bobcat	3.9	0.0	3.9
Total	**47.9**	**0.0**	**47.9**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number[b]	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Water Truck	1	50	4	10
Offsite				
Dump Truck	40	50	N/A	60
Worker Commute	4	50	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed
[b] Dump trucks based on 20,000 CY hauled offsite over 50 days and 10 CY/truck = 20,000 / 50 / 10 = 40

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Offsite									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 7
Substation Site Demolition Emissions

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Water Truck	0.01	0.04	0.09	0.00	0.00	0.00
Onsite Total	**0.01**	**0.04**	**0.09**	**0.00**	**0.00**	**0.00**
Offsite						
Dump Truck	1.92	10.35	22.38	0.10	1.16	0.87
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**2.03**	**11.17**	**22.45**	**0.10**	**1.19**	**0.89**
Total	**2.04**	**11.21**	**22.54**	**0.10**	**1.19**	**0.89**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Water Truck	1.0	0.0	1.0
Onsite Total	**1.0**	**0.0**	**1.0**
Offsite			
Dump Truck	228.3	0.0	228.4
Worker Commute	6.0	0.0	6.1
Offsite Total	**234.4**	**0.0**	**234.4**
Total	**235.3**	**0.0**	**235.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
Water Truck	1	Unpaved	10	2.145	0.214	21.45	2.14
Onsite Total						**21.45**	**2.14**
Offsite							
Dump Truck	40	Paved	60	0.001	0.000	1.92	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**2.11**	**0.00**
Total						**23.56**	**2.14**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling[c]	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion[d]	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 8
Substation Site Water Line Relocation Emissions

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.46	5.08	2.56	0.01	0.10	0.10	7.4
Onsite Motor Vehicle Exhaust	0.01	0.09	0.12	0.00	0.01	0.01	0.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	39.18	3.92	
Earthwork Fugitive PM	--	--	--	--	0.15	0.03	
Onsite Total	**0.47**	**5.16**	**2.68**	**0.01**	**39.43**	**4.05**	**7.6**
Offsite Motor Vehicle Exhaust	0.18	1.44	0.12	0.00	0.04	0.03	4.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.34	0.00	
Offsite Total	**0.18**	**1.44**	**0.12**	**0.00**	**0.38**	**0.03**	**4.2**
Total	**0.65**	**6.60**	**2.80**	**0.01**	**39.81**	**4.08**	**11.8**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Backhoe	79	1	20	8
Crane	125	1	20	5

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Crane	0.23	2.37	1.15	0.00	0.06	0.06
Total	**0.46**	**5.08**	**2.56**	**0.01**	**0.10**	**0.10**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Backhoe	3.8	0.0	3.8
Crane	3.6	0.0	3.6
Total	**7.4**	**0.0**	**7.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number[b]	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Flatbed Truck	1	20	1	2.5
Stakebed Truck	2	20	2	5
Crew Vehicle	2	20	2	5
Offsite				
Worker Commute	7	20	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Flatbed Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Stakebed Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Crew Vehicle	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Highest (Most Conservative) EMFAC2007 (version 2.3) or Highest (Most Conservative) EMFAC2007 (version 2.3)

Table 8
Substation Site Water Line Relocation Emissions

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Flatbed Truck	0.00	0.01	0.02	0.00	0.00	0.00
Stakebed Truck	0.01	0.04	0.09	0.00	0.00	0.00
Crew Vehicle	0.00	0.03	0.00	0.00	0.00	0.00
Onsite Total	**0.01**	**0.09**	**0.12**	**0.00**	**0.01**	**0.01**
Offsite						
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
Offsite Total	**0.18**	**1.44**	**0.12**	**0.00**	**0.04**	**0.03**
Total	**0.20**	**1.53**	**0.24**	**0.01**	**0.05**	**0.03**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Flatbed Truck	0.1	0.0	0.1
Crew Vehicle	0.1	0.0	0.1
Onsite Total	**0.2**	**0.0**	**0.2**
Offsite			
Worker Commute	4.2	0.0	4.2
Offsite Total	**4.2**	**0.0**	**4.2**
Total	**4.4**	**0.0**	**4.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
Flatbed Truck	1	Unpaved	2.5	2.145	0.214	5.36	0.54
Stakebed Truck	2	Unpaved	5	2.145	0.214	21.45	2.14
Crew Vehicle	2	Unpaved	5	1.237	0.124	12.37	1.24
Onsite Total						**39.18**	**3.92**
Offsite							
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
Offsite Total						**0.34**	**0.00**
Total						**39.51**	**3.92**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling[c]	CY/day	147	9.94E-04	2.07E-04	0.15	0.03
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.15**	**0.03**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
[c] Based on trench 4 ft. wide x 6 ft. deep x 1,700 ft. long over 20 days x 2 = 4 ft. x 6 ft. x 1,770 ft. / 27 cu. ft. per CY / 20 days = 151 CY/day 7

Table 9
Substation Construction Emissions
Survey

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.03	0.00	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	12.37	1.24	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.00**	**0.03**	**0.00**	**0.00**	**12.37**	**1.24**	**0.1**
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	1.8
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
Offsite Total	**0.10**	**0.82**	**0.07**	**0.00**	**0.22**	**0.02**	**1.8**
Total	**0.11**	**0.86**	**0.07**	**0.00**	**12.58**	**1.25**	**1.9**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
None				

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
None	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
None	0.0	0.0	0.0
Total	**0.0**	**0.0**	**0.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Crew Vehicle	2	15	2	5
Offsite				
Worker Commute	4	15	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Crew Vehicle	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 9
Substation Construction Emissions
Survey

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Crew Vehicle	0.00	0.03	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.10**	**0.82**	**0.07**	**0.00**	**0.02**	**0.02**
Total	**0.11**	**0.86**	**0.07**	**0.00**	**0.02**	**0.02**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Crew Vehicle	0.1	0.0	0.1
Onsite Total	**0.1**	**0.0**	**0.1**
Offsite			
Worker Commute	1.8	0.0	1.8
Offsite Total	**1.8**	**0.0**	**1.8**
Total	**1.9**	**0.0**	**1.9**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
Crew Vehicle	2	Unpaved	5	1.237	0.124	12.37	1.24
Onsite Total						**12.37**	**1.24**
Offsite							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**0.19**	**0.00**
Total						**12.56**	**1.24**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 10
Substation Construction Emissions
Grading

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	7.68	48.05	41.39	0.15	1.61	1.48	393.3
Onsite Motor Vehicle Exhaust	0.09	0.59	0.52	0.00	0.04	0.03	9.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	242.44	24.24	
Earthwork Fugitive PM	--	--	--	--	35.26	7.33	
Onsite Total	**7.77**	**48.63**	**41.91**	**0.15**	**279.35**	**33.09**	**402.4**
Offsite Motor Vehicle Exhaust	1.22	7.23	11.36	0.05	0.64	0.47	155.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.44	0.00	
Offsite Total	**1.22**	**7.23**	**11.36**	**0.05**	**2.08**	**0.47**	**155.2**
Total	**8.99**	**55.86**	**53.28**	**0.21**	**281.43**	**33.56**	**557.6**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Dozer	305	2	60	7
Loader	147	3	60	4
Scraper	267	3	60	7
Grader	110	1	60	7
4x4 Backhoe	79	2	60	7
4x4 Tamper	174	1	60	7
Excavator	152	1	60	7

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Dozer	305	0.139	0.588	0.753	0.003	0.028	0.026	259.229	0.013	Crawler Tractors
Loader	147	0.055	0.620	0.259	0.001	0.013	0.012	106.315	0.005	Rubber Tired Loaders
Scraper	267	0.176	0.733	0.973	0.003	0.036	0.034	321.428	0.016	Scrapers
Grader	110	0.052	0.501	0.322	0.001	0.015	0.014	74.965	0.005	Graders
4x4 Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
4x4 Tamper	174	0.038	0.586	0.173	0.001	0.007	0.007	106.516	0.003	Other Construction Equipment
Excavator	152	0.052	0.664	0.198	0.001	0.009	0.008	112.222	0.005	Excavators

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Dozer	1.95	8.23	10.54	0.04	0.39	0.36
Loader	0.66	7.44	3.11	0.01	0.16	0.14
Scraper	3.69	15.40	20.43	0.07	0.77	0.70
Grader	0.36	3.51	2.25	0.01	0.11	0.10
4x4 Backhoe	0.39	4.73	2.47	0.01	0.08	0.07
4x4 Tamper	0.27	4.10	1.21	0.01	0.05	0.05
Excavator	0.36	4.64	1.39	0.01	0.06	0.06
Total	**7.68**	**48.05**	**41.39**	**0.15**	**1.61**	**1.48**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Dozer	98.8	0.0	98.9
Loader	34.7	0.0	34.8
Scraper	183.7	0.0	183.9
Grader	14.3	0.0	14.3
4x4 Backhoe	19.7	0.0	19.7
4x4 Tamper	20.3	0.0	20.3
Excavator	21.4	0.0	21.4
Total	**392.9**	**0.0**	**393.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Table 10
Substation Construction Emissions
Grading

Motor Vehicle Usage

Vehicle	Number[b]	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Water Truck	3	60	7	17.5
Crew Vehicle	6	60	7	17.5
Offsite				
Dump Truck	20	60	N/A	60
Worker Commute	10	60	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

[b] Dump trucks based on 8,000 CY hauled offsite over 60 days and 10 CY/truck = 8,000 / 60 / 10 = 13.3

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Crew Vehicle	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Offsite									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Water Truck	0.04	0.23	0.49	0.00	0.03	0.02
Crew Vehicle	0.05	0.36	0.03	0.00	0.01	0.01
Onsite Total	**0.09**	**0.59**	**0.52**	**0.00**	**0.04**	**0.03**
Offsite						
Dump Truck	0.96	5.17	11.19	0.05	0.58	0.44
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
Offsite Total	**1.22**	**7.23**	**11.36**	**0.05**	**0.64**	**0.47**
Total	**1.31**	**7.82**	**11.88**	**0.06**	**0.68**	**0.50**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Water Truck	6.0	0.0	6.0
Crew Vehicle	3.2	0.0	3.2
Onsite Total	**9.2**	**0.0**	**9.2**
Offsite			
Dump Truck	137.0	0.0	137.0
Worker Commute	18.1	0.0	18.2
Offsite Total	**155.1**	**0.0**	**155.2**
Total	**164.3**	**0.0**	**164.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
Water Truck	3	Unpaved	17.5	2.145	0.214	112.60	11.26
Crew Vehicle	6	Unpaved	17.5	1.237	0.124	129.84	12.98
Onsite Total						**242.44**	**24.24**
Offsite							
Dump Truck	20	Paved	60	0.001	0.000	0.96	0.00
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
Offsite Total						**1.44**	**0.00**
Total						**243.88**	**24.24**

a From Table 56

[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Table 10
Substation Construction Emissions
Grading

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling[c]	CY/day	3,078	9.94E-04	2.07E-04	3.06	0.64
Bulldozing, Scraping and Grading	hr/day	42	0.348	0.072	14.60	3.04
Storage Pile Wind Erosion[d]	acres	0.4	44.0	9.15	17.60	3.66
Total					**35.26**	**7.33**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
[c] Peak daily estimated from total of 114,700 CY plus 70,000 CY from borrow pit, total 184,700 CY over 60 days
[d] Based on 1,000 CY in each of two cones 9 ft. tall x 100 ft. diameter

Table 11
Substation Construction Emissions
Fencing

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.14	2.13	0.99	0.00	0.02	0.02	2.3
Onsite Motor Vehicle Exhaust	0.02	0.13	0.14	0.00	0.01	0.00	0.4
Onsite Motor Vehicle Fugitive PM	--	--	--	--	34.63	3.46	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.16**	**2.27**	**1.13**	**0.00**	**34.66**	**3.48**	**2.8**
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	4.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
Offsite Total	**0.26**	**2.06**	**0.17**	**0.01**	**0.54**	**0.04**	**4.5**
Total	**0.42**	**4.32**	**1.30**	**0.01**	**35.20**	**3.52**	**7.3**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Bobcat	75	1	15	8

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Bobcat	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Bobcat	0.14	2.13	0.99	0.00	0.02	0.02
Total	**0.14**	**2.13**	**0.99**	**0.00**	**0.02**	**0.02**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Bobcat	2.3	0.0	2.3
Total	**2.3**	**0.0**	**2.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Flatbed Truck	1	15	3	7.5
Crewcab Truck	3	15	2	5
Offsite				
Worker Commute	10	15	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Flatbed Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Crewcab Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 11
Substation Construction Emissions
Fencing

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Flatbed Truck	0.01	0.04	0.05	0.00	0.00	0.00
Crewcab Truck	0.01	0.09	0.09	0.00	0.00	0.00
Onsite Total	**0.02**	**0.13**	**0.14**	**0.00**	**0.01**	**0.00**
Offsite						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
Offsite Total	**0.26**	**2.06**	**0.17**	**0.01**	**0.06**	**0.04**
Total	**0.28**	**2.19**	**0.31**	**0.01**	**0.06**	**0.04**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Flatbed Truck	0.1	0.0	0.1
Crewcab Truck	0.3	0.0	0.3
Onsite Total	**0.4**	**0.0**	**0.4**
Offsite			
Worker Commute	4.5	0.0	4.5
Offsite Total	**4.5**	**0.0**	**4.5**
Total	**5.0**	**0.0**	**5.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
Flatbed Truck	1	Unpaved	7.5	2.145	0.214	16.09	1.61
Crewcab Truck	3	Unpaved	5	1.237	0.124	18.55	1.85
Onsite Total						**34.63**	**3.46**
Offsite							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
Offsite Total						**0.48**	**0.00**
Total						**35.11**	**3.46**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 12
Substation Construction Emissions
Civil

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.68	23.43	10.09	0.04	0.26	0.24	155.6
Onsite Motor Vehicle Exhaust	0.02	0.10	0.21	0.00	0.01	0.01	3.9
Onsite Motor Vehicle Fugitive PM	--	--	--	--	48.26	4.83	
Earthwork Fugitive PM	--	--	--	--	0.14	0.03	
Onsite Total	**1.69**	**23.53**	**10.30**	**0.04**	**48.67**	**5.11**	**159.4**
Offsite Motor Vehicle Exhaust	1.21	7.48	9.77	0.05	0.58	0.43	215.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.72	0.00	
Offsite Total	**1.21**	**7.48**	**9.77**	**0.05**	**1.30**	**0.43**	**215.6**
Total	**2.90**	**31.01**	**20.07**	**0.10**	**49.97**	**5.53**	**375.0**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Excavator	152	2	90	4
Foundation Auger	79	2	90	7
Backhoe	79	3	90	6
Skip Loader	75	2	90	3
Bobcat Skid Steer	75	2	90	4
Forklift	83	1	90	4
17-Ton Crane	125	1	90	2

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Excavator	152	0.052	0.664	0.198	0.001	0.009	0.008	112.222	0.005	Excavators
Foundation Auger	79	0.025	0.466	0.195	0.001	0.002	0.002	77.122	0.002	Bore/Drill Rigs
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Skip Loader	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders
Bobcat Skid Steer	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts
17-Ton Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Excavator	0.41	5.31	1.59	0.01	0.07	0.07
Foundation Auger	0.35	6.52	2.74	0.01	0.03	0.03
Backhoe	0.51	6.08	3.17	0.01	0.10	0.09
Skip Loader	0.10	1.60	0.74	0.00	0.01	0.01
Bobcat Skid Steer	0.14	2.13	0.99	0.00	0.02	0.02
Forklift	0.07	0.83	0.40	0.00	0.01	0.01
17-Ton Crane	0.09	0.95	0.46	0.00	0.02	0.02
Total	**1.68**	**23.43**	**10.09**	**0.04**	**0.26**	**0.24**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Excavator	36.7	0.0	36.7
Foundation Auger	44.1	0.0	44.1
Backhoe	38.0	0.0	38.1
Skip Loader	10.5	0.0	10.5
Bobcat Skid Steer	26.2	0.0	26.3
Forklift	0.0	0.0	0.0
17-Ton Crane	0.0	0.0	0.0
Total	**155.5**	**0.0**	**155.6**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Table 12
Substation Construction Emissions
Civil

Motor Vehicle Usage

Vehicle	Number[b]	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Dump Truck	2	90	2	5
Water Truck	1	90	5	12.5
Offsite				
Concrete Truck	17	90	N/A	60
Worker Commute	15	90	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

[b] Concrete trucks based on 15,000 CY over 90 days and 10 CY/truck = 15,000 / 90 / 10 = 16.6

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Offsite									
Concrete Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Dump Truck	0.01	0.04	0.09	0.00	0.00	0.00
Water Truck	0.01	0.05	0.12	0.00	0.01	0.00
Onsite Total	**0.02**	**0.10**	**0.21**	**0.00**	**0.01**	**0.01**
Offsite						
Concrete Truck	0.82	4.40	9.51	0.04	0.50	0.37
Worker Commute	0.39	3.08	0.26	0.01	0.09	0.06
Offsite Total	**1.21**	**7.48**	**9.77**	**0.05**	**0.58**	**0.43**
Total	**1.23**	**7.58**	**9.98**	**0.05**	**0.59**	**0.44**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Dump Truck	1.7	0.0	1.7
Water Truck	2.1	0.0	2.1
Onsite Total	**3.9**	**0.0**	**3.9**
Offsite			
Concrete Truck	174.7	0.0	174.7
Worker Commute	40.8	0.0	40.8
Offsite Total	**215.5**	**0.0**	**215.6**
Total	**219.4**	**0.0**	**219.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
Dump Truck	2	Unpaved	5	2.145	0.214	21.45	2.14
Water Truck	1	Unpaved	12.5	2.145	0.214	26.81	2.68
Onsite Total						**48.26**	**4.83**
Offsite							
Concrete Truck	17	Paved	60	0.001	0.000	0.82	0.00
Worker Commute	15	Paved	60	0.001	0.000	0.72	0.00
Offsite Total						**0.72**	**0.00**
Total						**48.98**	**4.83**

a From Table 56

[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Table 12
Substation Construction Emissions
Civil

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling[c]	CY/day	140	9.94E-04	2.07E-04	0.14	0.03
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.14**	**0.03**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
[c] Peak daily estimated from total of 12,000 CY over 90 days

Table 13
Substation Construction Emissions
Control Building

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.01	0.09	0.09	0.00	0.00	0.00	0.4
Onsite Motor Vehicle Fugitive PM	--	--	--	--	32.17	3.22	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.01**	**0.09**	**0.09**	**0.00**	**32.18**	**3.22**	**0.4**
Offsite Motor Vehicle Exhaust	0.16	1.23	0.10	0.00	0.03	0.02	3.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	
Offsite Total	**0.16**	**1.23**	**0.10**	**0.00**	**0.32**	**0.02**	**3.6**
Total	**0.17**	**1.32**	**0.20**	**0.00**	**32.50**	**3.24**	**4.0**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
None				

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
None	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
None	0.0	0.0	0.0
Total	**0.0**	**0.0**	**0.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Carry-all Truck	2	20	2	5
Stake Truck	1	20	2	5
Offsite				
Worker Commute	6	20	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Carry-all Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Stake Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 13
Substation Construction Emissions
Control Building

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Carry-all Truck	0.01	0.06	0.06	0.00	0.00	0.00
Stake Truck	0.00	0.03	0.03	0.00	0.00	0.00
Onsite Total	**0.01**	**0.09**	**0.09**	**0.00**	**0.00**	**0.00**
Offsite						
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
Offsite Total	**0.16**	**1.23**	**0.10**	**0.00**	**0.03**	**0.02**
Total	**0.17**	**1.32**	**0.20**	**0.00**	**0.04**	**0.03**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Carry-all Truck	0.3	0.0	0.3
Stake Truck	0.1	0.0	0.1
Onsite Total	**0.4**	**0.0**	**0.4**
Offsite			
Worker Commute	3.6	0.0	3.6
Offsite Total	**3.6**	**0.0**	**3.6**
Total	**4.0**	**0.0**	**4.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
Carry-all Truck	2	Unpaved	5	2.145	0.214	21.45	2.14
Stake Truck	1	Unpaved	5	2.145	0.214	10.72	1.07
Onsite Total						**32.17**	**3.22**
Offsite							
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
Offsite Total						**0.29**	**0.00**
Total						**32.46**	**3.22**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 14
Substation Construction Emissions
Electrical

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.85	9.25	6.15	0.02	0.25	0.23	206.2
Onsite Motor Vehicle Exhaust	0.01	0.10	0.01	0.00	0.00	0.00	4.5
Onsite Motor Vehicle Fugitive PM	--	--	--	--	37.10	3.71	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.87**	**9.35**	**6.16**	**0.02**	**37.35**	**3.94**	**210.8**
Offsite Motor Vehicle Exhaust	0.39	3.08	0.26	0.01	0.09	0.06	136.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.72	0.00	
Offsite Total	**0.39**	**3.08**	**0.26**	**0.01**	**0.81**	**0.06**	**136.1**
Total	**1.26**	**12.43**	**6.41**	**0.03**	**38.15**	**4.00**	**346.9**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Scissor Lift	87	2	300	5
Manlift	43	2	300	7
Reach Manlift	87	2	300	6
15-Ton Crane	125	1	300	5

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Scissor Lift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts
Reach Manlift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
15-Ton Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Scissor Lift	0.18	2.26	1.50	0.00	0.06	0.06
Manlift	0.23	1.89	1.71	0.00	0.05	0.04
Reach Manlift	0.21	2.72	1.79	0.01	0.08	0.07
15-Ton Crane	0.23	2.37	1.15	0.00	0.06	0.06
Total	**0.85**	**9.25**	**6.15**	**0.02**	**0.25**	**0.23**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Scissor Lift	51.8	0.0	51.9
Manlift	37.4	0.0	37.4
Reach Manlift	62.2	0.0	62.2
15-Ton Crane	54.7	0.0	54.7
Total	**206.0**	**0.0**	**206.2**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Crew Truck	6	300	2	5
Offsite				
Worker Commute	15	300	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Table 14
Substation Construction Emissions
Electrical

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Crew Truck	0.01	0.10	0.01	0.00	0.00	0.00
Onsite Total	**0.01**	**0.10**	**0.01**	**0.00**	**0.00**	**0.00**
Offsite						
Worker Commute	0.39	3.08	0.26	0.01	0.09	0.06
Offsite Total	**0.39**	**3.08**	**0.26**	**0.01**	**0.09**	**0.06**
Total	**0.40**	**3.19**	**0.27**	**0.01**	**0.09**	**0.06**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Crew Truck	4.5	0.0	4.5
Onsite Total	**4.5**	**0.0**	**4.5**
Offsite			
Worker Commute	136.0	0.0	136.1
Offsite Total	**136.0**	**0.0**	**136.1**
Total	**140.6**	**0.0**	**140.7**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
Crew Truck	6	Unpaved	5	1.237	0.124	37.10	3.71
Onsite Total						**37.10**	**3.71**
Offsite							
Worker Commute	15	Paved	60	0.001	0.000	0.72	0.00
Offsite Total						**0.72**	**0.00**
Total						**37.82**	**3.71**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 15
Substation Construction Emissions
Wiring

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.07	0.54	0.49	0.00	0.01	0.01	8.9
Onsite Motor Vehicle Exhaust	0.01	0.07	0.01	0.00	0.00	0.00	2.5
Onsite Motor Vehicle Fugitive PM	--	--	--	--	24.73	2.47	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.08**	**0.61**	**0.49**	**0.00**	**24.75**	**2.49**	**11.4**
Offsite Motor Vehicle Exhaust	0.21	1.65	0.14	0.01	0.05	0.03	60.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.38	0.00	
Offsite Total	**0.21**	**1.65**	**0.14**	**0.01**	**0.43**	**0.03**	**60.5**
Total	**0.28**	**2.25**	**0.63**	**0.01**	**25.18**	**2.52**	**71.9**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Manlift	43	1	250	4

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Manlift	0.07	0.54	0.49	0.00	0.01	0.01
Total	**0.07**	**0.54**	**0.49**	**0.00**	**0.01**	**0.01**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Manlift	8.9	0.0	8.9
Total	**8.9**	**0.0**	**8.9**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Crew Truck	4	250	2	5
Offsite				
Worker Commute	8	250	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 15
Substation Construction Emissions
Wiring

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Crew Truck	0.01	0.07	0.01	0.00	0.00	0.00
Onsite Total	**0.01**	**0.07**	**0.01**	**0.00**	**0.00**	**0.00**
Offsite						
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
Offsite Total	**0.21**	**1.65**	**0.14**	**0.01**	**0.05**	**0.03**
Total	**0.22**	**1.71**	**0.14**	**0.01**	**0.05**	**0.03**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Crew Truck	2.5	0.0	2.5
Onsite Total	**2.5**	**0.0**	**2.5**
Offsite			
Worker Commute	60.5	0.0	60.5
Offsite Total	**60.5**	**0.0**	**60.5**
Total	**63.0**	**0.0**	**63.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
Crew Truck	4	Unpaved	5	1.237	0.124	24.73	2.47
Onsite Total						**24.73**	**2.47**
Offsite							
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
Offsite Total						**0.38**	**0.00**
Total						**25.12**	**2.47**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 16
Substation Construction Emissions
Transformers

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.38	4.10	1.98	0.01	0.09	0.08	27.4
Onsite Motor Vehicle Exhaust	0.02	0.11	0.10	0.00	0.01	0.00	2.6
Onsite Motor Vehicle Fugitive PM	--	--	--	--	46.18	4.62	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.40**	**4.21**	**2.08**	**0.01**	**46.27**	**4.70**	**30.0**
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	27.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
Offsite Total	**0.26**	**2.06**	**0.17**	**0.01**	**0.54**	**0.04**	**27.2**
Total	**0.66**	**6.27**	**2.25**	**0.01**	**46.81**	**4.74**	**57.2**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Crane	125	1	90	6
Forklift	83	1	90	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Crane	0.28	2.85	1.38	0.01	0.07	0.07
Forklift	0.10	1.25	0.60	0.00	0.01	0.01
Total	**0.38**	**4.10**	**1.98**	**0.01**	**0.09**	**0.08**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Crane	19.7	0.0	19.7
Forklift	7.6	0.0	7.7
Total	**27.3**	**0.0**	**27.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Crew Truck	4	90	2	5
Low Bed Truck	1	90	4	10
Offsite				
Worker Commute	10	90	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Low Bed Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 16
Substation Construction Emissions
Transformers

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Crew Truck	0.01	0.07	0.01	0.00	0.00	0.00
Low Bed Truck	0.01	0.04	0.09	0.00	0.00	0.00
Onsite Total	**0.02**	**0.11**	**0.10**	**0.00**	**0.01**	**0.00**
Offsite						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
Offsite Total	**0.26**	**2.06**	**0.17**	**0.01**	**0.06**	**0.04**
Total	**0.28**	**2.17**	**0.27**	**0.01**	**0.06**	**0.04**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Crew Truck	0.9	0.0	0.9
Low Bed Truck	1.7	0.0	1.7
Onsite Total	**2.6**	**0.0**	**2.6**
Offsite			
Worker Commute	27.2	0.0	27.2
Offsite Total	**27.2**	**0.0**	**27.2**
Total	**29.8**	**0.0**	**29.8**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
Crew Truck	4	Unpaved	5	1.237	0.124	24.73	2.47
Low Bed Truck	1	Unpaved	10	2.145	0.214	21.45	2.14
Onsite Total						**46.18**	**4.62**
Offsite							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
Offsite Total						**0.48**	**0.00**
Total						**46.66**	**4.62**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 17
Substation Construction Emissions
Maintenance Crew Equipment Check

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.02	0.12	0.12	0.00	0.01	0.00	1.6
Onsite Motor Vehicle Fugitive PM	--	--	--	--	33.78	3.38	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.02**	**0.12**	**0.12**	**0.00**	**33.79**	**3.38**	**1.6**
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	7.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
Offsite Total	**0.10**	**0.82**	**0.07**	**0.00**	**0.22**	**0.02**	**7.3**
Total	**0.12**	**0.94**	**0.19**	**0.00**	**34.00**	**3.40**	**8.8**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
None				

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
None										

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
None	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
None	0.0	0.0	0.0
Total	**0.0**	**0.0**	**0.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Maintenance Truck	2	60	4	10
Offsite				
Worker Commute	4	60	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Maintenance Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 17
Substation Construction Emissions
Maintenance Crew Equipment Check

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Maintenance Truck	0.02	0.12	0.12	0.00	0.01	0.00
Onsite Total	**0.02**	**0.12**	**0.12**	**0.00**	**0.01**	**0.00**
Offsite						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.10**	**0.82**	**0.07**	**0.00**	**0.02**	**0.02**
Total	**0.12**	**0.94**	**0.19**	**0.00**	**0.03**	**0.02**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Maintenance Truck	1.6	0.0	1.6
Onsite Total	**1.6**	**0.0**	**1.6**
Offsite			
Worker Commute	7.3	0.0	7.3
Offsite Total	**7.3**	**0.0**	**7.3**
Total	**8.8**	**0.0**	**8.8**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
Maintenance Truck	2	Unpaved	10	1.689	0.169	33.78	3.38
Onsite Total						**33.78**	**3.38**
Offsite							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**0.19**	**0.00**
Total						**33.98**	**3.38**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 18
Substation Construction Emissions
Testing

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.01	0.05	0.00	0.00	0.00	0.00	1.5
Onsite Motor Vehicle Fugitive PM	--	--	--	--	18.55	1.85	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.01**	**0.05**	**0.00**	**0.00**	**18.55**	**1.86**	**1.5**
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	24.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
Offsite Total	**0.10**	**0.82**	**0.07**	**0.00**	**0.22**	**0.02**	**24.2**
Total	**0.11**	**0.87**	**0.07**	**0.00**	**18.77**	**1.87**	**25.7**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
None				

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
None										

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
None	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
None	0.0	0.0	0.0
Total	**0.0**	**0.0**	**0.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Crew Truck	2	200	3	7.5
Offsite				
Worker Commute	4	200	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 18
Substation Construction Emissions
Testing

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Crew Truck	0.01	0.05	0.00	0.00	0.00	0.00
Onsite Total	**0.01**	**0.05**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.10**	**0.82**	**0.07**	**0.00**	**0.02**	**0.02**
Total	**0.11**	**0.87**	**0.07**	**0.00**	**0.02**	**0.02**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Crew Truck	1.5	0.0	1.5
Onsite Total	**1.5**	**0.0**	**1.5**
Offsite			
Worker Commute	24.2	0.0	24.2
Offsite Total	**24.2**	**0.0**	**24.2**
Total	**25.7**	**0.0**	**25.7**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
Crew Truck	2	Unpaved	7.5	1.237	0.124	18.55	1.85
Onsite Total						**18.55**	**1.85**
Offsite							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**0.19**	**0.00**
Total						**18.74**	**1.85**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 19
Substation Construction Emissions
Asphalting

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.87	6.33	4.62	0.01	0.21	0.19	12.0
Onsite Motor Vehicle Exhaust	0.02	0.11	0.17	0.00	0.01	0.01	1.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	49.90	4.99	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Asphaltic Paving VOC	0.6	--	--	--	--	--	--
Onsite Total	**1.52**	**6.44**	**4.79**	**0.01**	**50.12**	**5.19**	**13.2**
Offsite Motor Vehicle Exhaust	0.89	5.42	7.45	0.04	0.44	0.32	53.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.11	0.00	
Offsite Total	**0.89**	**5.42**	**7.45**	**0.04**	**1.54**	**0.32**	**53.6**
Total	**2.41**	**11.86**	**12.23**	**0.05**	**51.66**	**5.51**	**66.8**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Paving Roller	46	2	30	4
Asphalt Paver	152	1	30	4
Tractor	45	1	30	3
Asphalt Curb Machine	35	1	30	3

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Paving Roller	46	0.034	0.226	0.178	0.000	0.007	0.006	25.983	0.003	Rollers
Asphalt Paver	152	0.090	0.754	0.524	0.001	0.029	0.026	128.285	0.008	Pavers
Tractor	45	0.032	0.268	0.190	0.000	0.004	0.003	30.347	0.003	Tractors/Loaders/Backhoes
Asphalt Curb Machine	35	0.047	0.235	0.179	0.000	0.010	0.009	23.927	0.004	Paving Equipment

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Paving Roller	0.28	1.81	1.42	0.00	0.05	0.05
Asphalt Paver	0.36	3.02	2.10	0.01	0.11	0.11
Tractor	0.09	0.80	0.57	0.00	0.01	0.01
Asphalt Curb Machine	0.14	0.71	0.54	0.00	0.03	0.03
Total	**0.87**	**6.33**	**4.62**	**0.01**	**0.21**	**0.19**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Paving Roller	2.8	0.0	2.8
Asphalt Paver	7.0	0.0	7.0
Tractor	1.2	0.0	1.2
Asphalt Curb Machine	1.0	0.0	1.0
Total	**12.0**	**0.0**	**12.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number[b]	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Stake Truck	1	30	4	10
Dump Truck	1	30	3	7.5
Crew Truck	2	30	2	5
Offsite				
Asphalt Delivery Truck	13	30	N/A	60
Worker Commute	10	30	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed
[b] Asphalt delivery trucks based on 3,900 CY over 30 days and 10 CY/truck = 3,900 / 30 / 10 = 13

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Stake Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05

Table 19
Substation Construction Emissions
Asphalting

Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Offsite									
Asphalt Delivery Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Stake Truck	0.01	0.04	0.09	0.00	0.00	0.00
Dump Truck	0.01	0.03	0.07	0.00	0.00	0.00
Crew Truck	0.00	0.03	0.00	0.00	0.00	0.00
Onsite Total	**0.02**	**0.11**	**0.17**	**0.00**	**0.01**	**0.01**
Offsite						
Asphalt Delivery Truck	0.63	3.36	7.27	0.03	0.38	0.28
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
Offsite Total	**0.89**	**5.42**	**7.45**	**0.04**	**0.44**	**0.32**
Total	**0.91**	**5.53**	**7.61**	**0.04**	**0.45**	**0.33**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Stake Truck	0.6	0.0	0.6
Dump Truck	0.4	0.0	0.4
Crew Truck	0.2	0.0	0.2
Onsite Total	**1.2**	**0.0**	**1.2**
Offsite			
Asphalt Delivery Truck	44.5	0.0	44.5
Worker Commute	9.1	0.0	9.1
Offsite Total	**53.6**	**0.0**	**53.6**
Total	**54.7**	**0.0**	**54.8**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
Stake Truck	1	Unpaved	10	2.145	0.214	21.45	2.14
Dump Truck	1	Unpaved	7.5	2.145	0.214	16.09	1.61
Crew Truck	2	Unpaved	5	1.237	0.124	12.37	1.24
Onsite Total						**49.90**	**4.99**
Offsite							
Asphalt Delivery Truck	13	Paved	60	0.001	0.000	0.62	0.00
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
Offsite Total						**1.11**	**0.00**
Total						**51.00**	**4.99**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Asphaltic Paving VOC Emissions

Area Paved (acre/day)[a]	Emission Factor (lb/acre)[b]	VOC (lb/day)[c]
0.24	2.62	0.6

[a] Assumed twice daily average for 156,000 ft^2 total in 30 days:
2 x 156,000 ft^2 / 30 days / 43,560 ft^2 per acre = 0.24 acres
[b] From URBEMISS 2007 User's Guide, Appendix A,
http://www.urbemis.com/software/download.html
[c] Emissions [lb/day] = Emission factor [lb/acre] x Area paved [acre/day]

Table 20
Substation Construction Emissions
Landscaping

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.29	2.71	1.73	0.00	0.03	0.03	6.9
Onsite Motor Vehicle Exhaust	0.01	0.10	0.08	0.00	0.01	0.00	1.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	40.82	4.08	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.30**	**2.81**	**1.80**	**0.00**	**40.86**	**4.12**	**8.0**
Offsite Motor Vehicle Exhaust	1.42	8.26	13.60	0.06	0.76	0.56	136.9
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.63	0.00	
Offsite Total	**1.42**	**8.26**	**13.60**	**0.06**	**2.39**	**0.56**	**136.9**
Total	**1.72**	**11.07**	**15.40**	**0.07**	**43.25**	**4.68**	**144.9**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Tractor	45	1	45	7
Forklift	83	1	45	4

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Tractor	45	0.032	0.268	0.190	0.000	0.004	0.003	30.347	0.003	Tractors/Loaders/Backhoes
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Tractor	0.22	1.87	1.33	0.00	0.03	0.02
Forklift	0.07	0.83	0.40	0.00	0.01	0.01
Total	**0.29**	**2.71**	**1.73**	**0.00**	**0.03**	**0.03**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Tractor	4.3	0.0	4.3
Forklift	2.5	0.0	2.6
Total	**6.9**	**0.0**	**6.9**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number[b]	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Dump Truck	1	45	3	7.5
Crew Truck	4	45	2	5
Offsite				
Crushed Rock Delivery Truck	24	45	N/A	60
Worker Commute	10	45	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed
[b] Crushed rock delivery trucks based on 10,800 CY over 45 days and 10 CY/truck = 10,800 / 45 / 10 = 24

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Offsite									
Crushed Rock Delivery Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 20
Substation Construction Emissions
Landscaping

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Dump Truck	0.01	0.03	0.07	0.00	0.00	0.00
Crew Truck	0.01	0.07	0.01	0.00	0.00	0.00
Onsite Total	**0.01**	**0.10**	**0.08**	**0.00**	**0.01**	**0.00**
Offsite						
Crushed Rock Delivery Truck	1.15	6.21	13.43	0.06	0.70	0.52
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
Offsite Total	**1.42**	**8.26**	**13.60**	**0.06**	**0.76**	**0.56**
Total	**1.43**	**8.36**	**13.68**	**0.06**	**0.76**	**0.57**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Dump Truck	0.6	0.0	0.6
Crew Truck	0.5	0.0	0.5
Onsite Total	**1.1**	**0.0**	**1.1**
Offsite			
Crushed Rock Delivery Truck	123.3	0.0	123.3
Worker Commute	13.6	0.0	13.6
Offsite Total	**136.9**	**0.0**	**136.9**
Total	**138.0**	**0.0**	**138.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
Dump Truck	1	Unpaved	7.5	2.145	0.214	16.09	1.61
Crew Truck	4	Unpaved	5	1.237	0.124	24.73	2.47
Onsite Total						**40.82**	**4.08**
Offsite							
Crushed Rock Delivery Truck	24	Paved	60	0.001	0.000	1.15	0.00
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
Offsite Total						**1.63**	**0.00**
Total						**42.45**	**4.08**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 21
500 kV Transmission Line Construction Emissions
Survey

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.0**
Offsite Motor Vehicle Exhaust	0.11	0.89	0.08	0.00	0.03	0.02	0.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	20.42	2.02	
Offsite Total	**0.11**	**0.89**	**0.08**	**0.00**	**20.45**	**2.04**	**0.5**
Total	**0.11**	**0.89**	**0.08**	**0.00**	**20.45**	**2.04**	**0.5**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
None				

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
None	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
None	0.0	0.0	0.0
Total	**0.0**	**0.0**	**0.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
1/2-Ton Pick-up Truck, 4x4	2	4	N/A	10
Worker Commute	4	4	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
1/2-Ton Pick-up Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 21
500 kV Transmission Line Construction Emissions
Survey

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
1/2-Ton Pick-up Truck, 4x4	0.01	0.07	0.01	0.00	0.00	0.00
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.11**	**0.89**	**0.08**	**0.00**	**0.03**	**0.02**
Total	**0.11**	**0.89**	**0.08**	**0.00**	**0.03**	**0.02**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
1/2-Ton Pick-up Truck, 4x4	0.0	0.0	0.0
Worker Commute	0.5	0.0	0.5
Offsite Total	**0.5**	**0.0**	**0.5**
Total	**0.5**	**0.0**	**0.5**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None							
Onsite Total						**0.00**	**0.00**
Offsite							
1/2-Ton Pick-up Truck, 4x4	2	Unpaved	10	1.012	0.101	20.23	2.02
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**20.42**	**2.02**
Total						**20.42**	**2.02**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 22
500 kV Transmission Line Construction Emissions
Marshalling Yard

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.41	3.14	1.79	0.01	0.06	0.06	55.8
Onsite Motor Vehicle Exhaust	0.02	0.10	0.14	0.00	0.01	0.01	4.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	31.13	3.11	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.43**	**3.24**	**1.93**	**0.01**	**31.20**	**3.18**	**59.9**
Offsite Motor Vehicle Exhaust	0.20	1.41	0.87	0.01	0.06	0.04	27.9
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.28	0.00	
Offsite Total	**0.20**	**1.41**	**0.87**	**0.01**	**0.35**	**0.04**	**27.9**
Total	**0.63**	**4.65**	**2.81**	**0.02**	**31.55**	**3.22**	**87.8**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Boom/Crane Truck	215	1	137	5
Rough Terrain Forklift	125	1	137	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Boom/Crane Truck	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Boom/Crane Truck	0.27	1.16	1.35	0.01	0.05	0.04
Rough Terrain Forklift	0.14	1.99	0.44	0.00	0.02	0.02
Total	**0.41**	**3.14**	**1.79**	**0.01**	**0.06**	**0.06**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Boom/Crane Truck	34.8	0.0	34.9
Rough Terrain Forklift	20.9	0.0	20.9
Total	**55.7**	**0.0**	**55.8**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number[b]	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
1-Ton Crew Cab, 4x4	1	137	4	10
Truck, Semi Tractor	1	137	2	5
Jet A Fuel Truck	1	137	0.5	1.25
Water Truck	1	137	1	2.5
Offsite				
Flat Bed Truck/Trailer	1	10	N/A	60
Concrete Mixer Truck	1	10	N/A	10
Jet A Fuel Truck	1	137	N/A	20
Water Truck	1	137	N/A	20
Worker Commute	4	137	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed
[b] Dump trucks based on 8,000 CY hauled offsite over 60 days and 10 CY/truck = 8,000 / 60 / 10 = 13.3

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Truck, Semi Tractor	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Jet A Fuel Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Offsite									
Flat Bed Truck/Trailer	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Concrete Mixer Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Jet A Fuel Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05

Table 22
500 kV Transmission Line Construction Emissions
Marshalling Yard

Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Truck, Semi Tractor	0.00	0.02	0.05	0.00	0.00	0.00
Jet A Fuel Truck	0.00	0.01	0.01	0.00	0.00	0.00
Water Truck	0.00	0.01	0.02	0.00	0.00	0.00
Onsite Total	**0.02**	**0.10**	**0.14**	**0.00**	**0.01**	**0.01**
Offsite						
Flat Bed Truck/Trailer	0.06	0.36	0.37	0.00	0.02	0.01
Concrete Mixer Truck	0.01	0.06	0.06	0.00	0.00	0.00
Jet A Fuel Truck	0.02	0.09	0.19	0.00	0.01	0.01
Water Truck	0.02	0.09	0.19	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.20**	**1.41**	**0.87**	**0.01**	**0.06**	**0.04**
Total	**0.22**	**1.51**	**1.02**	**0.01**	**0.07**	**0.05**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
1-Ton Crew Cab, 4x4	1.8	0.0	1.8
Truck, Semi Tractor	1.3	0.0	1.3
Jet A Fuel Truck	0.33	0.00	0.33
Water Truck	0.65	0.00	0.65
Onsite Total	**4.1**	**0.0**	**4.1**
Offsite			
Flat Bed Truck/Trailer	0.8	0.0	0.8
Concrete Mixer Truck	0.1	0.0	0.1
Jet A Fuel Truck	5.21	0.00	5.21
Water Truck	5.21	0.00	5.21
Worker Commute	16.6	0.0	16.6
Offsite Total	**27.9**	**0.0**	**27.9**
Total	**32.0**	**0.0**	**32.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
1-Ton Crew Cab, 4x4	1	Unpaved	10	1.237	0.124	12.37	1.24
Truck, Semi Tractor	1	Unpaved	5	2.145	0.214	10.72	1.07
Jet A Fuel Truck	1	Unpaved	1.25	2.145	0.214	2.68	0.27
Water Truck	1	Unpaved	2.5	2.145	0.214	5.36	0.54
Onsite Total						**31.13**	**3.11**
Offsite							
Flat Bed Truck/Trailer	1	Paved	60	0.001	0.000	0.05	0.00
Concrete Mixer Truck	1	Paved	10	0.001	0.000	0.01	0.00
Jet A Fuel Truck	1	Paved	20	0.00	0.00	0.02	0.00
Water Truck	1	Paved	20	0.00	0.00	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**0.28**	**0.00**
Total						**31.42**	**3.11**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 23
500 kV Transmission Line Construction Emissions
Roads and Landing Work

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	2.09	16.82	9.96	0.05	0.45	0.42	44.9
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	9.17	1.91	
Onsite Total	**2.09**	**16.82**	**9.96**	**0.05**	**9.63**	**2.33**	**44.9**
Offsite Motor Vehicle Exhaust	0.28	2.18	0.37	0.01	0.07	0.05	8.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	45.02	4.45	
Offsite Total	**0.28**	**2.18**	**0.37**	**0.01**	**45.09**	**4.50**	**8.3**
Total	**2.37**	**19.00**	**10.34**	**0.05**	**54.71**	**6.83**	**53.1**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Road Grader	250	1	24	6
Backhoe/Front Loader	125	1	24	8
Drum Type Compactor	100	1	24	6
Track Type Dozer	150	1	24	8
Excavator	250	1	24	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers
Track Type Dozer	150	0.082	0.727	0.445	0.001	0.024	0.022	121.188	0.007	Crawler Tractors
Excavator	250	0.065	0.321	0.222	0.002	0.007	0.007	158.683	0.006	Excavators

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Road Grader	0.47	2.13	2.19	0.01	0.08	0.07
Backhoe/Front Loader	0.34	4.67	1.29	0.01	0.06	0.05
Drum Type Compactor	0.24	2.28	1.59	0.00	0.08	0.08
Track Type Dozer	0.66	5.81	3.56	0.01	0.19	0.18
Excavator	0.39	1.93	1.33	0.01	0.04	0.04
Total	**2.09**	**16.82**	**9.96**	**0.05**	**0.45**	**0.42**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Road Grader	11.2	0.0	11.3
Backhoe/Front Loader	8.8	0.0	8.8
Drum Type Compactor	3.9	0.0	3.9
Track Type Dozer	10.6	0.0	10.6
Excavator	10.4	0.0	10.4
Total	**44.8**	**0.0**	**44.9**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Table 23
500 kV Transmission Line Construction Emissions
Roads and Landing Work

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				
Offsite				
1-Ton Crew Cab, 4x4	2	24	N/A	5
Water Truck	2	24	N/A	5
Lowboy Truck/Trailer	1	24	N/A	5
Worker Commute	10	24	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Water Truck	0.01	0.04	0.09	0.00	0.00	0.00
Lowboy Truck/Trailer	0.00	0.02	0.05	0.00	0.00	0.00
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
Offsite Total	**0.28**	**2.18**	**0.37**	**0.01**	**0.07**	**0.05**
Total	**0.28**	**2.18**	**0.37**	**0.01**	**0.07**	**0.05**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
1-Ton Crew Cab, 4x4	0.3	0.0	0.3
Water Truck	0.5	0.0	0.5
Lowboy Truck/Trailer	0.2	0.0	0.2
Worker Commute	7.3	0.0	7.3
Offsite Total	**8.3**	**0.0**	**8.3**
Total	**8.3**	**0.0**	**8.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
None						0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
1-Ton Crew Cab, 4x4	2	Unpaved	5	1.237	0.124	12.37	1.24
Water Truck	2	Unpaved	5	2.145	0.214	21.45	2.14
Lowboy Truck/Trailer	1	Unpaved	5	2.145	0.214	10.72	1.07
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
Offsite Total						**45.02**	**4.45**
Total						**45.02**	**4.45**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Table 23
500 kV Transmission Line Construction Emissions
Roads and Landing Work

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling[c]	CY/day	4,334	9.94E-04	2.07E-04	4.31	0.90
Bulldozing, Scraping and Grading	hr/day	14	0.348	0.072	4.87	1.01
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**9.17**	**1.91**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
[c] Estimate 80,000 CY of cut plus 50,000 CY of fill yields 130,000 CY of soil handling over 30 days. Approx 4,334 CY/day.

Table 23b
500 kV Transmission Line Construction Emissions
Install Helicopter Platforms

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.15	15.80	7.68	0.03	0.24	0.22	28.5
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	1.38	0.29	
Onsite Total	**1.15**	**15.80**	**7.68**	**0.03**	**1.62**	**0.51**	**28.5**
Offsite Motor Vehicle Exhaust	0.16	1.23	0.10	0.00	0.03	0.02	4.4
Offsite Helicopter Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	
Offsite Total	**0.16**	**1.23**	**0.10**	**0.00**	**0.32**	**0.02**	**4.4**
Total	**1.30**	**17.03**	**7.78**	**0.03**	**1.94**	**0.53**	**32.9**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Compressor	150	1	24	8
Grout Machine	60	1	24	8
Drill Rig	75	1	24	8
Transfer Pump	60	1	24	8

Note: Helicopter use accounted for in Table 29c

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Compressor	150	0.042	0.500	0.219	0.001	0.010	0.010	88.483	0.004	Air Compressors
Grout Machine	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment
Drill Rig	75	0.025	0.466	0.195	0.001	0.002	0.002	77.122	0.002	Bore/Drill Rigs
Transfer Pump	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Compressor	0.34	4.00	1.75	0.01	0.08	0.08
Grout Machine	0.30	4.04	2.18	0.01	0.07	0.06
Drill Rig	0.20	3.73	1.56	0.01	0.02	0.01
Transfer Pump	0.30	4.04	2.18	0.01	0.07	0.06
Total	**1.15**	**15.80**	**7.68**	**0.03**	**0.24**	**0.22**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Compressor	7.7	0.0	7.7
Grout Machine	7.0	0.0	7.0
Drill Rig	6.7	0.0	6.7
Transfer Pump	7.0	0.0	7.0
Total	**28.5**	**0.0**	**28.5**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
Worker Commute	6	24	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Table 23b
500 kV Transmission Line Construction Emissions
Install Helicopter Platforms

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
Offsite Total	**0.16**	**1.23**	**0.10**	**0.00**	**0.03**	**0.02**
Total	**0.16**	**1.23**	**0.10**	**0.00**	**0.03**	**0.02**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
Worker Commute	4.4	0.0	4.4
Offsite Total	**4.4**	**0.0**	**4.4**
Total	**4.4**	**0.0**	**4.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
a From Table 56
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
None						0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
Offsite Total						**0.29**	**0.00**
Total						**0.29**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling[c]	CY/day	1,388	9.94E-04	2.07E-04	1.38	0.29
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**1.38**	**0.29**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
[c] Estimate

Table 24
500 kV Transmission Line Construction Emissions
Tower Removal

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.75	4.54	3.93	0.02	0.16	0.15	2.6
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.75**	**4.54**	**3.93**	**0.02**	**0.16**	**0.15**	**2.6**
Offsite Motor Vehicle Exhaust	0.27	2.03	0.63	0.01	0.07	0.05	1.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	105.11	10.47	
Offsite Total	**0.27**	**2.03**	**0.63**	**0.01**	**105.18**	**10.52**	**1.4**
Total	**1.02**	**6.57**	**4.56**	**0.02**	**105.34**	**10.67**	**4.0**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Compressor Trailer	60	1	4	8
Rough Terrain Crane (L)	275	1	4	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Rough Terrain Crane (L)	275	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
Rough Terrain Crane (L)	0.51	2.12	2.39	0.01	0.09	0.08
Total	**0.75**	**4.54**	**3.93**	**0.02**	**0.16**	**0.15**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Compressor Trailer	0.7	0.0	0.7
Rough Terrain Crane (L)	2.0	0.0	2.0
Total	**2.6**	**0.0**	**2.6**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
1-Ton Crew Cab, 4x4	2	4	N/A	5
1-Ton Flat Bed, 4x4	2	4	N/A	20
Flat Bed Truck/Trailer	1	4	N/A	20
Worker Commute	8	4	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Flat Bed Truck/Trailer	HHD	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 24
500 kV Transmission Line Construction Emissions
Tower Removal

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
1-Ton Flat Bed, 4x4	0.04	0.24	0.25	0.00	0.01	0.01
Flat Bed Truck/Trailer	0.02	0.09	0.19	0.00	0.01	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
Offsite Total	**0.27**	**2.03**	**0.63**	**0.01**	**0.07**	**0.05**
Total	**0.27**	**2.03**	**0.63**	**0.01**	**0.07**	**0.05**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
1-Ton Crew Cab, 4x4	0.1	0.0	0.1
1-Ton Flat Bed, 4x4	0.2	0.0	0.2
Flat Bed Truck/Trailer	0.2	0.0	0.2
Worker Commute	1.0	0.0	1.0
Offsite Total	**1.4**	**0.0**	**1.4**
Total	**1.4**	**0.0**	**1.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None						0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
1-Ton Crew Cab, 4x4	2	Unpaved	5	1.237	0.124	12.37	1.24
1-Ton Flat Bed, 4x4	2	Unpaved	20	1.237	0.124	49.46	4.95
Flat Bed Truck/Trailer	1	Unpaved	20	2.145	0.214	42.90	4.29
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
Offsite Total						**105.11**	**10.47**
Total						**105.11**	**10.47**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 25
500 kV Transmission Line Construction Emissions
Foundation Removal

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.48	5.92	2.51	0.01	0.11	0.10	0.9
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.48**	**5.92**	**2.51**	**0.01**	**0.11**	**0.10**	**0.9**
Offsite Motor Vehicle Exhaust	0.13	0.97	0.22	0.00	0.03	0.02	0.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	49.27	4.91	
Offsite Total	**0.13**	**0.97**	**0.22**	**0.00**	**49.30**	**4.93**	**0.6**
Total	**0.61**	**6.89**	**2.73**	**0.01**	**49.41**	**5.03**	**1.5**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Compressor Trailer	60	1	2	8
Backhoe/Front Loader	125	1	2	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
Backhoe/Front Loader	0.25	3.50	0.97	0.01	0.04	0.04
Total	**0.48**	**5.92**	**2.51**	**0.01**	**0.11**	**0.10**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Compressor Trailer	0.3	0.0	0.3
Backhoe/Front Loader	0.6	0.0	0.6
Total	**0.9**	**0.0**	**0.9**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
1-Ton Crew Cab, 4x4	1	4	N/A	5
Dump Truck	1	2	N/A	20
Worker Commute	4	4	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Dump Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 25
500 kV Transmission Line Construction Emissions
Foundation Removal

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
1-Ton Crew Cab, 4x4	0.00	0.03	0.03	0.00	0.00	0.00
Dump Truck	0.02	0.12	0.12	0.00	0.01	0.00
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.13**	**0.97**	**0.22**	**0.00**	**0.03**	**0.02**
Total	**0.13**	**0.97**	**0.22**	**0.00**	**0.03**	**0.02**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
1-Ton Crew Cab, 4x4	0.0	0.0	0.0
Dump Truck	0.1	0.0	0.1
Worker Commute	0.5	0.0	0.5
Offsite Total	**0.6**	**0.0**	**0.6**
Total	**0.6**	**0.0**	**0.6**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None						0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
1-Ton Crew Cab, 4x4	1	Unpaved	5	1.237	0.124	6.18	0.62
Dump Truck	1	Unpaved	20	2.145	0.214	42.90	4.29
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**49.27**	**4.91**
Total						**49.27**	**4.91**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 26
500 kV Transmission Line Construction Emissions
Tower Foundations Installation

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.73	13.83	6.02	0.05	0.23	0.21	53.6
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.20	0.04	
Onsite Total	**1.73**	**13.83**	**6.02**	**0.05**	**0.43**	**0.26**	**53.6**
Offsite Motor Vehicle Exhaust	0.28	2.10	0.64	0.01	0.08	0.05	10.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	107.06	10.66	
Offsite Total	**0.28**	**2.10**	**0.64**	**0.01**	**107.14**	**10.72**	**10.1**
Total	**2.01**	**15.93**	**6.66**	**0.06**	**107.57**	**10.97**	**63.6**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Boom/Crane Truck	350	1	30	7
Backhoe/Front Loader	125	1	30	10
Low Drill	385	1	16	10

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Low Drill	385	0.071	0.551	0.162	0.003	0.006	0.005	311.309	0.006	Bore/Drill Rigs

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Boom/Crane Truck	0.60	2.47	2.78	0.01	0.10	0.09
Backhoe/Front Loader	0.42	5.84	1.61	0.01	0.07	0.07
Low Drill	0.71	5.51	1.62	0.03	0.06	0.05
Total	**1.73**	**13.83**	**6.02**	**0.05**	**0.23**	**0.21**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Boom/Crane Truck	17.2	0.0	17.2
Backhoe/Front Loader	13.8	0.0	13.8
Low Drill	22.6	0.0	22.6
Total	**53.5**	**0.0**	**53.6**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
3/4-Ton Truck, 4x4	2	30	N/A	5
Water Truck	1	30	N/A	5
Dump Truck	1	30	N/A	10
Concrete Mixer Truck	3	18	N/A	10
Worker Commute	9	30	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Table 26
500 kV Transmission Line Construction Emissions
Tower Foundations Installation

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
3/4-Ton Truck, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Water Truck	0.00	0.02	0.05	0.00	0.00	0.00
Dump Truck	0.01	0.04	0.09	0.00	0.00	0.00
Concrete Mixer Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.24	1.85	0.16	0.01	0.05	0.03
Offsite Total	**0.28**	**2.10**	**0.64**	**0.01**	**0.08**	**0.05**
Total	**0.28**	**2.10**	**0.64**	**0.01**	**0.08**	**0.05**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
3/4-Ton Truck, 4x4	0.0	0.0	0.0
Water Truck	0.3	0.0	0.3
Dump Truck	0.6	0.0	0.6
Concrete Mixer Truck	1.0	0.0	1.0
Worker Commute	8.2	0.0	8.2
Offsite Total	**10.0**	**0.0**	**10.1**
Total	**10.0**	**0.0**	**10.1**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
a From Table 56
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
None						0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
3/4-Ton Truck, 4x4	2	Unpaved	5	1.012	0.101	10.12	1.01
Water Truck	1	Unpaved	5	2.145	0.214	10.72	1.07
Dump Truck	1	Unpaved	10	2.145	0.214	21.45	2.14
Concrete Mixer Truck	3	Unpaved	10	2.145	0.214	64.34	6.43
Worker Commute	9	Paved	60	0.001	0.000	0.43	0.00
Offsite Total						**107.06**	**10.66**
Total						**107.06**	**10.66**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling[c]	CY/day	200	9.94E-04	2.07E-04	0.20	0.04
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.20**	**0.04**

a From Table 57

Table 26
500 kV Transmission Line Construction Emissions
Tower Foundations Installation

[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
[c] Estimate

Table 26b
500 kV Transmission Line Construction Emissions
Install Micropile Foundations

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.15	15.80	7.68	0.03	0.24	0.22	104.7
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**1.15**	**15.80**	**7.68**	**0.03**	**0.24**	**0.22**	**104.7**
Offsite Motor Vehicle Exhaust	0.16	1.23	0.10	0.00	0.03	0.02	17.4
Offsite Helicopter Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	
Offsite Total	**0.16**	**1.23**	**0.10**	**0.00**	**0.32**	**0.02**	**17.4**
Total	**1.30**	**17.03**	**7.78**	**0.03**	**0.56**	**0.24**	**122.1**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Compressor	150	1	96	8
Grout Machine	60	1	80	8
Drill Rig	75	1	96	8
Transfer Pump	60	1	80	8

Note: Helicopter use accounted for in Table 29c

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	0.042814	0.500686	0.28637	0.001746	0.0041623	PM2.5 (lb/hr)[b]	164.8678	0.003863	Category
Compressor	150	0.042	0.500	0.219	0.001	0.010	0.010	88.483	0.004	Air Compressors
Grout Machine	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment
Drill Rig	75	0.025	0.466	0.195	0.001	0.002	0.002	77.122	0.002	Bore/Drill Rigs
Transfer Pump	60	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Compressor	0.34	4.00	1.75	0.01	0.08	0.08
Grout Machine	0.30	4.04	2.18	0.01	0.07	0.06
Drill Rig	0.20	3.73	1.56	0.01	0.02	0.01
Transfer Pump	0.30	4.04	2.18	0.01	0.07	0.06
Total	**1.15**	**15.80**	**7.68**	**0.03**	**0.24**	**0.22**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Compressor	30.8	0.0	30.9
Grout Machine	23.5	0.0	23.5
Drill Rig	26.9	0.0	26.9
Transfer Pump	23.5	0.0	23.5
Total	**104.6**	**0.0**	**104.7**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
Worker Commute	6	96	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Table 26b
500 kV Transmission Line Construction Emissions
Install Micropile Foundations

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
Offsite Total	**0.16**	**1.23**	**0.10**	**0.00**	**0.03**	**0.02**
Total	**0.16**	**1.23**	**0.10**	**0.00**	**0.03**	**0.02**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
Worker Commute	17.4	0.0	17.4
Offsite Total	**17.4**	**0.0**	**17.4**
Total	**17.4**	**0.0**	**17.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

a From Table 56

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
None						0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
Offsite Total						**0.29**	**0.00**
Total						**0.29**	**0.00**

a From Table 56

[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling[c]	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57

[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

[c] Estimate

Table 27
500 kV Transmission Line Construction Emissions
Tower Steel Haul

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.18	2.65	0.59	0.01	0.02	0.02	2.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.18**	**2.65**	**0.59**	**0.01**	**0.02**	**0.02**	**2.0**
Offsite Motor Vehicle Exhaust	0.13	0.97	0.32	0.00	0.04	0.02	1.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	55.45	5.53	
Offsite Total	**0.13**	**0.97**	**0.32**	**0.00**	**55.49**	**5.55**	**1.7**
Total	**0.31**	**3.62**	**0.90**	**0.01**	**55.51**	**5.57**	**3.8**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Rough Terrain Forklift	125	1	10	8

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Rough Terrain Forklift	0.18	2.65	0.59	0.01	0.02	0.02
Total	**0.18**	**2.65**	**0.59**	**0.01**	**0.02**	**0.02**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Rough Terrain Forklift	2.0	0.0	2.0
Total	**2.0**	**0.0**	**2.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
1-Ton Crew Cab Flat Bed, 4x4	2	10	N/A	5
Flat Bed Truck/Trailer	1	10	N/A	20
Worker Commute	4	10	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Flat Bed Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 27
500 kV Transmission Line Construction Emissions
Tower Steel Haul

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
1-Ton Crew Cab Flat Bed, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Flat Bed Truck/Trailer	0.02	0.09	0.19	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.13**	**0.97**	**0.32**	**0.00**	**0.04**	**0.02**
Total	**0.13**	**0.97**	**0.32**	**0.00**	**0.04**	**0.02**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
1-Ton Crew Cab Flat Bed, 4x4	0.1	0.0	0.1
Flat Bed Truck/Trailer	0.4	0.0	0.4
Worker Commute	1.2	0.0	1.2
Offsite Total	**1.7**	**0.0**	**1.7**
Total	**1.7**	**0.0**	**1.7**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None						0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
1-Ton Crew Cab Flat Bed, 4x4	2	Unpaved	5	1.237	0.124	12.37	1.24
Flat Bed Truck/Trailer	1	Unpaved	20	2.145	0.214	42.90	4.29
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**55.45**	**5.53**
Total						**55.45**	**5.53**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 28
500 kV Transmission Line Construction Emissions
Tower Steel Assembly

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.70	5.79	3.60	0.02	0.14	0.13	25.2
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.70**	**5.79**	**3.60**	**0.02**	**0.14**	**0.13**	**25.2**
Offsite Motor Vehicle Exhaust	0.29	2.24	0.36	0.01	0.07	0.04	13.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	33.08	3.26	
Offsite Total	**0.29**	**2.24**	**0.36**	**0.01**	**33.14**	**3.30**	**13.7**
Total	**0.98**	**8.03**	**3.96**	**0.02**	**33.29**	**3.44**	**38.8**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Rough Terrain Forklift	125	1	40	6
RT Crane (M)	215	1	40	6
Compressor Trailer	60	1	40	8

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts
RT Crane (M)	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Rough Terrain Forklift	0.14	1.99	0.44	0.00	0.02	0.02
RT Crane (M)	0.33	1.39	1.62	0.01	0.06	0.05
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
Total	**0.70**	**5.79**	**3.60**	**0.02**	**0.14**	**0.13**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Rough Terrain Forklift	6.1	0.0	6.1
RT Crane (M)	12.2	0.0	12.2
Compressor Trailer	6.8	0.0	6.8
Total	**25.1**	**0.0**	**25.2**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
3/4-Ton Truck, 4x4	2	40	N/A	10
1-Ton Crew Cab Flat Bed, 4x4	2	40	N/A	5
Worker Commute	10	40	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Table 28
500 kV Transmission Line Construction Emissions
Tower Steel Assembly

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
3/4-Ton Truck, 4x4	0.02	0.12	0.12	0.00	0.01	0.00
1-Ton Crew Cab Flat Bed, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
Offsite Total	**0.29**	**2.24**	**0.36**	**0.01**	**0.07**	**0.04**
Total	**0.29**	**2.24**	**0.36**	**0.01**	**0.07**	**0.04**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
3/4-Ton Truck, 4x4	1.0	0.0	1.0
1-Ton Crew Cab Flat Bed, 4x4	0.5	0.0	0.5
Worker Commute	12.1	0.0	12.1
Offsite Total	**13.7**	**0.0**	**13.7**
Total	**13.7**	**0.0**	**13.7**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None						0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
3/4-Ton Truck, 4x4	2	Unpaved	10	1.012	0.101	20.23	2.02
1-Ton Crew Cab Flat Bed, 4x4	2	Unpaved	5	1.237	0.124	12.37	1.24
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
Offsite Total						**33.08**	**3.26**
Total						**33.08**	**3.26**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 29
500 kV Transmission Line Construction Emissions
Tower Erection

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.07	5.93	5.55	0.02	0.21	0.20	17.7
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**1.07**	**5.93**	**5.55**	**0.02**	**0.21**	**0.20**	**17.7**
Offsite Motor Vehicle Exhaust	0.38	2.91	0.67	0.01	0.09	0.06	15.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	83.19	8.26	
Offsite Total	**0.38**	**2.91**	**0.67**	**0.01**	**83.29**	**8.32**	**15.2**
Total	**1.46**	**8.84**	**6.22**	**0.03**	**83.50**	**8.52**	**33.0**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Compressor Trailer	60	1	33	8
RT Crane (M)	215	1	22	6
RT Crane (L)	275	1	11	6

Note: Helicopter use accounted for in Table 29c

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
RT Crane (M)	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
RT Crane (L)	275	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
RT Crane (M)	0.33	1.39	1.62	0.01	0.06	0.05
RT Crane (L)	0.51	2.12	2.39	0.01	0.09	0.08
Total	**1.07**	**5.93**	**5.55**	**0.02**	**0.21**	**0.20**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Compressor Trailer	5.6	0.0	5.6
RT Crane (M)	6.7	0.0	6.7
RT Crane (L)	5.4	0.0	5.4
Total	**17.7**	**0.0**	**17.7**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]

Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
3/4-Ton Truck, 4x4	3	33	N/A	15
1-Ton Crew Cab Flat Bed, 4x4	2	33	N/A	15
Worker Commute	12	33	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 29
500 kV Transmission Line Construction Emissions
Tower Erection

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
3/4-Ton Truck, 4x4	0.04	0.27	0.28	0.00	0.01	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.31	2.47	0.21	0.01	0.07	0.05
Offsite Total	**0.38**	**2.91**	**0.67**	**0.01**	**0.09**	**0.06**
Total	**0.38**	**2.91**	**0.67**	**0.01**	**0.09**	**0.06**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
3/4-Ton Truck, 4x4	1.9	0.0	1.9
1-Ton Crew Cab Flat Bed, 4x4	1.3	0.0	1.3
Worker Commute	12.0	0.0	12.0
Offsite Total	**15.2**	**0.0**	**15.2**
Total	**15.2**	**0.0**	**15.2**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
None						0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
3/4-Ton Truck, 4x4	3	Unpaved	15	1.012	0.101	45.52	4.55
1-Ton Crew Cab Flat Bed, 4x4	2	Unpaved	15	1.237	0.124	37.10	3.71
Worker Commute	12	Paved	60	0.001	0.000	0.58	0.00
Offsite Total						**83.19**	**8.26**
Total						**83.19**	**8.26**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 29b
500 kV Transmission Line Construction Emissions
Tower Erection (Helicopter) Ground Support

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.0**
Offsite Motor Vehicle Exhaust	0.59	4.56	0.81	0.01	0.14	0.09	5.0
Offsite Helicopter Exhaust	0.23	2.42	1.54	0.00	0.07	0.07	1.36
Offsite Motor Vehicle Fugitive PM	--	--	--	--	93.83	9.29	
Offsite Total	**0.82**	**6.98**	**2.35**	**0.02**	**94.04**	**9.44**	**6.4**
Total	**0.82**	**6.98**	**2.35**	**0.02**	**94.04**	**9.44**	**6.4**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Compressor Trailer	60	1	8	8

Note: Helicopter use accounted for in Table 29c

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
Total	**0.23**	**2.42**	**1.54**	**0.00**	**0.07**	**0.07**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Compressor Trailer	1.4	0.0	1.4
Total	**1.4**	**0.0**	**1.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
3/4-Ton Truck, 4x4	2	2	N/A	15
1-Ton Truck, 4x4	2	2	N/A	15
Fuel, Helicopter Support Truck	1	2	N/A	15
Worker Commute	20	8	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Fuel, Helicopter Support Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 29b
500 kV Transmission Line Construction Emissions
Tower Erection (Helicopter) Ground Support

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
3/4-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
1-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Fuel, Helicopter Support Truck	0.01	0.09	0.09	0.00	0.00	0.00
Worker Commute	0.52	4.11	0.35	0.01	0.12	0.08
Offsite Total	**0.59**	**4.56**	**0.81**	**0.01**	**0.14**	**0.09**
Total	**0.59**	**4.56**	**0.81**	**0.01**	**0.14**	**0.09**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
3/4-Ton Truck, 4x4	0.1	0.0	0.1
1-Ton Truck, 4x4	0.1	0.0	0.1
Fuel, Helicopter Support Truck	0.0	0.0	0.0
Worker Commute	4.8	0.0	4.8
Offsite Total	**5.0**	**0.0**	**5.0**
Total	**5.0**	**0.0**	**5.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
None						0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
3/4-Ton Truck, 4x4	2	Unpaved	15	1.012	0.101	30.35	3.03
1-Ton Truck, 4x4	2	Unpaved	15	1.012	0.101	30.35	3.03
Fuel, Helicopter Support Truck	1	Unpaved	15	2.145	0.214	32.17	3.22
Worker Commute	20	Paved	60	0.001	0.000	0.96	0.00
Offsite Total						**93.83**	**9.29**
Total						**93.83**	**9.29**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 29c
500 kV Transmission Line Construction Emissions
Tower Helicopter Operations

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.0**
Offsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Offsite Helicopter Exhaust	46.71	56.80	577.42	32.18	12.02	12.02	1626.43
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Offsite Total	**46.71**	**56.80**	**577.42**	**32.18**	**12.02**	**12.02**	**1626.4**
Total	**46.71**	**56.80**	**577.42**	**32.18**	**12.02**	**12.02**	**1626.4**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Kaman K-Max	1500	1	120	8
Hughes 500E Helicopter	317	1	127	12
Sikorsky S64	9000	1	7	12

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Kaman K-Max	1500	1.129	1.353	7.403	0.626	0.201	0.201	1978.170	0.055	See note c
Hughes 500E Helicopter	317	2.106	2.645	1.067	0.218	0.035	0.035	676.039	0.019	See note c
Sikorsky S64	9000	1.786	2.088	47.051	2.464	0.966	0.966	7788.012	0.216	See note c

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html
[c] All except SOx, PM2.5, CO2, and CH4 from Guidance on the Determination of Helicopter Emissions, Federal Department of the Environment, Transport, Energy and Communications,
DETEC, Federal Office of Civil Aviation FOCA, Division Aviation Policy and Strategy, Swiss Confederation, March 2009.
Downloaded from http://www.bazl.admin.ch/experten/regulation/03312/03419/03532/index.html?lang=en
PM2.5 emissions assumed equal to PM10
SOx emissions [lb/hr] = Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] x Fuel sulfur [wt. %] / 100 x 2 [lb SO2/lbS]
K-Max Fuel use = 283.86 kg/hr from Guidance on the Determination of Helicopter Emissions
Hughes 500E Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicotper Emissions
Sikorsky S64 Fuel use = 1,118 kg/hr from Guidance on the Determination of Helicopter Emissions
Fuel sulfur = 0.05% from estimated average for Jet A
CO2 emissions [lb/hr] = CO2 emission factor [kg/gal] x 1000 [g/kg] / 453.6 [g/lb] x Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] / Fuel density [lb/gal]
CO2 emission factor = 9.75 kg/gal from Table 13.1 of 2013 Climate Registry Default Emission Factors, downloaded from
http://www.theclimateregistry.org/downloads/2013/01/2013-Climate-Registry-Default-Emissions-Factors.pdf
CH4 emission factor = 0.27 g/gal from Table 13.7 of 2013 Climate Registry Default Emission Factors
K-Max Fuel use = 283.86 kg/hr from Guidance on the Determination of Helicopter Emissions
Hughes 500E Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicotper Emissions
Sikorsky S64 Fuel use = 1,118 kg/hr from Guidance on the Determination of Helicopter Emissions
Jet-A density = 6.8 lb/gal

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Kaman K-Max	9.03	10.83	59.22	5.01	1.60	1.60
Hughes 500E Helicopter	25.27	31.74	12.80	2.61	0.42	0.42
Sikorsky S64	21.44	25.06	564.62	29.57	11.60	11.60
Total[b]	**46.71**	**56.80**	**577.42**	**32.18**	**12.02**	**12.02**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]
b Total daily emissions assume that the Kaman K-Max and Sikorsky S64 would not operate on the same day.

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Kaman K-Max	861.4	0.0	861.9
Hughes 500E Helicopter	467.3	0.0	467.6
Sikorsky S64	296.7	0.0	296.9
Total	**1,625.5**	**0.0**	**1,626.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Table 29c
500 kV Transmission Line Construction Emissions
Tower Helicopter Operations

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				
Offsite				
None				

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Fuel, Helicopter Support Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 29c
500 kV Transmission Line Construction Emissions
Tower Helicopter Operations

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
3/4-Ton Truck, 4x4	0.00	0.00	0.00	0.00	0.00	0.00
1-Ton Truck, 4x4	0.00	0.00	0.00	0.00	0.00	0.00
Fuel, Helicopter Support Truck	0.00	0.00	0.00	0.00	0.00	0.00
Worker Commute	0.00	0.00	0.00	0.00	0.00	0.00
Offsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
3/4-Ton Truck, 4x4	0.0	0.0	0.0
1-Ton Truck, 4x4	0.0	0.0	0.0
Fuel, Helicopter Support Truck	0.0	0.0	0.0
Worker Commute	0.0	0.0	0.0
Offsite Total	**0.0**	**0.0**	**0.0**
Total	**0.0**	**0.0**	**0.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
None						0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
None							
Offsite Total						**0.00**	**0.00**
Total						**0.00**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Table 30
500 kV Transmission Line Construction Emissions
Wire Stringing

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	5.93	32.28	29.00	0.15	1.00	0.92	0.00
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**5.93**	**32.28**	**29.00**	**0.15**	**1.00**	**0.92**	**0.0**
Offsite Motor Vehicle Exhaust	1.70	12.93	3.12	0.04	0.42	0.29	18.5
Offsite Helecopter Exhaust	12.64	15.87	6.40	1.31	0.21	0.21	0.00
Offsite Motor Vehicle Fugitive PM	--	--	--	--	382.11	37.94	
Offsite Total	**14.34**	**28.80**	**9.52**	**1.35**	**382.75**	**38.45**	**18.5**
Total	**20.27**	**61.08**	**38.52**	**1.51**	**383.75**	**39.37**	**18.5**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Bucket Truck	250	2	9	8
RT Crane (M)	215	2	9	6
Boom/Crane Truck	350	2	9	6
Spacing Cart	10	2	3	8
Static Truck/Tensioner	350	1	9	6
3 Drum Straw Sock Puller	300	1	4	6
Bull Wheel Puller	525	1	5	6
Sag Cat w/ winches	350	2	9	4
Backhoe/Front Loader	125	1	9	4
D8 Cat	350	2	9	4
Hughes 500 E Helicopter	N/A	1	2	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts
RT Crane (M)	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Spacing Cart	10	0.012	0.062	0.074	0.000	0.003	0.003	10.107	0.001	Other Construction Equipment
Static Truck/Tensioner	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
3 Drum Straw Sock Puller	300	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Bull Wheel Puller	525	0.044	0.347	0.202	0.001	0.007	0.006	122.505	0.004	Other Construction Equipment
Sag Cat w/ winches	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
D8 Cat	350	0.139	0.588	0.753	0.003	0.028	0.026	259.229	0.013	Crawler Tractors
Hughes 500 E Helicopter	317	2.106	2.645	1.067	0.218	0.035	0.035	676.039		See note c

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

[c] All except SOx, PM2.5 and CO2 from Guidance on the Determination of Helicopter Emissions, Federal Department of the Environment, Transport, Energy and Communications, DETEC, Federal Office of Civil Aviation FOCA, Division Aviation Policy and Strategy, Swiss Confederation, March 2009. Downloaded from http://www.bazl.admin.ch/fachleute/01169/01174/01628/index.html?lang=en

PM2.5 emissions assumed equal to PM10

SOx emissions [lb/hr] = Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] x Fuel sulfur [wt. %] / 100 x 2 [lb SO2/lbS]

Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicopter Emissions

Fuel sulfur = 0.05% from estimated average for Jet-A

CO2 emissions [lb/hr] = CO2 emission factor [kg/gal] x 1000 [g/kg] / 453.6 [g/lb] x Fuel use [kg/hr] x 1000 [g/kg] / 453.6 [g/lb] / Fuel density [lb/gal]

CO2 emission factor = 9.57 kg/gal from Table C.3 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008.

Downloaded from http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Fuel use = 98.8 kg/hr from Guidance on the Determination of Helicopter Emissions

Jet-A density = 6.8 lb/gal

Table 30
500 kV Transmission Line Construction Emissions
Wire Stringing

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Bucket Truck	0.93	5.94	5.86	0.03	0.17	0.16
RT Crane (M)	0.65	2.78	3.25	0.02	0.11	0.10
Boom/Crane Truck	1.03	4.24	4.77	0.02	0.18	0.16
Spacing Cart	0.19	0.99	1.18	0.00	0.05	0.04
Static Truck/Tensioner	0.48	2.76	1.82	0.01	0.06	0.05
3 Drum Straw Sock Puller	0.48	2.76	1.82	0.01	0.06	0.05
Bull Wheel Puller	0.27	2.08	1.21	0.01	0.04	0.04
Sag Cat w/ winches	0.63	3.68	2.43	0.02	0.08	0.07
Backhoe/Front Loader	0.17	2.34	0.65	0.00	0.03	0.03
D8 Cat	1.11	4.70	6.02	0.02	0.22	0.21
Hughes 500 E Helicopter	12.64	15.87	6.40	1.31	0.21	0.21
Total	**18.56**	**48.15**	**35.40**	**1.46**	**1.21**	**1.13**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Bucket Truck	13.9	0.0	13.9
RT Crane (M)	5.5	0.0	5.5
Boom/Crane Truck	8.8	0.0	8.8
Spacing Cart	0.2	0.0	0.2
Static Truck/Tensioner	6.2	0.0	6.2
3 Drum Straw Sock Puller	2.8	0.0	2.8
Bull Wheel Puller	1.7	0.0	1.7
Sag Cat w/ winches	8.3	0.0	8.3
Backhoe/Front Loader	1.7	0.0	1.7
D8 Cat	8.5	0.0	8.5
Hughes 500 E Helicopter	3.7	0.0	3.7
Total	**61.2**	**0.0**	**61.2**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
3/4-Ton Truck, 4x4	4	9	N/A	20
1-Ton Crew Cab, 4x4	6	9	N/A	20
Wire Truck/Trailer	4	6	N/A	5
Dump Truck	1	9	N/A	5
Lowboy Truck/Trailer	3	9	N/A	15
Fuel, Helicopter Support Truck	1	2	N/A	30
Worker Commute	55	9	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Wire Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Fuel, Helicopter Support Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 30
500 kV Transmission Line Construction Emissions
Wire Stringing

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
3/4-Ton Truck, 4x4	0.07	0.48	0.49	0.00	0.02	0.02
1-Ton Crew Cab, 4x4	0.11	0.71	0.74	0.00	0.03	0.03
Wire Truck/Trailer	0.02	0.09	0.19	0.00	0.01	0.01
Dump Truck	0.00	0.02	0.05	0.00	0.00	0.00
Lowboy Truck/Trailer	0.04	0.19	0.42	0.00	0.02	0.02
Fuel, Helicopter Support Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	1.44	11.31	0.95	0.04	0.32	0.21
Offsite Total	**1.70**	**12.93**	**3.12**	**0.04**	**0.42**	**0.29**
Total	**1.70**	**12.93**	**3.12**	**0.04**	**0.42**	**0.29**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
3/4-Ton Truck, 4x4	0.9	0.0	0.9
1-Ton Crew Cab, 4x4	1.4	0.0	1.4
Wire Truck/Trailer	0.2	0.0	0.2
Dump Truck	0.1	0.0	0.1
Lowboy Truck/Trailer	0.8	0.0	0.8
Fuel, Helicopter Support Truck	0.1	0.0	0.1
Worker Commute	15.0	0.0	15.0
Offsite Total	**18.5**	**0.0**	**18.5**
Total	**18.5**	**0.0**	**18.5**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None						0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
3/4-Ton Truck, 4x4	4	Unpaved	20	1.012	0.101	80.93	8.09
1-Ton Crew Cab, 4x4	6	Unpaved	20	1.237	0.124	148.39	14.84
Wire Truck/Trailer	4	Unpaved	5	2.145	0.214	42.90	4.29
Dump Truck	1	Unpaved	5	2.145	0.214	10.72	1.07
Lowboy Truck/Trailer	3	Unpaved	15	2.145	0.214	96.51	9.65
Fuel, Helicopter Support Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	55	Paved	60	0.001	0.000	2.64	0.00
Offsite Total						**382.11**	**37.94**
Total						**382.11**	**37.94**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 31
500 kV Transmission Line Construction Emissions
Restoration

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.87	6.75	4.42	0.02	0.19	0.17	3.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	2.58	0.54	
Onsite Total	**0.87**	**6.75**	**4.42**	**0.02**	**2.77**	**0.71**	**3.3**
Offsite Motor Vehicle Exhaust	0.20	1.56	0.32	0.01	0.05	0.03	1.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	44.87	4.45	
Offsite Total	**0.20**	**1.56**	**0.32**	**0.01**	**44.92**	**4.49**	**1.0**
Total	**1.08**	**8.31**	**4.75**	**0.03**	**47.70**	**5.20**	**4.3**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Road Grader	250	1	4	6
Backhoe/Front Loader	125	1	4	4
Drum Type Compactor	100	1	4	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Road Grader	0.47	2.13	2.19	0.01	0.08	0.07
Backhoe/Front Loader	0.17	2.34	0.65	0.00	0.03	0.03
Drum Type Compactor	0.24	2.28	1.59	0.00	0.08	0.08
Total	**0.87**	**6.75**	**4.42**	**0.02**	**0.19**	**0.17**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Road Grader	1.9	0.0	1.9
Backhoe/Front Loader	0.7	0.0	0.7
Drum Type Compactor	0.6	0.0	0.6
Total	**3.3**	**0.0**	**3.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
1-Ton Crew Cab, 4x4	2	4	N/A	5
Water Truck	1	4	N/A	5
Lowboy Truck/Trailer	1	4	N/A	10
Worker Commute	7	4	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Table 31
500 kV Transmission Line Construction Emissions
Restoration

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Water Truck	0.00	0.02	0.05	0.00	0.00	0.00
Lowboy Truck/Trailer	0.01	0.04	0.09	0.00	0.00	0.00
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
Offsite Total	**0.20**	**1.56**	**0.32**	**0.01**	**0.05**	**0.03**
Total	**0.20**	**1.56**	**0.32**	**0.01**	**0.05**	**0.03**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
1-Ton Crew Cab, 4x4	0.1	0.0	0.1
Water Truck	0.0	0.0	0.0
Lowboy Truck/Trailer	0.1	0.0	0.1
Worker Commute	0.8	0.0	0.8
Offsite Total	**1.0**	**0.0**	**1.0**
Total	**1.0**	**0.0**	**1.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None						0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
1-Ton Crew Cab, 4x4	2	Unpaved	5	1.237	0.124	12.37	1.24
Water Truck	1	Unpaved	5	2.145	0.214	10.72	1.07
Lowboy Truck/Trailer	1	Unpaved	10	2.145	0.214	21.45	2.14
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
Offsite Total						**44.87**	**4.45**
Total						**44.87**	**4.45**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling[c]	CY/day	500	9.94E-04	2.07E-04	0.50	0.10
Bulldozing, Scraping and Grading	hr/day	6	0.348	0.072	2.09	0.43
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**2.58**	**0.54**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
[c] Estimate

Table 32
115 kV Subtransmission Line Construction Emissions
Survey

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.0**
Offsite Motor Vehicle Exhaust	0.12	0.96	0.08	0.00	0.03	0.02	2.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.22	0.00	
Offsite Total	**0.12**	**0.96**	**0.08**	**0.00**	**0.25**	**0.02**	**2.5**
Total	**0.12**	**0.96**	**0.08**	**0.00**	**0.25**	**0.02**	**2.5**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
None				

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
None	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
None	0.0	0.0	0.0
Total	**0.0**	**0.0**	**0.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				
Offsite				
1-Ton Truck, 4x4	2	18	8	20
Worker Commute	4	18	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
1-Ton Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 32
115 kV Subtransmission Line Construction Emissions
Survey

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
1-Ton Truck, 4x4	0.02	0.14	0.01	0.00	0.00	0.00
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.12**	**0.96**	**0.08**	**0.00**	**0.03**	**0.02**
Total	**0.12**	**0.96**	**0.08**	**0.00**	**0.03**	**0.02**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
1-Ton Truck, 4x4	0.4	0.0	0.4
Worker Commute	2.2	0.0	2.2
Offsite Total	**2.5**	**0.0**	**2.5**
Total	**2.5**	**0.0**	**2.5**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None							
Onsite Total						**0.00**	**0.00**
Offsite							
1-Ton Truck, 4x4	2	Paved	20	0.001	0.000	0.03	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**0.22**	**0.00**
Total						**0.22**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 33
115 kV Subtransmission Line Construction Emissions
Marshalling Yard

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.25	2.45	0.98	0.01	0.04	0.03	92.9
Onsite Motor Vehicle Exhaust	0.01	0.08	0.11	0.00	0.01	0.00	8.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	23.09	2.31	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.26**	**2.53**	**1.09**	**0.01**	**23.13**	**2.35**	**101.1**
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	44.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
Offsite Total	**0.10**	**0.82**	**0.07**	**0.00**	**0.22**	**0.02**	**44.2**
Total	**0.36**	**3.35**	**1.16**	**0.01**	**23.35**	**2.36**	**145.3**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Boom/Crane Truck	215	1	365	2
Rough Terrain Forklift	125	1	365	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Boom/Crane Truck	215	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Boom/Crane Truck	0.11	0.46	0.54	0.00	0.02	0.02
Rough Terrain Forklift	0.14	1.99	0.44	0.00	0.02	0.02
Total	**0.25**	**2.45**	**0.98**	**0.01**	**0.04**	**0.03**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Boom/Crane Truck	37.1	0.0	37.2
Rough Terrain Forklift	55.7	0.0	55.7
Total	**92.8**	**0.0**	**92.9**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
1-Ton Crew Cab, 4x4	1	365	4	10
Truck, Semi Tractor	1	365	2	5
Offsite				
Worker Commute	4	365	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Truck, Semi Tractor	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 33
115 kV Subtransmission Line Construction Emissions
Marshalling Yard

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
1-Ton Crew Cab, 4x4	0.01	0.06	0.06	0.00	0.00	0.00
Truck, Semi Tractor	0.00	0.02	0.05	0.00	0.00	0.00
Onsite Total	**0.01**	**0.08**	**0.11**	**0.00**	**0.01**	**0.00**
Offsite						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.10**	**0.82**	**0.07**	**0.00**	**0.02**	**0.02**
Total	**0.12**	**0.90**	**0.18**	**0.00**	**0.03**	**0.02**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
1-Ton Crew Cab, 4x4	4.8	0.0	4.8
Truck, Semi Tractor	3.5	0.0	3.5
Onsite Total	**8.2**	**0.0**	**8.2**
Offsite			
Worker Commute	44.1	0.0	44.2
Offsite Total	**44.1**	**0.0**	**44.2**
Total	**52.4**	**0.0**	**52.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
1-Ton Crew Cab, 4x4	1	Unpaved	10	1.237	0.124	12.37	1.24
Truck, Semi Tractor	1	Unpaved	5	2.145	0.214	10.72	1.07
Onsite Total						**23.09**	**2.31**
Offsite							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**0.19**	**0.00**
Total						**23.28**	**2.31**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 34
115 kV Subtransmission Line Construction Emissions
Roads and Landing Work

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.60	12.73	7.49	0.04	0.34	0.31	109.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.01	0.00	0.00	0.00	0.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	2.14	0.21	
Earthwork Fugitive PM	--	--	--	--	3.58	0.74	
Onsite Total	**1.60**	**12.73**	**7.50**	**0.04**	**6.06**	**1.27**	**109.5**
Offsite Motor Vehicle Exhaust	0.18	1.34	0.55	0.01	0.05	0.04	19.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.29	0.00	
Offsite Total	**0.18**	**1.34**	**0.55**	**0.01**	**0.34**	**0.04**	**19.3**
Total	**1.79**	**14.07**	**8.05**	**0.04**	**6.40**	**1.31**	**128.8**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Road Grader	250	1	88	4
Backhoe/Front Loader	125	1	88	6
Drum Type Compactor	100	1	88	4
Track Type Dozer	150	1	88	6
Excavator	250	1	44	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers
Track Type Dozer	150	0.082	0.727	0.445	0.001	0.024	0.022	121.188	0.007	Crawler Tractors
Excavator	250	0.065	0.321	0.222	0.002	0.007	0.007	158.683	0.006	Excavators

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Road Grader	0.31	1.42	1.46	0.01	0.05	0.05
Backhoe/Front Loader	0.25	3.50	0.97	0.01	0.04	0.04
Drum Type Compactor	0.16	1.52	1.06	0.00	0.05	0.05
Track Type Dozer	0.49	4.36	2.67	0.01	0.14	0.13
Excavator	0.39	1.93	1.33	0.01	0.04	0.04
Total	**1.60**	**12.73**	**7.49**	**0.04**	**0.34**	**0.31**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Road Grader	27.5	0.0	27.5
Backhoe/Front Loader	24.3	0.0	24.3
Drum Type Compactor	9.4	0.0	9.4
Track Type Dozer	29.0	0.0	29.1
Excavator	19.0	0.0	19.0
Total	**109.2**	**0.0**	**109.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.
Onsite				
Water Truck	1	88	8	1
Offsite				
1-Ton Crew Cab, 4x4	1	88	N/A	30
Lowboy Truck/Trailer	1	44	N/A	30
Worker Commute	5	88	N/A	60

Table 34
115 kV Subtransmission Line Construction Emissions
Roads and Landing Work

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Offsite									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Water Truck	0.00	0.00	0.01	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**
Offsite						
1-Ton Crew Cab, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Lowboy Truck/Trailer	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.13	1.03	0.09	0.00	0.03	0.02
Offsite Total	**0.18**	**1.34**	**0.55**	**0.01**	**0.05**	**0.04**
Total	**0.18**	**1.34**	**0.56**	**0.01**	**0.05**	**0.04**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Water Truck	0.2	0.0	0.2
Onsite Total	**0.2**	**0.0**	**0.2**
Offsite			
1-Ton Crew Cab, 4x4	3.5	0.0	3.5
Lowboy Truck/Trailer	2.5	0.0	2.5
Worker Commute	13.3	0.0	13.3
Offsite Total	**19.3**	**0.0**	**19.3**
Total	**19.4**	**0.0**	**19.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
Water Truck	1	Unpaved	1	2.145	0.214	2.14	0.21
Onsite Total						**2.14**	**0.21**
Offsite							
1-Ton Crew Cab, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Lowboy Truck/Trailer	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	5	Paved	60	0.001	0.000	0.24	0.00
Offsite Total						**0.29**	**0.00**
Total						**2.43**	**0.21**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling[c]	CY/day	100	9.94E-04	2.07E-04	0.10	0.02
Bulldozing, Scraping and Grading	hr/day	10	0.348	0.072	3.48	0.72
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**3.58**	**0.74**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
[c] Estimate

Table 35
115 kV Subtransmission Line Construction Emissions
Guard Structure Installation

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.35	8.18	6.39	0.04	0.23	0.22	43.7
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**1.35**	**8.18**	**6.39**	**0.04**	**0.23**	**0.22**	**43.7**
Offsite Motor Vehicle Exhaust	0.26	1.90	0.94	0.01	0.07	0.05	9.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.38	0.00	
Offsite Total	**0.26**	**1.90**	**0.94**	**0.01**	**0.46**	**0.05**	**9.3**
Total	**1.61**	**10.08**	**7.33**	**0.05**	**0.69**	**0.27**	**53.0**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Compressor Trailer	60	1	26	6
Auger Truck	210	1	26	6
Boom/Crane Truck	350	1	26	8
Bucket Truck	250	1	26	4

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Auger Truck	210	0.043	0.343	0.098	0.002	0.004	0.003	188.102	0.004	Bore/Drill Rigs
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Compressor Trailer	0.17	1.81	1.16	0.00	0.05	0.05
Auger Truck	0.26	2.06	0.59	0.01	0.02	0.02
Boom/Crane Truck	0.69	2.83	3.18	0.01	0.12	0.11
Bucket Truck	0.23	1.48	1.46	0.01	0.04	0.04
Total	**1.35**	**8.18**	**6.39**	**0.04**	**0.23**	**0.22**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Compressor Trailer	3.3	0.0	3.3
Auger Truck	13.3	0.0	13.3
Boom/Crane Truck	17.0	0.0	17.0
Bucket Truck	10.0	0.0	10.0
Total	**43.7**	**0.0**	**43.7**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				
Offsite				
3/4-Ton Pick-up Truck, 4x4	2	26	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	1	26	N/A	30
Extendable Flat Bed Pole Truck	1	26	N/A	30
Worker Commute	6	26	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Table 35
115 kV Subtransmission Line Construction Emissions
Guard Structure Installation

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
3/4-Ton Pick-up Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Extendable Flat Bed Pole Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
3/4-Ton Pick-up Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Extendable Flat Bed Pole Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
Offsite Total	**0.26**	**1.90**	**0.94**	**0.01**	**0.07**	**0.05**
Total	**0.26**	**1.90**	**0.94**	**0.01**	**0.07**	**0.05**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
3/4-Ton Pick-up Truck, 4x4	2.0	0.0	2.0
1-Ton Crew Cab Flat Bed, 4x4	1.0	0.0	1.0
Extendable Flat Bed Pole Truck	1.5	0.0	1.5
Worker Commute	4.7	0.0	4.7
Offsite Total	**9.3**	**0.0**	**9.3**
Total	**9.3**	**0.0**	**9.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
None							
Onsite Total						**0.00**	**0.00**
Offsite							
3/4-Ton Pick-up Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Extendable Flat Bed Pole Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
Offsite Total						**0.38**	**0.00**
Total						**0.38**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 36
115 kV Subtransmission Line Construction Emissions
Remove Existing Wood H-Frames and Poles

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.84	5.86	4.22	0.02	0.17	0.16	17.5
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.84**	**5.86**	**4.22**	**0.02**	**0.17**	**0.16**	**17.5**
Offsite Motor Vehicle Exhaust	0.24	1.72	0.75	0.01	0.07	0.05	7.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.36	0.00	
Offsite Total	**0.24**	**1.72**	**0.75**	**0.01**	**0.43**	**0.05**	**7.3**
Total	**1.07**	**7.58**	**4.97**	**0.02**	**0.60**	**0.20**	**24.8**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Rough Terrain Forklift	125	1	23	4
Boom/Crane Truck	350	1	23	6
Compressor Trailer	60	1	23	8

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Rough Terrain Forklift	125	0.023	0.331	0.073	0.001	0.003	0.003	56.054	0.002	Forklifts
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Rough Terrain Forklift	0.09	1.32	0.29	0.00	0.01	0.01
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
Compressor Trailer	0.23	2.42	1.54	0.00	0.07	0.07
Total	**0.84**	**5.86**	**4.22**	**0.02**	**0.17**	**0.16**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Rough Terrain Forklift	2.3	0.0	2.3
Boom/Crane Truck	11.3	0.0	11.3
Compressor Trailer	3.9	0.0	3.9
Total	**17.5**	**0.0**	**17.5**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				
Offsite				
1-Ton Crew Cab, 4x4	2	23	N/A	30
Flat Bed Truck/Trailer	1	23	N/A	30
Worker Commute	6	23	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Table 36
115 kV Subtransmission Line Construction Emissions
Remove Existing Wood H-Frames and Poles

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Flat Bed Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
1-Ton Crew Cab, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Flat Bed Truck/Trailer	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
Offsite Total	**0.24**	**1.72**	**0.75**	**0.01**	**0.07**	**0.05**
Total	**0.24**	**1.72**	**0.75**	**0.01**	**0.07**	**0.05**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
1-Ton Crew Cab, 4x4	1.8	0.0	1.8
Flat Bed Truck/Trailer	1.3	0.0	1.3
Worker Commute	4.2	0.0	4.2
Offsite Total	**7.3**	**0.0**	**7.3**
Total	**7.3**	**0.0**	**7.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None							
Onsite Total						**0.00**	**0.00**
Offsite							
1-Ton Crew Cab, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Flat Bed Truck/Trailer	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
Offsite Total						**0.36**	**0.00**
Total						**0.36**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 37
115 kV Subtransmission Line Construction Emissions
Remove Existing Tubular Steel/Light Weight Steel Poles

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.66	3.63	3.35	0.01	0.13	0.12	3.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.66**	**3.63**	**3.35**	**0.01**	**0.13**	**0.12**	**3.0**
Offsite Motor Vehicle Exhaust	0.32	2.36	0.88	0.01	0.08	0.06	2.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
Offsite Total	**0.32**	**2.36**	**0.88**	**0.01**	**0.56**	**0.06**	**2.0**
Total	**0.98**	**5.99**	**4.23**	**0.02**	**0.69**	**0.18**	**5.0**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Compressor Trailer	60	1	5	5
Boom/Crane Truck	350	1	5	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Compressor Trailer	0.14	1.51	0.96	0.00	0.04	0.04
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
Total	**0.66**	**3.63**	**3.35**	**0.01**	**0.13**	**0.12**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Compressor Trailer	0.5	0.0	0.5
Boom/Crane Truck	2.5	0.0	2.5
Total	**3.0**	**0.0**	**3.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				
Offsite				
3/4-Ton Truck, 4x4	2	5	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	2	5	N/A	30
Worker Commute	8	5	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 37
115 kV Subtransmission Line Construction Emissions
Remove Existing Tubular Steel/Light Weight Steel Poles

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
Offsite Total	**0.32**	**2.36**	**0.88**	**0.01**	**0.08**	**0.06**
Total	**0.32**	**2.36**	**0.88**	**0.01**	**0.08**	**0.06**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
3/4-Ton Truck, 4x4	0.4	0.0	0.4
1-Ton Crew Cab Flat Bed, 4x4	0.4	0.0	0.4
Worker Commute	1.2	0.0	1.2
Offsite Total	**2.0**	**0.0**	**2.0**
Total	**2.0**	**0.0**	**2.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None							
Onsite Total						**0.00**	**0.00**
Offsite							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
Offsite Total						**0.48**	**0.00**
Total						**0.48**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 38
115 kV Subtransmission Line Construction Emissions
Install Tubular Steel Pole Foundations

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.11	9.18	4.06	0.03	0.16	0.15	119.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.01	0.00	0.00	0.00	0.2
Onsite Motor Vehicle Fugitive PM	--	--	--	--	2.14	0.21	
Earthwork Fugitive PM	--	--	--	--	0.03	0.01	
Onsite Total	**1.11**	**9.18**	**4.07**	**0.03**	**2.34**	**0.37**	**119.2**
Offsite Motor Vehicle Exhaust	0.31	2.14	1.43	0.01	0.11	0.08	40.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.38	0.00	
Offsite Total	**0.31**	**2.14**	**1.43**	**0.01**	**0.49**	**0.08**	**40.7**
Total	**1.41**	**11.32**	**5.50**	**0.05**	**2.83**	**0.44**	**159.9**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Boom/Crane Truck	350	1	96	5
Backhoe/Front Loader	125	1	96	8
Auger Truck	210	1	65	8

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Auger Truck	210	0.043	0.343	0.098	0.002	0.004	0.003	188.102	0.004	Bore/Drill Rigs

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Boom/Crane Truck	0.43	1.77	1.99	0.01	0.07	0.07
Backhoe/Front Loader	0.34	4.67	1.29	0.01	0.06	0.05
Auger Truck	0.34	2.74	0.78	0.02	0.03	0.03
Total	**1.11**	**9.18**	**4.06**	**0.03**	**0.16**	**0.15**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Boom/Crane Truck	39.2	0.0	39.2
Backhoe/Front Loader	35.3	0.0	35.3
Auger Truck	44.4	0.0	44.4
Total	**118.9**	**0.0**	**119.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.
Onsite				
Water Truck	1	96	8	1
Offsite				
1-Ton Crew Cab Flat Bed, 4x4	1	96	N/A	30
Dump Truck	1	96	N/A	30
Concrete Mixer Truck	3	65	N/A	30
Worker Commute	7	96	N/A	60

Table 38
115 kV Subtransmission Line Construction Emissions
Install Tubular Steel Pole Foundations

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Offsite									
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Water Truck	0.00	0.00	0.01	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**
Offsite						
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Dump Truck	0.02	0.13	0.28	0.00	0.01	0.01
Concrete Mixer Truck	0.07	0.39	0.84	0.00	0.04	0.03
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
Offsite Total	**0.31**	**2.14**	**1.43**	**0.01**	**0.11**	**0.08**
Total	**0.31**	**2.14**	**1.43**	**0.01**	**0.11**	**0.08**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Water Truck	0.2	0.0	0.2
Onsite Total	**0.2**	**0.0**	**0.2**
Offsite			
1-Ton Crew Cab Flat Bed, 4x4	3.8	0.0	3.8
Dump Truck	5.5	0.0	5.5
Concrete Mixer Truck	11.1	0.0	11.1
Worker Commute	20.3	0.0	20.3
Offsite Total	**40.7**	**0.0**	**40.7**
Total	**40.9**	**0.0**	**40.9**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
Water Truck	1	Unpaved	1	2.145	0.214	2.14	0.21
Onsite Total						**2.14**	**0.21**
Offsite							
1-Ton Crew Cab Flat Bed, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Dump Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
Offsite Total						**0.38**	**0.00**
Total						**2.53**	**0.21**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling[c]	CY/day	35	9.94E-04	2.07E-04	0.03	0.01
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.03**	**0.01**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
[c] Estimate

Table 39
115 kV Subtransmission Line Construction Emissions
Steel Pole Haul

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.51	2.12	2.39	0.01	0.09	0.08	62.8
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.51**	**2.12**	**2.39**	**0.01**	**0.09**	**0.08**	**62.8**
Offsite Motor Vehicle Exhaust	0.18	1.31	0.72	0.01	0.05	0.04	32.8
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.26	0.00	
Offsite Total	**0.18**	**1.31**	**0.72**	**0.01**	**0.32**	**0.04**	**32.8**
Total	**0.70**	**3.43**	**3.10**	**0.02**	**0.41**	**0.12**	**95.6**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Boom/Crane Truck	350	1	128	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
Total	**0.51**	**2.12**	**2.39**	**0.01**	**0.09**	**0.08**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Boom/Crane Truck	62.7	0.0	62.8
Total	**62.7**	**0.0**	**62.8**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
3/4-Ton Truck, 4x4	2	128	N/A	30
40' Flat Bed Pole Truck	1	128	N/A	30
Worker Commute	4	128	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None									
Offsite									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
40' Flat Bed Pole Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 39
115 kV Subtransmission Line Construction Emissions
Steel Pole Haul

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
40' Flat Bed Pole Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.18**	**1.31**	**0.72**	**0.01**	**0.05**	**0.04**
Total	**0.18**	**1.31**	**0.72**	**0.01**	**0.05**	**0.04**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
3/4-Ton Truck, 4x4	10.0	0.0	10.0
40' Flat Bed Pole Truck	7.3	0.0	7.3
Worker Commute	15.5	0.0	15.5
Offsite Total	**32.8**	**0.0**	**32.8**
Total	**32.8**	**0.0**	**32.8**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None	0						
Onsite Total						**0.00**	**0.00**
Offsite							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
40' Flat Bed Pole Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**0.26**	**0.00**
Total						**0.26**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 40
115 kV Subtransmission Line Construction Emissions
Steel Pole Assembly

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.66	3.63	3.35	0.01	0.13	0.12	152.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.66**	**3.63**	**3.35**	**0.01**	**0.13**	**0.12**	**152.3**
Offsite Motor Vehicle Exhaust	0.32	2.36	0.88	0.01	0.08	0.06	101.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
Offsite Total	**0.32**	**2.36**	**0.88**	**0.01**	**0.56**	**0.06**	**101.7**
Total	**0.98**	**5.99**	**4.23**	**0.02**	**0.69**	**0.18**	**254.0**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Compressor Trailer	60	1	255	5
Boom/Crane Truck	350	1	255	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Compressor Trailer	0.14	1.51	0.96	0.00	0.04	0.04
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
Total	**0.66**	**3.63**	**3.35**	**0.01**	**0.13**	**0.12**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Compressor Trailer	27.2	0.0	27.2
Boom/Crane Truck	125.0	0.0	125.1
Total	**152.1**	**0.0**	**152.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
3/4-Ton Truck, 4x4	2	255	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	2	255	N/A	30
Worker Commute	8	255	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 40
115 kV Subtransmission Line Construction Emissions
Steel Pole Assembly

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
Offsite Total	**0.32**	**2.36**	**0.88**	**0.01**	**0.08**	**0.06**
Total	**0.32**	**2.36**	**0.88**	**0.01**	**0.08**	**0.06**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
3/4-Ton Truck, 4x4	20.0	0.0	20.0
1-Ton Crew Cab Flat Bed, 4x4	20.0	0.0	20.0
Worker Commute	61.7	0.0	61.7
Offsite Total	**101.7**	**0.0**	**101.7**
Total	**101.7**	**0.0**	**101.7**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None	0						
Onsite Total						**0.00**	**0.00**
Offsite							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
Offsite Total						**0.48**	**0.00**
Total						**0.48**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 41
115 kV Subtransmission Line Construction Emissions
Steel Pole Erection

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.66	3.63	3.35	0.01	0.13	0.12	152.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.66**	**3.63**	**3.35**	**0.01**	**0.13**	**0.12**	**152.3**
Offsite Motor Vehicle Exhaust	0.32	2.36	0.88	0.01	0.08	0.06	101.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
Offsite Total	**0.32**	**2.36**	**0.88**	**0.01**	**0.56**	**0.06**	**101.7**
Total	**0.98**	**5.99**	**4.23**	**0.02**	**0.69**	**0.18**	**254.0**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Compressor Trailer	60	1	255	5
Boom/Crane Truck	350	1	255	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Compressor Trailer	0.14	1.51	0.96	0.00	0.04	0.04
Boom/Crane Truck	0.51	2.12	2.39	0.01	0.09	0.08
Total	**0.66**	**3.63**	**3.35**	**0.01**	**0.13**	**0.12**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Compressor Trailer	27.2	0.0	27.2
Boom/Crane Truck	125.0	0.0	125.1
Total	**152.1**	**0.0**	**152.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
3/4-Ton Truck, 4x4	2	255	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	2	255	N/A	30
Worker Commute	8	255	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 41
115 kV Subtransmission Line Construction Emissions
Steel Pole Erection

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.21	1.65	0.14	0.01	0.05	0.03
Offsite Total	**0.32**	**2.36**	**0.88**	**0.01**	**0.08**	**0.06**
Total	**0.32**	**2.36**	**0.88**	**0.01**	**0.08**	**0.06**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
3/4-Ton Truck, 4x4	20.0	0.0	20.0
1-Ton Crew Cab Flat Bed, 4x4	20.0	0.0	20.0
Worker Commute	61.7	0.0	61.7
Offsite Total	**101.7**	**0.0**	**101.7**
Total	**101.7**	**0.0**	**101.7**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None	0						
Onsite Total						**0.00**	**0.00**
Offsite							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	8	Paved	60	0.001	0.000	0.38	0.00
Offsite Total						**0.48**	**0.00**
Total						**0.48**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 42
115 kV Subtransmission Line Construction Emissions
Wire Stringing

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	4.34	23.98	22.32	0.13	0.72	0.66	458.5
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**4.34**	**23.98**	**22.32**	**0.13**	**0.72**	**0.66**	**458.5**
Offsite Motor Vehicle Exhaust	0.73	5.39	2.11	0.02	0.20	0.14	83.2
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.15	0.00	
Offsite Total	**0.73**	**5.39**	**2.11**	**0.02**	**1.36**	**0.14**	**83.2**
Total	**5.07**	**29.37**	**24.43**	**0.15**	**2.08**	**0.80**	**541.7**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Bucket Truck	250	4	89	8
Boom/Crane Truck	350	2	89	8
Splicing Rig	350	1	20	2
3 Drum Straw Line Puller	300	1	45	6
Static Truck/Tensioner	350	1	45	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Splicing Rig	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
3 Drum Straw Line Puller	300	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Static Truck/Tensioner	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006, http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Bucket Truck	1.86	11.87	11.71	0.07	0.35	0.32
Boom/Crane Truck	1.37	5.66	6.36	0.03	0.23	0.21
Splicing Rig	0.16	0.92	0.61	0.00	0.02	0.02
3 Drum Straw Line Puller	0.48	2.76	1.82	0.01	0.06	0.05
Static Truck/Tensioner	0.48	2.76	1.82	0.01	0.06	0.05
Total	**4.34**	**23.98**	**22.32**	**0.13**	**0.72**	**0.66**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Bucket Truck	275.0	0.0	275.1
Boom/Crane Truck	116.3	0.0	116.4
Splicing Rig	4.6	0.0	4.6
3 Drum Straw Line Puller	31.1	0.0	31.2
Static Truck/Tensioner	31.1	0.0	31.2
Total	**458.2**	**0.0**	**458.5**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Table 42
115 kV Subtransmission Line Construction Emissions
Wire Stringing

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
3/4-Ton Truck, 4x4	2	89	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	3	89	N/A	30
Wire Truck/Trailer	2	60	N/A	30
Dump Truck	1	89	N/A	30
Worker Commute	20	89	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Wire Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
3/4-Ton Truck, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.08	0.54	0.55	0.00	0.03	0.02
Wire Truck/Trailer	0.05	0.26	0.56	0.00	0.03	0.02
Dump Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.52	4.11	0.35	0.01	0.12	0.08
Offsite Total	**0.73**	**5.39**	**2.11**	**0.02**	**0.20**	**0.14**
Total	**0.73**	**5.39**	**2.11**	**0.02**	**0.20**	**0.14**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
3/4-Ton Truck, 4x4	7.0	0.0	7.0
1-Ton Crew Cab Flat Bed, 4x4	10.5	0.0	10.5
Wire Truck/Trailer	6.9	0.0	6.9
Dump Truck	5.1	0.0	5.1
Worker Commute	53.8	0.0	53.8
Offsite Total	**83.2**	**0.0**	**83.2**
Total	**83.2**	**0.0**	**83.2**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Table 42
115 kV Subtransmission Line Construction Emissions
Wire Stringing

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
None	0						
Onsite Total						**0.00**	**0.00**
Offsite							
3/4-Ton Truck, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
1-Ton Crew Cab Flat Bed, 4x4	3	Paved	30	0.001	0.000	0.07	0.00
Wire Truck/Trailer	2	Paved	30	0.001	0.000	0.05	0.00
Dump Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	20	Paved	60	0.001	0.000	0.96	0.00
Offsite Total						**1.15**	**0.00**
Total						**1.15**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 42b
115 kV Subtransmission Line Construction Emissions
Vault Installation

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.92	12.58	7.81	0.05	0.29	0.27	10.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.80	0.17	
Onsite Total	**1.92**	**12.58**	**7.81**	**0.05**	**1.09**	**0.43**	**10.0**
Offsite Motor Vehicle Exhaust	0.70	5.00	2.80	0.02	0.23	0.17	5.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.10	0.00	
Offsite Total	**0.70**	**5.00**	**2.80**	**0.02**	**1.34**	**0.17**	**5.3**
Total	**2.63**	**17.58**	**10.62**	**0.07**	**2.43**	**0.60**	**15.3**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Excavator	250	1	5	10
Crane (L)	500	1	5	10
Backhoe/Front Loader	125	1	5	10

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Excavator	250	0.065	0.321	0.222	0.002	0.007	0.007	158.683	0.006	Excavators
Crane (L)	500	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Excavator	0.65	3.21	2.22	0.02	0.07	0.07
Crane (L)	0.86	3.54	3.98	0.02	0.15	0.13
Backhoe/Front Loader	0.42	5.84	1.61	0.01	0.07	0.07
Total	**1.92**	**12.58**	**7.81**	**0.05**	**0.29**	**0.27**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Excavator	3.6	0.0	3.6
Crane (L)	4.1	0.0	4.1
Backhoe/Front Loader	2.3	0.0	2.3
Total	**10.0**	**0.0**	**10.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.
Onsite				
None				
Offsite				
1-Ton Crew Cab, 4x4	2	5	N/A	50
Water Truck	1	5	N/A	25
Concrete Mixer Truck	3	5	N/A	25
Dump Truck	3	5	N/A	25
Lowboy Truck/Trailer	1	5	N/A	25
Flat Bed Truck/Trailer	3	5	N/A	25
Worker Commute	20	5	N/A	50

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None									
Offsite									

Table 42b
115 kV Subtransmission Line Construction Emissions
Vault Installation

1-Ton Crew Cab, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Water Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Flat Bed Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None						
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
1-Ton Crew Cab, 4x4	0.04	0.34	0.03	0.00	0.01	0.01
Water Truck	0.02	0.15	0.15	0.00	0.01	0.01
Concrete Mixer Truck	0.06	0.32	0.70	0.00	0.04	0.03
Dump Truck	0.06	0.32	0.70	0.00	0.04	0.03
Lowboy Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
Flat Bed Truck/Trailer	0.06	0.32	0.70	0.00	0.04	0.03
Worker Commute	0.44	3.43	0.29	0.01	0.10	0.06
Offsite Total	**0.70**	**5.00**	**2.80**	**0.02**	**0.23**	**0.17**
Total	**0.70**	**5.00**	**2.80**	**0.02**	**0.23**	**0.17**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None			
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
1-Ton Crew Cab, 4x4	0.3	0.0	0.3
Water Truck	0.2	0.0	0.2
Concrete Mixer Truck	0.7	0.0	0.7
Dump Truck	0.7	0.0	0.7
Lowboy Truck/Trailer	0.2	0.0	0.2
Flat Bed Truck/Trailer	0.7	0.0	0.7
Worker Commute	2.5	0.0	2.5
Offsite Total	**5.3**	**0.0**	**5.3**
Total	**5.3**	**0.0**	**5.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None							
Onsite Total						**0.00**	**0.00**
Offsite							
1-Ton Crew Cab, 4x4	2	Paved	50	0.001	0.000	0.08	0.00
Water Truck	1	Paved	25	0.001	0.000	0.02	0.00
Concrete Mixer Truck	3	Paved	25	0.001	0.000	0.06	0.00
Dump Truck	3	Paved	25	0.001	0.000	0.06	0.00
Lowboy Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
Flat Bed Truck/Trailer	3	Paved	25	0.001	0.000	0.06	0.00
Worker Commute	20	Paved	50	0.001	0.000	0.80	0.00
Offsite Total						**1.10**	**0.00**
Total						**1.10**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level[c]	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day	49.28	9.94E-04	2.07E-04	0.05	0.01

Table 42b
115 kV Subtransmission Line Construction Emissions
Vault Installation

Bulldozing, Scraping and Grading	hr/day	0	0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres	0.017	44.0	9.15	0.75	0.16
Total					**0.80**	**0.17**

a From Table 57

[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

[c] Soil handling volume based on a vault size of approximately 24 feet long, 14 feet wide, 12 feet deep. Approximately 0.33 vaults built per day. 12 feet x 14 feet x 12 feet = 4032 cubic feet x 0.33 vaults/day = 1330.56 cubic feet/day = 49.28 cubic yards/day 12 feet x 14 feet x 12 feet = 4032 cubic feet x 0.33 vaults/day = 1330.56 cubic feet/day = 49.28 cubic yards/day

Storage pile size based on a 1 vault volume of 4032 cubic feet of soil. Storage pile assumed maximum 48 feet long, 14 feet wide, 6 feet high. 48 feet x 14 feet = 720 square feet = 0.017 acres

Table 42c
115 kV Subtransmission Line Construction Emissions
Duct Bank Installation

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.71	8.86	3.54	0.02	0.16	0.15	10.1
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	1.37	0.28	
Onsite Total	**0.71**	**8.86**	**3.54**	**0.02**	**1.53**	**0.43**	**10.1**
Offsite Motor Vehicle Exhaust	0.68	4.89	2.57	0.02	0.22	0.16	7.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	1.08	0.00	
Offsite Total	**0.68**	**4.89**	**2.57**	**0.02**	**1.31**	**0.16**	**7.5**
Total	**1.39**	**13.75**	**6.11**	**0.04**	**2.84**	**0.59**	**17.6**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Backhoe/Front Loader	125	1	15	10
Compressor Trailer	60	1	15	10

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Backhoe/Front Loader	0.42	5.84	1.61	0.01	0.07	0.07
Compressor Trailer	0.29	3.02	1.93	0.01	0.09	0.08
Total	**0.71**	**8.86**	**3.54**	**0.02**	**0.16**	**0.15**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Backhoe/Front Loader	6.9	0.0	6.9
Compressor Trailer	3.2	0.0	3.2
Total	**10.1**	**0.0**	**10.1**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.
Onsite				
None				
Offsite				
Lowboy Truck/Trailer	1	15	N/A	25
1-Ton Truck, 4x4	2	15	N/A	50
Water Truck	1	15	N/A	25
Pipe Truck/Trailer	1	15	N/A	25
Concrete Mixer Truck	3	15	N/A	25
Dump Truck	3	15	N/A	25
Lowboy Truck/Trailer	1	1	N/A	25
Worker Commute	20	1	N/A	50

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None									
Offsite									
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
1-Ton Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Water Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Pipe Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Concrete Mixer Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Table 42c
115 kV Subtransmission Line Construction Emissions
Duct Bank Installation

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None						
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
Lowboy Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
1-Ton Truck, 4x4	0.04	0.34	0.03	0.00	0.01	0.01
Water Truck	0.02	0.15	0.15	0.00	0.01	0.01
Pipe Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
Concrete Mixer Truck	0.06	0.32	0.70	0.00	0.04	0.03
Dump Truck	0.06	0.32	0.70	0.00	0.04	0.03
Lowboy Truck/Trailer	0.02	0.11	0.23	0.00	0.01	0.01
Worker Commute	0.44	3.43	0.29	0.01	0.10	0.06
Offsite Total	**0.68**	**4.89**	**2.57**	**0.02**	**0.22**	**0.16**
Total	**0.68**	**4.89**	**2.57**	**0.02**	**0.22**	**0.16**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None			
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
Lowboy Truck/Trailer	0.7	0.0	0.7
1-Ton Truck, 4x4	0.8	0.0	0.8
Water Truck	0.5	0.0	0.5
Pipe Truck/Trailer	0.7	0.0	0.7
Concrete Mixer Truck	2.1	0.0	2.1
Dump Truck	2.1	0.0	2.1
Lowboy Truck/Trailer	0.0	0.0	0.0
Worker Commute	0.5	0.0	0.5
Offsite Total	**7.5**	**0.0**	**7.5**
Total	**7.5**	**0.0**	**7.5**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
None							
Onsite Total						**0.00**	**0.00**
Offsite							
Lowboy Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
1-Ton Truck, 4x4	2	Paved	50	0.001	0.000	0.08	0.00
Water Truck	1	Paved	25	0.001	0.000	0.02	0.00
Pipe Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
Concrete Mixer Truck	3	Paved	25	0.001	0.000	0.06	0.00
Dump Truck	3	Paved	25	0.001	0.000	0.06	0.00
Lowboy Truck/Trailer	1	Paved	25	0.001	0.000	0.02	0.00
Worker Commute	20	Paved	50	0.001	0.000	0.80	0.00
Offsite Total						**1.08**	**0.00**
Total						**1.08**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level[c]	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day	92.28	9.94E-04	2.07E-04	0.09	0.02
Bulldozing, Scraping and Grading	hr/day	0	0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres	0.029	44.0	9.15	1.28	0.27
Total					**1.37**	**0.28**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
[c] Soil handling cubic yards/day based on approximately 250 feet of trenching per day, 24 inches wide x 60 inches deep. 83 yards x 0.667 yards x 1.667 yards = 92.28 cubic yards/day
Storage pile acres based on approximately 250 feet of trenching per day, 60 inches wide x 24 inches high. 83 yards x 1.667 yards = 138.361 square yards = 0.029 acres

Table 42d
115 kV Subtransmission Line Construction Emissions
Install Underground Cable

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	2.99	15.06	12.75	0.08	0.44	0.40	90.9
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**2.99**	**15.06**	**12.75**	**0.08**	**0.44**	**0.40**	**90.9**
Offsite Motor Vehicle Exhaust	0.53	4.03	0.88	0.01	0.14	0.09	3.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.93	0.00	
Offsite Total	**0.53**	**4.03**	**0.88**	**0.01**	**1.06**	**0.09**	**3.3**
Total	**3.51**	**19.09**	**13.63**	**0.09**	**1.50**	**0.50**	**94.2**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Boom/Crane Truck	350	1	25	10
Manlift/Bucket Truck	250	1	25	10
Puller	350	1	25	10
Static Truck/Tensioner	350	1	25	10

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Manlift/Bucket Truck	250	0.054	0.232	0.271	0.001	0.009	0.009	112.159	0.005	Cranes
Puller	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment
Static Truck/Tensioner	350	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Boom/Crane Truck	0.86	3.54	3.98	0.02	0.15	0.13
Manlift/Bucket Truck	0.54	2.32	2.71	0.01	0.09	0.09
Puller	0.79	4.61	3.03	0.02	0.10	0.09
Static Truck/Tensioner	0.79	4.61	3.03	0.02	0.10	0.09
Total	**2.99**	**15.06**	**12.75**	**0.08**	**0.44**	**0.40**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Boom/Crane Truck	20.4	0.0	20.4
Manlift/Bucket Truck	12.7	0.0	12.7
Puller	28.8	0.0	28.8
Static Truck/Tensioner	28.8	0.0	28.8
Total	**90.8**	**0.0**	**90.9**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.
Onsite				
None				
Offsite				
1-Ton Truck, 4x4	2	5	N/A	50
Wire Truck/Trailer	2	5	N/A	30
Worker Commute	20	5	N/A	50

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
1-Ton Truck, 4x4	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Wire Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						

Table 42d
115 kV Subtransmission Line Construction Emissions
Install Underground Cable

None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
1-Ton Truck, 4x4	0.04	0.34	0.03	0.00	0.01	0.01
Wire Truck/Trailer	0.05	0.26	0.56	0.00	0.03	0.02
Worker Commute	0.44	3.43	0.29	0.01	0.10	0.06
Offsite Total	**0.53**	**4.03**	**0.88**	**0.01**	**0.14**	**0.09**
Total	**0.53**	**4.03**	**0.88**	**0.01**	**0.14**	**0.09**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
1-Ton Truck, 4x4	0.3	0.0	0.3
Wire Truck/Trailer	0.6	0.0	0.6
Worker Commute	2.5	0.0	2.5
Offsite Total	**3.3**	**0.0**	**3.3**
Total	**3.3**	**0.0**	**3.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
None							
Onsite Total						**0.00**	**0.00**
Offsite							
1-Ton Truck, 4x4	2	Paved	50	0.001	0.000	0.08	0.00
Wire Truck/Trailer	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	20	Paved	50	0.001	0.000	0.80	0.00
Offsite Total						**0.93**	**0.00**
Total						**0.93**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 43
115 kV Subtransmission Line Construction Emissions
Guard Structure Removal

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.27	7.94	6.96	0.03	0.27	0.25	23.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**1.27**	**7.94**	**6.96**	**0.03**	**0.27**	**0.25**	**23.3**
Offsite Motor Vehicle Exhaust	0.24	1.72	0.75	0.01	0.07	0.05	5.7
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.36	0.00	
Offsite Total	**0.24**	**1.72**	**0.75**	**0.01**	**0.43**	**0.05**	**5.7**
Total	**1.50**	**9.66**	**7.71**	**0.04**	**0.69**	**0.29**	**29.0**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Compressor Trailer	60	2	18	6
Boom/Crane Truck	350	1	18	8
Bucket Truck	250	1	18	4

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Compressor Trailer	60	0.029	0.302	0.193	0.001	0.009	0.008	46.950	0.003	Air Compressors
Boom/Crane Truck	350	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
Bucket Truck	250	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Compressor Trailer	0.35	3.63	2.31	0.01	0.11	0.10
Boom/Crane Truck	0.69	2.83	3.18	0.01	0.12	0.11
Bucket Truck	0.23	1.48	1.46	0.01	0.04	0.04
Total	**1.27**	**7.94**	**6.96**	**0.03**	**0.27**	**0.25**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Compressor Trailer	4.6	0.0	4.6
Boom/Crane Truck	11.8	0.0	11.8
Bucket Truck	7.0	0.0	7.0
Total	**23.3**	**0.0**	**23.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
3/4-Ton Truck, 4x4	1	18	N/A	30
1-Ton Crew Cab Flat Bed, 4x4	1	18	N/A	30
Extendable Flat Bed Pole Truck	1	18	N/A	30
Worker Commute	6	18	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Table 43
115 kV Subtransmission Line Construction Emissions
Guard Structure Removal

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
3/4-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
1-Ton Crew Cab Flat Bed, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Extendable Flat Bed Pole Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
3/4-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
1-Ton Crew Cab Flat Bed, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Extendable Flat Bed Pole Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.16	1.23	0.10	0.00	0.03	0.02
Offsite Total	**0.24**	**1.72**	**0.75**	**0.01**	**0.07**	**0.05**
Total	**0.24**	**1.72**	**0.75**	**0.01**	**0.07**	**0.05**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
3/4-Ton Truck, 4x4	0.7	0.0	0.7
1-Ton Crew Cab Flat Bed, 4x4	0.7	0.0	0.7
Extendable Flat Bed Pole Truck	1.0	0.0	1.0
Worker Commute	3.3	0.0	3.3
Offsite Total	**5.7**	**0.0**	**5.7**
Total	**5.7**	**0.0**	**5.7**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
None	0						
Onsite Total						**0.00**	**0.00**
Offsite							
3/4-Ton Truck, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
1-Ton Crew Cab Flat Bed, 4x4	1	Paved	30	0.001	0.000	0.02	0.00
Extendable Flat Bed Pole Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	6	Paved	60	0.001	0.000	0.29	0.00
Offsite Total						**0.36**	**0.00**
Total						**0.36**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 44
115 kV Subtransmission Line Construction Emissions
Restoration

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.96	7.91	4.75	0.02	0.20	0.19	16.3
Onsite Motor Vehicle Exhaust	0.00	0.01	0.03	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	6.43	0.64	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.96**	**7.93**	**4.78**	**0.02**	**6.64**	**0.83**	**16.4**
Offsite Motor Vehicle Exhaust	0.26	1.93	0.77	0.01	0.07	0.05	6.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.41	0.00	
Offsite Total	**0.26**	**1.93**	**0.77**	**0.01**	**0.48**	**0.05**	**6.3**
Total	**1.22**	**9.85**	**5.55**	**0.03**	**7.12**	**0.88**	**22.7**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Road Grader	250	1	18	6
Backhoe/Front Loader	125	1	18	6
Drum Type Compactor	100	1	18	6

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Road Grader	250	0.078	0.355	0.365	0.002	0.013	0.012	172.113	0.007	Graders
Backhoe/Front Loader	125	0.042	0.584	0.161	0.001	0.007	0.007	101.387	0.004	Tractors/Loaders/Backhoes
Drum Type Compactor	100	0.039	0.380	0.265	0.001	0.014	0.013	58.989	0.004	Rollers

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Road Grader	0.47	2.13	2.19	0.01	0.08	0.07
Backhoe/Front Loader	0.25	3.50	0.97	0.01	0.04	0.04
Drum Type Compactor	0.24	2.28	1.59	0.00	0.08	0.08
Total	**0.96**	**7.91**	**4.75**	**0.02**	**0.20**	**0.19**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Road Grader	8.4	0.0	8.4
Backhoe/Front Loader	5.0	0.0	5.0
Drum Type Compactor	2.9	0.0	2.9
Total	**16.3**	**0.0**	**16.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.
Onsite				
Water Truck	1	18	8	3
Offsite				
1-Ton Crew Cab, 4x4	2	18	N/A	30
Lowboy Truck/Trailer	1	18	N/A	30
Worker Commute	7	18	N/A	60

Table 44
115 kV Subtransmission Line Construction Emissions
Restoration

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Water Truck		8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Offsite									
1-Ton Crew Cab, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Lowboy Truck/Trailer	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Water Truck	0.00	0.01	0.03	0.00	0.00	0.00
Onsite Total	**0.00**	**0.01**	**0.03**	**0.00**	**0.00**	**0.00**
Offsite						
1-Ton Crew Cab, 4x4	0.06	0.36	0.37	0.00	0.02	0.01
Lowboy Truck/Trailer	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
Offsite Total	**0.26**	**1.93**	**0.77**	**0.01**	**0.07**	**0.05**
Total	**0.26**	**1.94**	**0.80**	**0.01**	**0.07**	**0.05**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Water Truck	0.1	0.0	0.1
Onsite Total	**0.1**	**0.0**	**0.1**
Offsite			
1-Ton Crew Cab, 4x4	1.4	0.0	1.4
Lowboy Truck/Trailer	1.0	0.0	1.0
Worker Commute	3.8	0.0	3.8
Offsite Total	**6.2**	**0.0**	**6.3**
Total	**6.4**	**0.0**	**6.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
Water Truck	1	Unpaved	3	2.145	0.214	6.43	0.64
Onsite Total						**6.43**	**0.64**
Offsite							
1-Ton Crew Cab, 4x4	2	Paved	30	0.001	0.000	0.05	0.00
Lowboy Truck/Trailer	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
Offsite Total						**0.41**	**0.00**
Total						**6.84**	**0.64**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 45
Telecomminications Construction
Tower Foundation

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.53	6.74	3.59	0.01	0.11	0.10	2.4
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.50	0.10	
Onsite Total	**0.53**	**6.74**	**3.59**	**0.01**	**0.61**	**0.21**	**2.4**
Offsite Motor Vehicle Exhaust	0.18	1.31	0.72	0.01	0.05	0.04	1.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.26	0.00	
Offsite Total	**0.18**	**1.31**	**0.72**	**0.01**	**0.32**	**0.04**	**1.3**
Total	**0.71**	**8.05**	**4.31**	**0.02**	**0.93**	**0.25**	**3.7**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Backhoe	79	1	5	8
Concrete Mixer	120	1	5	8

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Concrete Mixer	120	0.038	0.504	0.273	0.001	0.009	0.008	80.859	0.003	Other Construction Equipment

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Concrete Mixer	0.30	4.04	2.18	0.01	0.07	0.06
Total	**0.53**	**6.74**	**3.59**	**0.01**	**0.11**	**0.10**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Backhoe	0.9	0.0	0.9
Concrete Mixer	1.5	0.0	1.5
Total	**2.4**	**0.0**	**2.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
Crew Truck	2	5	N/A	30
Stake Truck	1	5	N/A	30
Worker Commute	4	5	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Table 45
Telecomminications Construction
Tower Foundation

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Stake Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
Crew Truck	0.06	0.36	0.37	0.00	0.02	0.01
Stake Truck	0.02	0.13	0.28	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.18**	**1.31**	**0.72**	**0.01**	**0.05**	**0.04**
Total	**0.18**	**1.31**	**0.72**	**0.01**	**0.05**	**0.04**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
Crew Truck	0.4	0.0	0.4
Stake Truck	0.3	0.0	0.3
Worker Commute	0.6	0.0	0.6
Offsite Total	**1.3**	**0.0**	**1.3**
Total	**1.3**	**0.0**	**1.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
None	0					0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
Crew Truck	2	Paved	30	0.001	0.000	0.05	0.00
Stake Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**0.26**	**0.00**
Total						**0.26**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling[c]	CY/day	500	9.94E-04	2.07E-04	0.50	0.10
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.50**	**0.10**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
[c] Estimate

Table 46
Telecomminications Construction
Tower Construction

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.83	4.64	4.38	0.02	0.17	0.15	23.8
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.83**	**4.64**	**4.38**	**0.02**	**0.17**	**0.15**	**23.8**
Offsite Motor Vehicle Exhaust	0.16	1.18	0.44	0.00	0.04	0.03	6.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.24	0.00	
Offsite Total	**0.16**	**1.18**	**0.44**	**0.00**	**0.28**	**0.03**	**6.0**
Total	**0.99**	**5.82**	**4.82**	**0.02**	**0.45**	**0.18**	**29.8**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
150-Foot Crane	300	1	30	8
150-Foot Lift Truck	100	1	30	8

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
150-Foot Crane	300	0.086	0.354	0.398	0.002	0.015	0.013	180.101	0.008	Cranes
150-Foot Lift Truck	100	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
150-Foot Crane	0.69	2.83	3.18	0.01	0.12	0.11
150-Foot Lift Truck	0.14	1.81	1.20	0.00	0.05	0.05
Total	**0.83**	**4.64**	**4.38**	**0.02**	**0.17**	**0.15**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
150-Foot Crane	19.6	0.0	19.6
150-Foot Lift Truck	4.1	0.0	4.1
Total	**23.8**	**0.0**	**23.8**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
Crew Truck	2	30	N/A	30
Worker Commute	4	30	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 46
Telecomminications Construction
Tower Construction

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
Crew Truck	0.06	0.36	0.37	0.00	0.02	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.16**	**1.18**	**0.44**	**0.00**	**0.04**	**0.03**
Total	**0.16**	**1.18**	**0.44**	**0.00**	**0.04**	**0.03**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
Crew Truck	2.4	0.0	2.4
Worker Commute	3.6	0.0	3.6
Offsite Total	**6.0**	**0.0**	**6.0**
Total	**6.0**	**0.0**	**6.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None	0					0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
Crew Truck	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**0.24**	**0.00**
Total						**0.24**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 47
Telecomminications Construction
Dish Installation

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.14	1.81	1.20	0.00	0.05	0.05	1.4
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.14**	**1.81**	**1.20**	**0.00**	**0.05**	**0.05**	**1.4**
Offsite Motor Vehicle Exhaust	0.13	1.00	0.25	0.00	0.03	0.02	1.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.22	0.00	
Offsite Total	**0.13**	**1.00**	**0.25**	**0.00**	**0.25**	**0.02**	**1.6**
Total	**0.27**	**2.81**	**1.45**	**0.01**	**0.30**	**0.07**	**3.0**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
150-Foot Lift Truck	100	1	10	8

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
150-Foot Lift Truck	100	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
150-Foot Lift Truck	0.14	1.81	1.20	0.00	0.05	0.05
Total	**0.14**	**1.81**	**1.20**	**0.00**	**0.05**	**0.05**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
150-Foot Lift Truck	1.4	0.0	1.4
Total	**1.4**	**0.0**	**1.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
Crew Truck	1	10	N/A	30
Worker Commute	4	10	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 47
Telecomminications Construction
Dish Installation

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
Crew Truck	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.13**	**1.00**	**0.25**	**0.00**	**0.03**	**0.02**
Total	**0.13**	**1.00**	**0.25**	**0.00**	**0.03**	**0.02**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
Crew Truck	0.4	0.0	0.4
Worker Commute	1.2	0.0	1.2
Offsite Total	**1.6**	**0.0**	**1.6**
Total	**1.6**	**0.0**	**1.6**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None	0					0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
Crew Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**0.22**	**0.00**
Total						**0.22**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 48
Telecomminications Construction
Control Building

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.46	2.97	2.93	0.02	0.09	0.08	19.3
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.46**	**2.97**	**2.93**	**0.02**	**0.09**	**0.08**	**19.3**
Offsite Motor Vehicle Exhaust	0.08	0.59	0.22	0.00	0.02	0.01	2.5
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.12	0.00	
Offsite Total	**0.08**	**0.59**	**0.22**	**0.00**	**0.14**	**0.01**	**2.5**
Total	**0.54**	**3.56**	**3.15**	**0.02**	**0.23**	**0.09**	**21.8**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Bucket Truck	350	1	25	8

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Bucket Truck	350	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

a From Table 53

[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction= 0.920

From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Bucket Truck	0.46	2.97	2.93	0.02	0.09	0.08
Total	**0.46**	**2.97**	**2.93**	**0.02**	**0.09**	**0.08**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Bucket Truck	19.3	0.0	19.3
Total	**19.3**	**0.0**	**19.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
Crew Truck	1	25	N/A	30
Worker Commute	2	25	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
Crew Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 48
Telecomminications Construction
Control Building

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
Crew Truck	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.05	0.41	0.03	0.00	0.01	0.01
Offsite Total	**0.08**	**0.59**	**0.22**	**0.00**	**0.02**	**0.01**
Total	**0.08**	**0.59**	**0.22**	**0.00**	**0.02**	**0.01**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
Crew Truck	1.0	0.0	1.0
Worker Commute	1.5	0.0	1.5
Offsite Total	**2.5**	**0.0**	**2.5**
Total	**2.5**	**0.0**	**2.5**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None	0					0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
Crew Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	2	Paved	60	0.001	0.000	0.10	0.00
Offsite Total						**0.12**	**0.00**
Total						**0.12**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 49
Telecomminications Construction
Overhead Communications Installation

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.46	2.97	2.93	0.02	0.09	0.08	24.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.46**	**2.97**	**2.93**	**0.02**	**0.09**	**0.08**	**24.0**
Offsite Motor Vehicle Exhaust	0.13	1.00	0.25	0.00	0.03	0.02	5.0
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.22	0.00	
Offsite Total	**0.13**	**1.00**	**0.25**	**0.00**	**0.25**	**0.02**	**5.0**
Total	**0.60**	**3.97**	**3.18**	**0.02**	**0.33**	**0.10**	**28.9**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Bucket Truck	350	1	31	8

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Bucket Truck	350	0.058	0.371	0.366	0.002	0.011	0.010	212.856	0.005	Aerial Lifts

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Bucket Truck	0.46	2.97	2.93	0.02	0.09	0.08
Total	**0.46**	**2.97**	**2.93**	**0.02**	**0.09**	**0.08**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Bucket Truck	23.9	0.0	24.0
Total	**23.9**	**0.0**	**24.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
Reel Truck	1	31	N/A	30
Worker Commute	4	31	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
Reel Truck	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 49
Telecomminications Construction
Overhead Communications Installation

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
Reel Truck	0.03	0.18	0.18	0.00	0.01	0.01
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.13**	**1.00**	**0.25**	**0.00**	**0.03**	**0.02**
Total	**0.13**	**1.00**	**0.25**	**0.00**	**0.03**	**0.02**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
Reel Truck	1.2	0.0	1.2
Worker Commute	3.7	0.0	3.8
Offsite Total	**5.0**	**0.0**	**5.0**
Total	**5.0**	**0.0**	**5.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
None	0					0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
Reel Truck	1	Paved	30	0.001	0.000	0.02	0.00
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**0.22**	**0.00**
Total						**0.22**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 50
Telecomminications Construction
Substation Telecommunications Equipment Installation

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.0**
Offsite Motor Vehicle Exhaust	0.08	0.62	0.05	0.00	0.02	0.01	0.9
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.14	0.00	
Offsite Total	**0.08**	**0.62**	**0.05**	**0.00**	**0.16**	**0.01**	**0.9**
Total	**0.08**	**0.62**	**0.05**	**0.00**	**0.16**	**0.01**	**0.9**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
None				

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
None		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
None	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
None	0.0	0.0	0.0
Total	**0.0**	**0.0**	**0.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
None				0
Offsite				
Van	2	10	N/A	30
Worker Commute	2	10	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
None		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Offsite									
Van	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 50
Telecomminications Construction
Substation Telecommunications Equipment Installation

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
None	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
Van	0.03	0.21	0.02	0.00	0.01	0.00
Worker Commute	0.05	0.41	0.03	0.00	0.01	0.01
Offsite Total	**0.08**	**0.62**	**0.05**	**0.00**	**0.02**	**0.01**
Total	**0.08**	**0.62**	**0.05**	**0.00**	**0.02**	**0.01**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
None	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
Van	0.3	0.0	0.3
Worker Commute	0.6	0.0	0.6
Offsite Total	**0.9**	**0.0**	**0.9**
Total	**0.9**	**0.0**	**0.9**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
None	0					0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
Van	2	Paved	30	0.001	0.000	0.05	0.00
Worker Commute	2	Paved	60	0.001	0.000	0.10	0.00
Offsite Total						**0.14**	**0.00**
Total						**0.14**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 51
Telecommunications Construction
Santiago Peak Communication Site

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.32	1.84	1.21	0.01	0.04	0.04	13.8
Onsite Motor Vehicle Exhaust	0.03	0.21	0.22	0.00	0.01	0.01	1.4
Onsite Motor Vehicle Fugitive PM	--	--	--	--	35.40	3.54	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.35**	**2.05**	**1.43**	**0.01**	**35.45**	**3.58**	**15.2**
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	3.6
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
Offsite Total	**0.10**	**0.82**	**0.07**	**0.00**	**0.22**	**0.02**	**3.6**
Total	**0.45**	**2.87**	**1.50**	**0.01**	**35.67**	**3.60**	**18.8**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
1-Ton Truck	300	1	30	4

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
1-Ton Truck	300	0.079	0.461	0.303	0.002	0.010	0.009	254.239	0.007	Other Construction Equipment

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
1-Ton Truck	0.32	1.84	1.21	0.01	0.04	0.04
Total	**0.32**	**1.84**	**1.21**	**0.01**	**0.04**	**0.04**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
1-Ton Truck	13.8	0.0	13.8
Total	**13.8**	**0.0**	**13.8**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
1-Ton Truck, 4x4	3	30	4	10
Van	1	30	2	5
Offsite				
Worker Commute	4	30	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
1-Ton Truck, 4x4	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Van	Delivery	9.22E-04	5.95E-03	6.16E-03	2.76E-05	2.84E-04	2.10E-04	2.88E+00	3.76E-05
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 51
Telecommunications Construction
Santiago Peak Communication Site

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
1-Ton Truck, 4x4	0.03	0.18	0.18	0.00	0.01	0.01
Van	0.00	0.03	0.03	0.00	0.00	0.00
Onsite Total	**0.03**	**0.21**	**0.22**	**0.00**	**0.01**	**0.01**
Offsite						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.10**	**0.82**	**0.07**	**0.00**	**0.02**	**0.02**
Total	**0.14**	**1.03**	**0.28**	**0.00**	**0.03**	**0.02**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
1-Ton Truck, 4x4	1.2	0.0	1.2
Van	0.2	0.0	0.2
Onsite Total	**1.4**	**0.0**	**1.4**
Offsite			
Worker Commute	3.6	0.0	3.6
Offsite Total	**3.6**	**0.0**	**3.6**
Total	**5.0**	**0.0**	**5.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55

[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
1-Ton Truck, 4x4	3	Unpaved	10	1.012	0.101	30.35	3.03
Van	1	Unpaved	5	1.012	0.101	5.06	0.51
Onsite Total						**35.40**	**3.54**
Offsite							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**0.19**	**0.00**
Total						**35.60**	**3.54**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Table 51b
Additional Substation Construction Emissions
Civil

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.78	9.91	3.89	0.02	0.14	0.12	7.4
Onsite Motor Vehicle Exhaust	0.00	0.02	0.05	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	10.72	1.07	
Earthwork Fugitive PM	--	--	--	--	0.02	0.00	
Onsite Total	**0.78**	**9.93**	**3.94**	**0.02**	**10.89**	**1.20**	**7.5**
Offsite Motor Vehicle Exhaust	0.38	2.47	2.36	0.01	0.16	0.11	4.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.34	0.00	
Offsite Total	**0.38**	**2.47**	**2.36**	**0.01**	**0.49**	**0.11**	**4.4**
Total	**1.16**	**12.41**	**6.30**	**0.03**	**11.38**	**1.32**	**11.9**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Excavator with Auger Attachment	152	1	10	8
Backhoe	79	1	10	8
Bobcat Skid Steer	75	1	10	4
Forklift	83	1	10	4

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Excavator with Auger Attachment	152	0.052	0.664	0.198	0.001	0.009	0.008	112.222	0.005	Excavators
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Bobcat Skid Steer	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders
Forklift	83	0.017	0.209	0.100	0.000	0.002	0.002	31.225	0.002	Forklifts

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Excavator with Auger Attachment	0.41	5.31	1.59	0.01	0.07	0.07
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Bobcat Skid Steer	0.07	1.07	0.50	0.00	0.01	0.01
Forklift	0.07	0.83	0.40	0.00	0.01	0.01
Total	**0.78**	**9.91**	**3.89**	**0.02**	**0.14**	**0.12**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Excavator with Auger Attachment	4.1	0.0	4.1
Backhoe	1.9	0.0	1.9
Bobcat Skid Steer	1.5	0.0	1.5
Forklift	0.0	0.0	0.0
Total	**7.4**	**0.0**	**7.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number[b]	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Dump Truck	2	5	0.5	1.25
Water Truck	1	10	1	2.5
Offsite				
Concrete Truck	4	5	N/A	60
Worker Commute	7	10	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed
[b] Concrete trucks based on 15,000 CY over 90 days and 10 CY/truck = 15,000 / 90 / 10 = 16.6

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									

Table 51b
Additional Substation Construction Emissions
Civil

Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Offsite									
Concrete Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Dump Truck	0.00	0.01	0.02	0.00	0.00	0.00
Water Truck	0.00	0.01	0.02	0.00	0.00	0.00
Onsite Total	**0.00**	**0.02**	**0.05**	**0.00**	**0.00**	**0.00**
Offsite						
Concrete Truck	0.19	1.03	2.24	0.01	0.12	0.09
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
Offsite Total	**0.38**	**2.47**	**2.36**	**0.01**	**0.16**	**0.11**
Total	**0.38**	**2.50**	**2.41**	**0.01**	**0.16**	**0.12**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Dump Truck	0.0	0.0	0.0
Water Truck	0.0	0.0	0.0
Onsite Total	**0.1**	**0.0**	**0.1**
Offsite			
Concrete Truck	2.3	0.0	2.3
Worker Commute	2.1	0.0	2.1
Offsite Total	**4.4**	**0.0**	**4.4**
Total	**4.5**	**0.0**	**4.5**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
Dump Truck	2	Unpaved	1.25	2.145	0.214	5.36	0.54
Water Truck	1	Unpaved	2.5	2.145	0.214	5.36	0.54
Onsite Total						**10.72**	**1.07**
Offsite							
Concrete Truck	4	Paved	60	0.001	0.000	0.19	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
Offsite Total						**0.34**	**0.00**
Total						**11.06**	**1.07**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling[c]	CY/day	24	9.94E-04	2.07E-04	0.02	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.02**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
[c] Peak daily estimated at 24 CY

Table 51c
Additional Substation Construction Emissions
Electrical

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	1.14	11.25	7.51	0.02	0.29	0.27	15.5
Onsite Motor Vehicle Exhaust	0.00	0.02	0.00	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.01	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**1.15**	**11.27**	**7.51**	**0.02**	**0.30**	**0.27**	**15.6**
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	9.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
Offsite Total	**0.26**	**2.06**	**0.17**	**0.01**	**0.54**	**0.04**	**9.1**
Total	**1.41**	**13.32**	**7.68**	**0.03**	**0.84**	**0.31**	**24.7**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Manlift	43	4	30	7
Reach Manlift	87	2	30	6
15-Ton Crane	125	2	5	5

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Scissor Lift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts
Reach Manlift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
15-Ton Crane	125	0.046	0.474	0.230	0.001	0.012	0.011	80.345	0.004	Cranes

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Manlift	0.47	3.78	3.41	0.01	0.10	0.09
Reach Manlift	0.21	2.72	1.79	0.01	0.08	0.07
15-Ton Crane	0.46	4.74	2.30	0.01	0.12	0.11
Total	**1.14**	**11.25**	**7.51**	**0.02**	**0.29**	**0.27**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Manlift	7.5	0.0	7.5
Reach Manlift	6.2	0.0	6.2
15-Ton Crane	1.8	0.0	1.8
Total	**15.5**	**0.0**	**15.5**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Crew Truck	10	30	0.25	0.625
Offsite				
Worker Commute	10	30	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Table 51c
Additional Substation Construction Emissions
Electrical

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Crew Truck	0.00	0.02	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
Offsite Total	**0.26**	**2.06**	**0.17**	**0.01**	**0.06**	**0.04**
Total	**0.26**	**2.08**	**0.17**	**0.01**	**0.06**	**0.04**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Crew Truck	0.1	0.0	0.1
Onsite Total	**0.1**	**0.0**	**0.1**
Offsite			
Worker Commute	9.1	0.0	9.1
Offsite Total	**9.1**	**0.0**	**9.1**
Total	**9.2**	**0.0**	**9.2**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
Crew Truck	10	Paved	0.625	0.001	0.000	0.01	0.00
Onsite Total						**0.01**	**0.00**
Offsite							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
Offsite Total						**0.48**	**0.00**
Total						**0.49**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 51d
Additional Substation Construction Emissions
Wiring

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.17	1.90	1.38	0.00	0.05	0.05	3.6
Onsite Motor Vehicle Exhaust	0.00	0.02	0.00	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.17**	**1.92**	**1.39**	**0.00**	**0.06**	**0.05**	**3.7**
Offsite Motor Vehicle Exhaust	0.26	2.06	0.17	0.01	0.06	0.04	9.1
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.48	0.00	
Offsite Total	**0.26**	**2.06**	**0.17**	**0.01**	**0.54**	**0.04**	**9.1**
Total	**0.44**	**3.97**	**1.56**	**0.01**	**0.59**	**0.09**	**12.8**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Reach Manlift	87	2	30	3
Manlift	43	1	15	4

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Reach Manlift	87	0.018	0.226	0.150	0.000	0.006	0.006	38.072	0.002	Aerial Lifts
Manlift	43	0.017	0.135	0.122	0.000	0.003	0.003	19.613	0.002	Aerial Lifts

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Reach Manlift	0.11	1.36	0.90	0.00	0.04	0.03
Manlift	0.07	0.54	0.49	0.00	0.01	0.01
Total	**0.17**	**1.90**	**1.38**	**0.00**	**0.05**	**0.05**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Reach Manlift	3.1	0.0	3.1
Manlift	0.5	0.0	0.5
Total	**3.6**	**0.0**	**3.6**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Crew Truck	8	30	0.25	0.625
Offsite				
Worker Commute	10	30	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 51d
Additional Substation Construction Emissions
Wiring

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Crew Truck	0.00	0.02	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
Worker Commute	0.26	2.06	0.17	0.01	0.06	0.04
Offsite Total	**0.26**	**2.06**	**0.17**	**0.01**	**0.06**	**0.04**
Total	**0.26**	**2.07**	**0.17**	**0.01**	**0.06**	**0.04**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Crew Truck	0.1	0.0	0.1
Onsite Total	**0.1**	**0.0**	**0.1**
Offsite			
Worker Commute	9.1	0.0	9.1
Offsite Total	**9.1**	**0.0**	**9.1**
Total	**9.1**	**0.0**	**9.2**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
Crew Truck	8	Paved	0.625	0.001	0.000	0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
Worker Commute	10	Paved	60	0.001	0.000	0.48	0.00
Offsite Total						**0.48**	**0.00**
Total						**0.48**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 51e
Additional Substation Construction Emissions
Testing

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Exhaust	0.00	0.00	0.00	0.00	0.00	0.00	0.0
Onsite Motor Vehicle Fugitive PM	--	--	--	--	0.00	0.00	
Earthwork Fugitive PM	--	--	--	--	0.00	0.00	
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.0**
Offsite Motor Vehicle Exhaust	0.10	0.82	0.07	0.00	0.02	0.02	2.4
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.19	0.00	
Offsite Total	**0.10**	**0.82**	**0.07**	**0.00**	**0.22**	**0.02**	**2.4**
Total	**0.11**	**0.83**	**0.07**	**0.00**	**0.22**	**0.02**	**2.4**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
None				

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
None										

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
None	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
None	0.0	0.0	0.0
Total	**0.0**	**0.0**	**0.0**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Crew Truck	2	20	0.25	0.625
Offsite				
Worker Commute	4	20	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Crew Truck	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Offsite									
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Table 51e
Additional Substation Construction Emissions
Testing

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Crew Truck	0.00	0.00	0.00	0.00	0.00	0.00
Onsite Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
Offsite						
Worker Commute	0.10	0.82	0.07	0.00	0.02	0.02
Offsite Total	**0.10**	**0.82**	**0.07**	**0.00**	**0.02**	**0.02**
Total	**0.11**	**0.83**	**0.07**	**0.00**	**0.02**	**0.02**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Crew Truck	0.0	0.0	0.0
Onsite Total	**0.0**	**0.0**	**0.0**
Offsite			
Worker Commute	2.4	0.0	2.4
Offsite Total	**2.4**	**0.0**	**2.4**
Total	**2.4**	**0.0**	**2.4**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Onsite							
Crew Truck	2	Paved	0.625	0.001	0.000	0.00	0.00
Onsite Total						**0.00**	**0.00**
Offsite							
Worker Commute	4	Paved	60	0.001	0.000	0.19	0.00
Offsite Total						**0.19**	**0.00**
Total						**0.19**	**0.00**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling	CY/day		9.94E-04	2.07E-04	0.00	0.00
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.00**	**0.00**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]

Table 51f
Additional Substation Construction Emissions
Civil - Demo

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT)
Construction Equipment Exhaust	0.29	3.77	1.90	0.01	0.05	0.05	3.3
Onsite Motor Vehicle Exhaust	0.00	0.02	0.05	0.00	0.00	0.00	0.1
Onsite Motor Vehicle Fugitive PM	--	--	--	--	10.72	1.07	
Earthwork Fugitive PM	--	--	--	--	0.14	0.03	
Onsite Total	**0.30**	**3.79**	**1.95**	**0.01**	**10.92**	**1.15**	**3.4**
Offsite Motor Vehicle Exhaust	0.28	1.96	1.24	0.01	0.10	0.07	3.3
Offsite Motor Vehicle Fugitive PM	--	--	--	--	0.34	0.00	
Offsite Total	**0.28**	**1.96**	**1.24**	**0.01**	**0.44**	**0.07**	**3.3**
Total	**0.58**	**5.75**	**3.19**	**0.02**	**11.35**	**1.22**	**6.7**

Construction Equipment Summary

Equipment	Horse-power	Number	Days Used	Hours Used/ Day
Backhoe	79	1	10	8
Bobcat Skid Steer	75	1	10	4

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Backhoe	79	0.028	0.338	0.176	0.001	0.006	0.005	51.728	0.003	Tractors/Loaders/Backhoes
Bobcat Skid Steer	75	0.017	0.267	0.124	0.001	0.002	0.002	42.762	0.002	Skid Steer Loaders

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Construction Equipment Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Backhoe	0.22	2.70	1.41	0.00	0.04	0.04
Bobcat Skid Steer	0.07	1.07	0.50	0.00	0.01	0.01
Total	**0.29**	**3.77**	**1.90**	**0.01**	**0.05**	**0.05**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Construction Equipment Total Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Backhoe	1.9	0.0	1.9
Bobcat Skid Steer	1.5	0.0	1.5
Total	**3.3**	**0.0**	**3.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number[b]	Days Used	Hours Used/ Day	Miles/ Day/ Veh.[a]
Onsite				
Dump Truck	2	5	0.5	1.25
Water Truck	1	10	1	2.5
Offsite				
Concrete Truck	2	5	N/A	60
Worker Commute	7	10	N/A	60

[a] Onsite travel based on 25% use at 10 mph average speed
[b] Concrete trucks based on 15,000 CY over 90 days and 10 CY/truck = 15,000 / 90 / 10 = 16.6

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Onsite									
Dump Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Water Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Offsite									
Concrete Truck	HHDT	8.02E-04	4.31E-03	9.33E-03	4.02E-05	4.85E-04	3.63E-04	4.20E+00	3.70E-05
Worker Commute	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Table 51f
Additional Substation Construction Emissions
Civil - Demo

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Onsite						
Dump Truck	0.00	0.01	0.02	0.00	0.00	0.00
Water Truck	0.00	0.01	0.02	0.00	0.00	0.00
Onsite Total	**0.00**	**0.02**	**0.05**	**0.00**	**0.00**	**0.00**
Offsite						
Concrete Truck	0.10	0.52	1.12	0.00	0.06	0.04
Worker Commute	0.18	1.44	0.12	0.00	0.04	0.03
Offsite Total	**0.28**	**1.96**	**1.24**	**0.01**	**0.10**	**0.07**
Total	**0.28**	**1.98**	**1.29**	**0.01**	**0.10**	**0.07**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Total Greenhouse Gas Emissions

Vehicle	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Onsite			
Dump Truck	0.0	0.0	0.0
Water Truck	0.0	0.0	0.0
Onsite Total	**0.1**	**0.0**	**0.1**
Offsite			
Concrete Truck	1.1	0.0	1.1
Worker Commute	2.1	0.0	2.1
Offsite Total	**3.3**	**0.0**	**3.3**
Total	**3.3**	**0.0**	**3.3**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emission s (lb/day)[b]
Onsite							
Dump Truck	2	Unpaved	1.25	2.145	0.214	5.36	0.54
Water Truck	1	Unpaved	2.5	2.145	0.214	5.36	0.54
Onsite Total						**10.72**	**1.07**
Offsite							
Concrete Truck	2	Paved	60	0.001	0.000	0.10	0.00
Worker Commute	7	Paved	60	0.001	0.000	0.34	0.00
Offsite Total						**0.34**	**0.00**
Total						**11.06**	**1.07**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Earthwork Fugitive Particulate Matter Emissions

Activity	Activity Units	Activity Level	PM10 Emission Factor[a]	PM2.5 Emission Factor[a]	PM10 (lb/day)[b]	PM2.5 (lb/day)[b]
Soil Handling[c]	CY/day	140	9.94E-04	2.07E-04	0.14	0.03
Bulldozing, Scraping and Grading	hr/day		0.348	0.072	0.00	0.00
Storage Pile Wind Erosion	acres		44.0	9.15	0.00	0.00
Total					**0.14**	**0.03**

a From Table 57
[b] Emissions [lb/day] = Emission factor [lb/activity unit] x Activity unit [units/day]
[c] Peak daily estimated from total of 12,000 CY over 90 days

Table 52
Operational Emissions

Emissions Summary

Source	VOC (lb/day)	CO (lb/day)	NOX (lb/day)	SOX (lb/day)	PM10 (lb/day)	PM2.5 (lb/day)	CO2e (MT/yr)
Emergency Diesel Generator	0.09	0.58	0.57	0.00	0.02	0.00	8
Motor Vehicle Exhaust	0.08	0.64	0.05	0.00	0.02	0.01	2
Motor Vehicle Fugitive PM	--	--	--	--	5.20	0.51	--
SF6 Leakage	--	--	--	--	--	--	660
Total	**0.17**	**1.22**	**0.62**	**0.01**	**5.24**	**0.52**	**670**

Emergency Diesel Generator Usage

Equipment	Horse-power	Number	Days Used/ Year	Hours Used/ Day
Emergency Diesel Generator	440	1	52	1

Construction Equipment Exhaust Emission Factors

Equipment	Horse-power	VOC (lb/hr)[a]	CO (lb/hr)[a]	NOX (lb/hr)[a]	SOX (lb/hr)[a]	PM10 (lb/hr)[a]	PM2.5 (lb/hr)[b]	CO2 (lb/hr)[a]	CH4 (lb/hr)[a]	Category
Emergency Diesel Generator	440	0.086	0.582	0.570	0.003	0.017	0.000	336.853	0.008	Generator Sets

a From Table 53
[b] Diesel PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10
PM2.5 Fraction= 0.920
From Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5
and PM 2.5 Significance Thresholds, SCAQMD, October 2006,
http://www.aqmd.gov/ceqa/handbook/PM2_5/PM2_5.html

Emergency Diesel Generator Daily Criteria Pollutant Exhaust Emissions

Equipment	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Emergency Diesel Generator	0.09	0.58	0.57	0.00	0.02	0.00
Total	**0.09**	**0.58**	**0.57**	**0.00**	**0.02**	**0.00**

[a] Emissions [lb/day] = number x hours/day x emission factor [lb/hr]

Emergency Diesel Generator Annual Greenhouse Gas Emissions

Equipment	CO2 (MT)[a]	CH4 (MT)[a]	CO2e (MT)[b]
Emergency Diesel Generator	7.9	0.0	7.9
Total	**7.9**	**0.0**	**7.9**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x hours/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 53
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Motor Vehicle Usage

Vehicle	Number	Days Used/ Year	Miles/ Day/ Veh.
Transmission Line Inspection	1	1	65
Subtransmission Line Inspection	1	1	62
Substation Site Visit	1	48	60

Motor Vehicle Exhaust Emission Factors

Vehicle	Category	VOC (lb/mi)[a]	CO (lb/mi)[a]	NOX (lb/mi)[a]	SOX (lb/mi)[a]	PM10 (lb/mi)[a]	PM2.5 (lb/mi)[b]	CO2 (lb/mi)[a]	CH4 (lb/mi)[a]
Transmission Line Inspection	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Subtransmission Line Inspection	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05
Substation Site Visit	Passenger	4.35E-04	3.43E-03	2.88E-04	1.07E-05	9.68E-05	6.42E-05	1.11E+00	3.64E-05

a From Table 54 or Table 55

Motor Vehicle Daily Criteria Pollutant Exhaust Emissions

Vehicle	VOC (lb/day)[a]	CO (lb/day)[a]	NOX (lb/day)[a]	SOX (lb/day)[a]	PM10 (lb/day)[a]	PM2.5 (lb/day)[a]
Transmission Line Inspection	0.03	0.22	0.02	0.00	0.01	0.00
Subtransmission Line Inspection	0.03	0.21	0.02	0.00	0.01	0.00
Substation Site Visit	0.03	0.21	0.02	0.00	0.01	0.00
Total	**0.08**	**0.64**	**0.05**	**0.00**	**0.02**	**0.01**

[a] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

Motor Vehicle Annual Greenhouse Gas Emissions

Vehicle	CO2 (MT/yr)[a]	CH4 (MT/yr)[a]	CO2e (MT/yr)[b]
Transmission Line Inspection	0.0	0.0	0.0
Subtransmission Line Inspection	0.0	0.0	0.0
Substation Site Visit	1.5	0.0	1.5
Total	**1.5**	**0.0**	**1.5**

[a] Emissions [metric tons, MT] = emission factor [lb/hr] x miles/day x Number x
days used x 453.6 [g/lb] / 1,000,000 [g/MT]
Emission factors are in Table 54 and Table 55
[b] CO_2-equivalent (CO_2e) emission factors are CO_2 emissions plus 21 x CH_4 emissions, based on Table C.1 from California Climate Action
Registry General Reporting Protocol, Version 3.0, April 2008, http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf

Table 52
Operational Emissions

Motor Vehicle Fugitive Particulate Matter Emissions

Vehicle	Number	Road Type	Miles/ Day/ Vehicle	PM10 Emission Factor (lb/mi)[a]	PM2.5 Emission Factor (lb/mi)[a]	PM10 Emissions (lb/day)[b]	PM2.5 Emissions (lb/day)[b]
Transmission Line Inspection	1	Paved	60	0.001	0.000	0.05	0.00
Transmission Line Inspection	1	Unpaved	5	1.012	0.101	5.06	0.51
Subtransmission Line Inspection	1	Paved	62	0.001	0.000	0.05	0.00
Substation Site Visit	1	Paved	60	0.001	0.000	0.05	0.00
Total						**5.20**	**0.51**

a From Table 56
[b] Emissions [lb/day] = number x miles/day x emission factor [lb/mi]

SF6 Leakage Greenhouse Gas Emissions

Item	Value	Units
SF6 in 500 kV Equipment	11,515	pounds
SF6 in 115 kV Equipment	1,257	pounds
Total SF6 Added	12,772	pounds
SF6 Leakage Rate	0.5	%/year
SF6 Emissions	63.86	pounds
SF6 Global Warming Potential[a]	22,800	
CO2e Emissions[b]	**660**	**MT/yr**

[a] Based on Table C.1 from California Climate Action Registry General Reporting Protocol, Version 3.0, April 2008.
http://www.climateregistry.org/resources/docs/protocols/grp/GRP_V3_April2008_FINAL.pdf
[b] CO_2e emissions [metric tons] = SF_6 emissions [lb] x Global warming potential [lb CO_2e/lb SF_6] x 453.6 [g/lb] / 1,000,000 [g/MT]

SF6 Volume Changes				
Substation	**Item**	**SF6 Volume (Pounds Each)**	**Quantity Added**	**Total SF6 Volume (Pounds)**
500 kV				
Alberhill	Circuit Breaker	1,645	7	11,515
500 kV Total				**11,515**
115 kV				
Alberhill	Circuit Breaker	83	15	1,245
Valley	Circuit Breaker	71	(1)	(71)
Newcomb	Circuit Breaker	83	1	83
115 kV Total				**1,257**
Total Change				**12,772**

Table 53
SCAB Fleet Average Emission Factors (Diesel)

2025

Air Basin	SC

Equipment	MaxHP			ROG (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SOX (lb/hr)	PM (lb/hr)	CO2 (lb/hr)	CH4 (lb/hr)
Aerial Lifts	15	Aerial Lifts	Aerial Lifts0000	0.0101	0.0528	0.0631	0.0001	0.0025	8.7	0.0009
	25	Aerial Lifts	Aerial Lifts0016	0.0132	0.0451	0.0838	0.0001	0.0032	11.0	0.0012
	50	Aerial Lifts	Aerial Lifts0026	0.0168	0.1351	0.1218	0.0003	0.0035	19.6	0.0015
	120	Aerial Lifts	Aerial Lifts0051	0.0176	0.2265	0.1496	0.0004	0.0063	38.1	0.0016
	500	Aerial Lifts	Aerial Lifts0121	0.0580	0.3710	0.3660	0.0021	0.0109	213	0.0052
	750	Aerial Lifts	Aerial Lifts0501	0.1054	0.6706	0.6753	0.0039	0.0199	385	0.0095
Aerial Lifts Composite		Aerial Lifts	Aerial Lifts0751	0.0184	0.1646	0.1366	0.0004	0.0048	34.7	0.0017
Air Compressors	15	Air Compressors	Air Compressors0000	0.0087	0.0444	0.0545	0.0001	0.0023	7.2	0.0008
	25	Air Compressors	Air Compressors0016	0.0181	0.0605	0.1121	0.0002	0.0045	14.4	0.0016
	50	Air Compressors	Air Compressors0026	0.0263	0.1911	0.1476	0.0003	0.0047	22.3	0.0024
	120	Air Compressors	Air Compressors0051	0.0289	0.3023	0.1928	0.0006	0.0088	47.0	0.0026
	175	Air Compressors	Air Compressors0121	0.0424	0.4998	0.2187	0.0010	0.0104	88.5	0.0038
	250	Air Compressors	Air Compressors0176	0.0514	0.2531	0.2553	0.0015	0.0078	131	0.0046
	500	Air Compressors	Air Compressors0251	0.0894	0.4292	0.4150	0.0023	0.0134	232	0.0081
	750	Air Compressors	Air Compressors0501	0.1385	0.6633	0.6545	0.0036	0.0210	358	0.0125
	1000	Air Compressors	Air Compressors0751	0.1999	0.9265	2.5439	0.0049	0.0483	486	0.0180
Air Compressors Composite		Air Compressors	Air Compressors1001	0.0349	0.3027	0.2104	0.0007	0.0088	63.6	0.0031
Bore/Drill Rigs	15	Bore/Drill Rigs	Bore/Drill Rigs0000	0.0120	0.0632	0.0754	0.0002	0.0029	10.3	0.0011
	25	Bore/Drill Rigs	Bore/Drill Rigs0016	0.0193	0.0658	0.1219	0.0002	0.0046	16.0	0.0017
	50	Bore/Drill Rigs	Bore/Drill Rigs0026	0.0190	0.2200	0.1662	0.0004	0.0009	31.0	0.0017
	120	Bore/Drill Rigs	Bore/Drill Rigs0051	0.0252	0.4660	0.1955	0.0009	0.0020	77.1	0.0023
	175	Bore/Drill Rigs	Bore/Drill Rigs0121	0.0324	0.7542	0.0787	0.0016	0.0030	141	0.0029
	250	Bore/Drill Rigs	Bore/Drill Rigs0176	0.0427	0.3426	0.0981	0.0021	0.0035	188	0.0039
	500	Bore/Drill Rigs	Bore/Drill Rigs0251	0.0706	0.5512	0.1622	0.0031	0.0058	311	0.0064
	750	Bore/Drill Rigs	Bore/Drill Rigs0501	0.1396	1.0891	0.3204	0.0062	0.0115	615	0.0126
	1000	Bore/Drill Rigs	Bore/Drill Rigs0751	0.2115	1.6437	3.8912	0.0093	0.0364	928	0.0191
Bore/Drill Rigs Composite		Bore/Drill Rigs	Bore/Drill Rigs1001	0.0428	0.5007	0.2864	0.0017	0.0042	165	0.0039
Cement and Mortar Mixers	15	Cement and Mortar Mixers	Cement and Mortar Mixers0000	0.0074	0.0386	0.0461	0.0001	0.0018	6.3	0.0007
	25	Cement and Mortar Mixers	Cement and Mortar Mixers0016	0.0213	0.0724	0.1346	0.0002	0.0052	17.6	0.0019
Cement and Mortar Mixers Composite		Cement and Mortar Mixers	Cement and Mortar Mixers0026	0.0085	0.0414	0.0534	0.0001	0.0021	7.2	0.0008
Concrete/Industrial Saws	25	Concrete/Industrial Saws	Concrete/Industrial Saws0000	0.0199	0.0678	0.1256	0.0002	0.0047	16.5	0.0018
	50	Concrete/Industrial Saws	Concrete/Industrial Saws0026	0.0279	0.2284	0.1910	0.0004	0.0053	30.2	0.0025
	120	Concrete/Industrial Saws	Concrete/Industrial Saws0051	0.0370	0.4561	0.2840	0.0009	0.0117	74.1	0.0033
	175	Concrete/Industrial Saws	Concrete/Industrial Saws0121	0.0623	0.8663	0.3523	0.0018	0.0160	160	0.0056
Concrete/Industrial Saws Composite		Concrete/Industrial Saws	Concrete/Industrial Saws0176	0.0337	0.3706	0.2471	0.0007	0.0093	58.5	0.0030
Cranes	50	Cranes	Cranes0000	0.0350	0.2256	0.1644	0.0003	0.0062	23.2	0.0032
	120	Cranes	Cranes0051	0.0376	0.3384	0.2298	0.0006	0.0120	50.1	0.0034
	175	Cranes	Cranes0121	0.0462	0.4744	0.2300	0.0009	0.0120	80.3	0.0042
	250	Cranes	Cranes0176	0.0544	0.2316	0.2705	0.0013	0.0094	112	0.0049
	500	Cranes	Cranes0251	0.0858	0.3535	0.3977	0.0018	0.0146	180	0.0077
	750	Cranes	Cranes0501	0.1446	0.5947	0.6821	0.0030	0.0248	303	0.0130
	9999	Cranes	Cranes0751	0.5219	1.9715	5.5760	0.0098	0.1146	971	0.0471
Cranes Composite		Cranes	Cranes10000	0.0681	0.3738	0.4223	0.0014	0.0143	129	0.0061
Crawler Tractors	50	Crawler Tractors	Crawler Tractors0000	0.0487	0.2566	0.1842	0.0003	0.0090	24.9	0.0044
	120	Crawler Tractors	Crawler Tractors0051	0.0609	0.4537	0.3562	0.0008	0.0221	65.8	0.0055
	175	Crawler Tractors	Crawler Tractors0121	0.0823	0.7265	0.4447	0.0014	0.0241	121	0.0074
	250	Crawler Tractors	Crawler Tractors0176	0.0924	0.3662	0.5348	0.0019	0.0192	166	0.0083
	500	Crawler Tractors	Crawler Tractors0251	0.1392	0.5877	0.7527	0.0025	0.0280	259	0.0126
	750	Crawler Tractors	Crawler Tractors0501	0.2506	1.0528	1.3878	0.0047	0.0510	465	0.0226
	1000	Crawler Tractors	Crawler Tractors0751	0.3749	1.5618	4.2168	0.0066	0.0958	658	0.0338
Crawler Tractors Composite		Crawler Tractors	Crawler Tractors1001	0.0789	0.5065	0.4492	0.0013	0.0227	114	0.0071

Table 53
SCAB Fleet Average Emission Factors (Diesel)

2025

Air Basin	SC

Equipment	MaxHP			ROG (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SOX (lb/hr)	PM (lb/hr)	CO2 (lb/hr)	CH4 (lb/hr)
Crushing/Proc. Equipment	50	Crushing/Proc. Equipment	Crushing/Proc. Equipment0000	0.0508	0.3859	0.2899	0.0006	0.0083	44.0	0.0046
	120	Crushing/Proc. Equipment	Crushing/Proc. Equipment0051	0.0506	0.5406	0.3289	0.0010	0.0140	83.1	0.0046
	175	Crushing/Proc. Equipment	Crushing/Proc. Equipment0121	0.0795	0.9556	0.3830	0.0019	0.0177	167	0.0072
	250	Crushing/Proc. Equipment	Crushing/Proc. Equipment0176	0.0967	0.4768	0.4357	0.0028	0.0134	245	0.0087
	500	Crushing/Proc. Equipment	Crushing/Proc. Equipment0251	0.1459	0.6977	0.6163	0.0037	0.0200	374	0.0132
	750	Crushing/Proc. Equipment	Crushing/Proc. Equipment0501	0.2307	1.1003	0.9907	0.0059	0.0316	589	0.0208
	9999	Crushing/Proc. Equipment	Crushing/Proc. Equipment0751	0.6019	2.5014	6.6977	0.0131	0.1238	1,308	0.0543
Crushing/Proc. Equipment Composite		Crushing/Proc. Equipment	Crushing/Proc. Equipment10000	0.0693	0.6187	0.3763	0.0015	0.0146	132	0.0062
Dumpers/Tenders	25	Dumpers/Tenders	Dumpers/Tenders0000	0.0092	0.0314	0.0581	0.0001	0.0022	7.6	0.0008
Dumpers/Tenders Composite		Dumpers/Tenders	Dumpers/Tenders0026	0.0092	0.0314	0.0581	0.0001	0.0022	7.6	0.0008
Excavators	25	Excavators	Excavators0000	0.0198	0.0677	0.1253	0.0002	0.0047	16.4	0.0018
	50	Excavators	Excavators0026	0.0297	0.2365	0.1616	0.0003	0.0035	25.0	0.0027
	120	Excavators	Excavators0051	0.0448	0.4942	0.2638	0.0009	0.0092	73.6	0.0040
	175	Excavators	Excavators0121	0.0518	0.6636	0.1982	0.0013	0.0091	112	0.0047
	250	Excavators	Excavators0176	0.0647	0.3210	0.2222	0.0018	0.0074	159	0.0058
	500	Excavators	Excavators0251	0.0946	0.4495	0.3091	0.0023	0.0107	234	0.0085
	750	Excavators	Excavators0501	0.1569	0.7451	0.5194	0.0039	0.0178	387	0.0142
Excavators Composite		Excavators	Excavators0751	0.0559	0.5086	0.2269	0.0013	0.0086	120	0.0050
Forklifts	50	Forklifts	Forklifts0000	0.0150	0.1361	0.0904	0.0002	0.0013	14.7	0.0014
	120	Forklifts	Forklifts0051	0.0168	0.2086	0.0997	0.0004	0.0023	31.2	0.0015
	175	Forklifts	Forklifts0121	0.0228	0.3310	0.0732	0.0006	0.0029	56.1	0.0021
	250	Forklifts	Forklifts0176	0.0289	0.1551	0.0746	0.0009	0.0027	77.1	0.0026
	500	Forklifts	Forklifts0251	0.0416	0.2123	0.1038	0.0011	0.0038	111	0.0038
Forklifts Composite		Forklifts	Forklifts0501	0.0236	0.2148	0.0860	0.0006	0.0025	54.4	0.0021
Generator Sets	15	Generator Sets	Generator Sets0000	0.0109	0.0627	0.0768	0.0002	0.0032	10.2	0.0010
	25	Generator Sets	Generator Sets0016	0.0216	0.0738	0.1368	0.0002	0.0055	17.6	0.0019
	50	Generator Sets	Generator Sets0026	0.0242	0.2034	0.1881	0.0004	0.0051	30.6	0.0022
	120	Generator Sets	Generator Sets0051	0.0340	0.4585	0.3022	0.0009	0.0122	77.9	0.0031
	175	Generator Sets	Generator Sets0121	0.0469	0.7328	0.3291	0.0016	0.0136	142	0.0042
	250	Generator Sets	Generator Sets0176	0.0558	0.3746	0.3885	0.0024	0.0108	213	0.0050
	500	Generator Sets	Generator Sets0251	0.0862	0.5820	0.5697	0.0033	0.0167	337	0.0078
	750	Generator Sets	Generator Sets0501	0.1401	0.9395	0.9382	0.0055	0.0272	544	0.0126
	9999	Generator Sets	Generator Sets0751	0.3235	1.8648	5.2188	0.0105	0.0888	1,049	0.0292
Generator Sets Composite		Generator Sets	Generator Sets10000	0.0288	0.2667	0.2329	0.0007	0.0081	61.0	0.0026
Graders	50	Graders	Graders0000	0.0382	0.2599	0.1877	0.0004	0.0063	27.5	0.0034
	120	Graders	Graders0051	0.0521	0.5009	0.3219	0.0009	0.0153	75.0	0.0047
	175	Graders	Graders0121	0.0652	0.7261	0.3117	0.0014	0.0157	124	0.0059
	250	Graders	Graders0176	0.0781	0.3549	0.3652	0.0019	0.0129	172	0.0071
	500	Graders	Graders0251	0.1023	0.4610	0.4468	0.0023	0.0165	229	0.0092
	750	Graders	Graders0501	0.2167	0.9755	0.9628	0.0049	0.0353	486	0.0196
Graders Composite		Graders	Graders0751	0.0676	0.5696	0.3314	0.0015	0.0147	133	0.0061
Off-Highway Tractors	120	Off-Highway Tractors	Off-Highway Tractors0000	0.1108	0.6619	0.6362	0.0011	0.0455	93.7	0.0100
	175	Off-Highway Tractors	Off-Highway Tractors0121	0.1110	0.7932	0.6639	0.0015	0.0370	130	0.0100
	250	Off-Highway Tractors	Off-Highway Tractors0176	0.0890	0.3179	0.5983	0.0015	0.0227	130	0.0080
	750	Off-Highway Tractors	Off-Highway Tractors0251	0.3692	1.5358	2.4157	0.0057	0.0918	568	0.0333
	1000	Off-Highway Tractors	Off-Highway Tractors0751	0.5623	2.3619	6.0896	0.0082	0.1577	814	0.0507
Off-Highway Tractors Composite		Off-Highway Tractors	Off-Highway Tractors1001	0.1134	0.6101	0.7291	0.0017	0.0331	151	0.0102
Off-Highway Trucks	175	Off-Highway Trucks	Off-Highway Trucks0000	0.0622	0.7536	0.2376	0.0014	0.0112	125	0.0056
	250	Off-Highway Trucks	Off-Highway Trucks0176	0.0730	0.3435	0.2521	0.0019	0.0085	167	0.0066
	500	Off-Highway Trucks	Off-Highway Trucks0251	0.1183	0.5319	0.3878	0.0027	0.0135	272	0.0107
	750	Off-Highway Trucks	Off-Highway Trucks0501	0.1921	0.8627	0.6384	0.0044	0.0221	442	0.0173
	1000	Off-Highway Trucks	Off-Highway Trucks0751	0.2823	1.2403	3.1782	0.0063	0.0546	625	0.0255
Off-Highway Trucks Composite		Off-Highway Trucks	Off-Highway Trucks1001	0.1140	0.5385	0.4769	0.0027	0.0142	260	0.0103

Table 53
SCAB Fleet Average Emission Factors (Diesel)

2025

Air Basin	SC

Equipment	MaxHP			ROG (lb/hr)	CO (lb/hr)	NOX (lb/hr)	SOX (lb/hr)	PM (lb/hr)	CO2 (lb/hr)	CH4 (lb/hr)
Other Construction Equipment	15	Other Construction Equipment	Other Construction Equipment0000	0.0118	0.0617	0.0737	0.0002	0.0029	10.1	0.0011
	25	Other Construction Equipment	Other Construction Equipment0016	0.0159	0.0544	0.1008	0.0002	0.0038	13.2	0.0014
	50	Other Construction Equipment	Other Construction Equipment0026	0.0244	0.2188	0.1693	0.0004	0.0034	28.0	0.0022
	120	Other Construction Equipment	Other Construction Equipment0051	0.0379	0.5045	0.2730	0.0009	0.0087	80.9	0.0034
	175	Other Construction Equipment	Other Construction Equipment0121	0.0384	0.5858	0.1729	0.0012	0.0075	107	0.0035
	500	Other Construction Equipment	Other Construction Equipment0176	0.0792	0.4606	0.3034	0.0025	0.0099	254	0.0071
Other Construction Equipment Composite		Other Construction Equipment	Other Construction Equipment0501	0.0442	0.3474	0.2021	0.0013	0.0069	123	0.0040
Other General Industrial Equipmen	15	Other General Industrial Equipmen	Other General Industrial Equipmen0000	0.0066	0.0391	0.0466	0.0001	0.0018	6.4	0.0006
	25	Other General Industrial Equipmen	Other General Industrial Equipmen0016	0.0185	0.0632	0.1170	0.0002	0.0044	15.3	0.0017
	50	Other General Industrial Equipmen	Other General Industrial Equipmen0026	0.0298	0.2099	0.1491	0.0003	0.0047	21.7	0.0027
	120	Other General Industrial Equipmen	Other General Industrial Equipmen0051	0.0436	0.4189	0.2603	0.0007	0.0120	62.0	0.0039
	175	Other General Industrial Equipmen	Other General Industrial Equipmen0121	0.0519	0.5684	0.2412	0.0011	0.0115	95.9	0.0047
	250	Other General Industrial Equipmen	Other General Industrial Equipmen0176	0.0608	0.2743	0.2679	0.0015	0.0083	136	0.0055
	500	Other General Industrial Equipmen	Other General Industrial Equipmen0251	0.1174	0.5103	0.4826	0.0026	0.0157	265	0.0106
	750	Other General Industrial Equipmen	Other General Industrial Equipmen0501	0.1939	0.8411	0.8117	0.0044	0.0262	437	0.0175
	1000	Other General Industrial Equipmen	Other General Industrial Equipmen0751	0.2627	1.1060	2.9924	0.0056	0.0579	560	0.0237
Other General Industrial Equipmen Composite		Other General Industrial Equipmen	Other General Industrial Equipmen1001	0.0747	0.4438	0.3947	0.0016	0.0130	152	0.0067
Other Material Handling Equipment	50	Other Material Handling Equipment	Other Material Handling Equipment0000	0.0410	0.2893	0.2073	0.0004	0.0065	30.3	0.0037
	120	Other Material Handling Equipment	Other Material Handling Equipment0051	0.0421	0.4076	0.2541	0.0007	0.0117	60.7	0.0038
	175	Other Material Handling Equipment	Other Material Handling Equipment0121	0.0653	0.7197	0.3067	0.0014	0.0146	122	0.0059
	250	Other Material Handling Equipment	Other Material Handling Equipment0176	0.0642	0.2920	0.2863	0.0016	0.0088	145	0.0058
	500	Other Material Handling Equipment	Other Material Handling Equipment0251	0.0837	0.3670	0.3482	0.0019	0.0113	192	0.0075
	9999	Other Material Handling Equipment	Other Material Handling Equipment0501	0.3781	1.4596	3.9555	0.0073	0.0764	741	0.0341
Other Material Handling Equipment Composite		Other Material Handling Equipment	Other Material Handling Equipment10000	0.0696	0.4355	0.3844	0.0015	0.0124	141	0.0063
Pavers	25	Pavers	Pavers0000	0.0225	0.0768	0.1422	0.0002	0.0053	18.7	0.0020
	50	Pavers	Pavers0026	0.0574	0.2803	0.2102	0.0004	0.0114	28.0	0.0052
	120	Pavers	Pavers0051	0.0662	0.4696	0.4003	0.0008	0.0263	69.2	0.0060
	175	Pavers	Pavers0121	0.0899	0.7543	0.5238	0.0014	0.0286	128	0.0081
	250	Pavers	Pavers0176	0.1097	0.4287	0.7020	0.0022	0.0254	194	0.0099
	500	Pavers	Pavers0251	0.1263	0.5374	0.7572	0.0023	0.0284	233	0.0114
Pavers Composite		Pavers	Pavers0501	0.0717	0.4745	0.3858	0.0009	0.0220	77.9	0.0065
Paving Equipment	25	Paving Equipment	Paving Equipment0000	0.0152	0.0520	0.0963	0.0002	0.0036	12.6	0.0014
	50	Paving Equipment	Paving Equipment0026	0.0469	0.2355	0.1789	0.0003	0.0095	23.9	0.0042
	120	Paving Equipment	Paving Equipment0051	0.0503	0.3671	0.3092	0.0006	0.0200	54.5	0.0045
	175	Paving Equipment	Paving Equipment0121	0.0687	0.5900	0.4021	0.0011	0.0219	101	0.0062
	250	Paving Equipment	Paving Equipment0176	0.0672	0.2648	0.4289	0.0014	0.0154	122	0.0061
Paving Equipment Composite		Paving Equipment	Paving Equipment0251	0.0548	0.3993	0.3281	0.0008	0.0190	68.9	0.0049
Plate Compactors	15	Plate Compactors	Plate Compactors0000	0.0050	0.0263	0.0314	0.0001	0.0012	4.3	0.0005
Plate Compactors Composite		Plate Compactors	Plate Compactors0016	0.0050	0.0263	0.0314	0.0001	0.0012	4.3	0.0005
Pressure Washers	15	Pressure Washers	Pressure Washers0000	0.0052	0.0301	0.0368	0.0001	0.0015	4.9	0.0005
	25	Pressure Washers	Pressure Washers0016	0.0087	0.0299	0.0555	0.0001	0.0022	7.1	0.0008
	50	Pressure Washers	Pressure Washers0026	0.0079	0.0810	0.0843	0.0002	0.0019	14.3	0.0007
	120	Pressure Washers	Pressure Washers0051	0.0082	0.1351	0.0897	0.0003	0.0031	24.1	0.0007
Pressure Washers Composite		Pressure Washers	Pressure Washers0121	0.0066	0.0531	0.0561	0.0001	0.0019	9.4	0.0006
Pumps	15	Pumps	Pumps0000	0.0089	0.0456	0.0560	0.0001	0.0024	7.4	0.0008
	25	Pumps	Pumps0016	0.0244	0.0816	0.1512	0.0002	0.0061	19.5	0.0022
	50	Pumps	Pumps0026	0.0299	0.2394	0.2138	0.0004	0.0061	34.3	0.0027
	120	Pumps	Pumps0051	0.0365	0.4656	0.3062	0.0009	0.0129	77.9	0.0033
	175	Pumps	Pumps0121	0.0499	0.7342	0.3301	0.0016	0.0142	140	0.0045
	250	Pumps	Pumps0176	0.0572	0.3604	0.3745	0.0023	0.0107	201	0.0052
	500	Pumps	Pumps0251	0.0959	0.6034	0.5922	0.0034	0.0178	345	0.0087
	750	Pumps	Pumps0501	0.1593	0.9975	0.9991	0.0057	0.0297	571	0.0144
	9999	Pumps	Pumps0751	0.4488	2.4388	6.8114	0.0136	0.1186	1,355	0.0405

Table 53
SCAB Fleet Average Emission Factors (Diesel)

2025

Air Basin	SC

				(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	MaxHP			ROG	CO	NOX	SOX	PM	CO2	CH4
Pumps Composite		Pumps	Pumps10000	0.0270	0.2617	0.2079	0.0006	0.0078	49.6	0.0024
Rollers	15	Rollers	Rollers0000	0.0074	0.0386	0.0461	0.0001	0.0018	6.3	0.0007
	25	Rollers	Rollers0016	0.0161	0.0549	0.1017	0.0002	0.0038	13.3	0.0015
	50	Rollers	Rollers0026	0.0345	0.2258	0.1776	0.0003	0.0068	26.0	0.0031
	120	Rollers	Rollers0051	0.0392	0.3801	0.2647	0.0007	0.0137	59.0	0.0035
	175	Rollers	Rollers0121	0.0553	0.6096	0.3030	0.0012	0.0156	108	0.0050
	250	Rollers	Rollers0176	0.0656	0.3037	0.3629	0.0017	0.0127	153	0.0059
	500	Rollers	Rollers0251	0.0920	0.4189	0.4752	0.0022	0.0174	219	0.0083
Rollers Composite		Rollers	Rollers0501	0.0410	0.3763	0.2501	0.0008	0.0122	67.0	0.0037
Rough Terrain Forklifts	50	Rough Terrain Forklifts	Rough Terrain Forklifts0000	0.0381	0.3041	0.2193	0.0004	0.0054	33.9	0.0034
	120	Rough Terrain Forklifts	Rough Terrain Forklifts0051	0.0369	0.4106	0.2316	0.0007	0.0087	62.4	0.0033
	175	Rough Terrain Forklifts	Rough Terrain Forklifts0121	0.0569	0.7229	0.2450	0.0014	0.0112	125	0.0051
	250	Rough Terrain Forklifts	Rough Terrain Forklifts0176	0.0671	0.3372	0.2625	0.0019	0.0084	171	0.0061
	500	Rough Terrain Forklifts	Rough Terrain Forklifts0251	0.0999	0.4838	0.3682	0.0025	0.0123	257	0.0090
Rough Terrain Forklifts Composite		Rough Terrain Forklifts	Rough Terrain Forklifts0501	0.0396	0.4430	0.2336	0.0008	0.0090	70.3	0.0036
Rubber Tired Dozers	175	Rubber Tired Dozers	Rubber Tired Dozers0000	0.1163	0.8019	0.6895	0.0015	0.0386	129	0.0105
	250	Rubber Tired Dozers	Rubber Tired Dozers0176	0.1329	0.4624	0.8841	0.0021	0.0340	183	0.0120
	500	Rubber Tired Dozers	Rubber Tired Dozers0251	0.1817	0.7490	1.1543	0.0026	0.0448	265	0.0164
	750	Rubber Tired Dozers	Rubber Tired Dozers0501	0.2747	1.1262	1.7818	0.0040	0.0684	399	0.0248
	1000	Rubber Tired Dozers	Rubber Tired Dozers0751	0.4321	1.7954	4.5523	0.0060	0.1202	592	0.0390
Rubber Tired Dozers Composite		Rubber Tired Dozers	Rubber Tired Dozers1001	0.1672	0.6620	1.0824	0.0025	0.0419	239	0.0151
Rubber Tired Loaders	25	Rubber Tired Loaders	Rubber Tired Loaders0000	0.0204	0.0697	0.1291	0.0002	0.0048	16.9	0.0018
	50	Rubber Tired Loaders	Rubber Tired Loaders0026	0.0418	0.2904	0.2109	0.0004	0.0069	31.1	0.0038
	120	Rubber Tired Loaders	Rubber Tired Loaders0051	0.0397	0.3916	0.2476	0.0007	0.0115	58.9	0.0036
	175	Rubber Tired Loaders	Rubber Tired Loaders0121	0.0546	0.6199	0.2592	0.0012	0.0130	106	0.0049
	250	Rubber Tired Loaders	Rubber Tired Loaders0176	0.0661	0.3041	0.3040	0.0017	0.0107	149	0.0060
	500	Rubber Tired Loaders	Rubber Tired Loaders0251	0.1034	0.4654	0.4455	0.0023	0.0164	237	0.0093
	750	Rubber Tired Loaders	Rubber Tired Loaders0501	0.2119	0.9532	0.9273	0.0049	0.0338	486	0.0191
	1000	Rubber Tired Loaders	Rubber Tired Loaders0751	0.2701	1.1927	3.2272	0.0060	0.0615	594	0.0244
Rubber Tired Loaders Composite		Rubber Tired Loaders	Rubber Tired Loaders1001	0.0559	0.4311	0.2835	0.0012	0.0121	109	0.0050
Scrapers	120	Scrapers	Scrapers0000	0.0887	0.6472	0.5218	0.0011	0.0330	93.9	0.0080
	175	Scrapers	Scrapers0121	0.1025	0.8864	0.5654	0.0017	0.0307	148	0.0092
	250	Scrapers	Scrapers0176	0.1187	0.4642	0.7040	0.0024	0.0254	209	0.0107
	500	Scrapers	Scrapers0251	0.1755	0.7332	0.9727	0.0032	0.0364	321	0.0158
	750	Scrapers	Scrapers0501	0.3043	1.2657	1.7266	0.0056	0.0638	555	0.0275
Scrapers Composite		Scrapers	Scrapers0751	0.1495	0.7187	0.8387	0.0027	0.0335	262	0.0135
Signal Boards	15	Signal Boards	Signal Boards0000	0.0072	0.0377	0.0450	0.0001	0.0018	6.2	0.0006
	50	Signal Boards	Signal Boards0016	0.0332	0.2686	0.2268	0.0005	0.0063	36.2	0.0030
	120	Signal Boards	Signal Boards0051	0.0394	0.4898	0.3076	0.0009	0.0127	80.2	0.0036
	175	Signal Boards	Signal Boards0121	0.0587	0.8292	0.3433	0.0017	0.0152	155	0.0053
	250	Signal Boards	Signal Boards0176	0.0794	0.4676	0.4435	0.0029	0.0132	255	0.0072
Signal Boards Composite		Signal Boards	Signal Boards0251	0.0111	0.0909	0.0718	0.0002	0.0029	16.7	0.0010
Skid Steer Loaders	25	Skid Steer Loaders	Skid Steer Loaders0000	0.0167	0.0568	0.1055	0.0002	0.0040	13.8	0.0015
	50	Skid Steer Loaders	Skid Steer Loaders0026	0.0194	0.1977	0.1446	0.0003	0.0015	25.5	0.0017
	120	Skid Steer Loaders	Skid Steer Loaders0051	0.0175	0.2665	0.1240	0.0005	0.0022	42.8	0.0016
Skid Steer Loaders Composite		Skid Steer Loaders	Skid Steer Loaders0121	0.0186	0.2104	0.1354	0.0004	0.0019	30.3	0.0017
Surfacing Equipment	50	Surfacing Equipment	Surfacing Equipment0000	0.0171	0.1105	0.0934	0.0002	0.0035	14.1	0.0015
	120	Surfacing Equipment	Surfacing Equipment0051	0.0385	0.3950	0.2869	0.0007	0.0146	63.8	0.0035
	175	Surfacing Equipment	Surfacing Equipment0121	0.0386	0.4642	0.2429	0.0010	0.0119	85.8	0.0035
	250	Surfacing Equipment	Surfacing Equipment0176	0.0504	0.2604	0.3275	0.0015	0.0111	135	0.0045
	500	Surfacing Equipment	Surfacing Equipment0251	0.0800	0.4236	0.4893	0.0022	0.0174	221	0.0072
	750	Surfacing Equipment	Surfacing Equipment0501	0.1260	0.6643	0.7833	0.0035	0.0275	347	0.0114
Surfacing Equipment Composite		Surfacing Equipment	Surfacing Equipment0751	0.0638	0.3590	0.3924	0.0017	0.0142	166	0.0058

Table 53
SCAB Fleet Average Emission Factors (Diesel)

2025

Air Basin	SC

				(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)	(lb/hr)
Equipment	**MaxHP**			**ROG**	**CO**	**NOX**	**SOX**	**PM**	**CO2**	**CH4**
Sweepers/Scrubbers	15	Sweepers/Scrubbers	Sweepers/Scrubbers0000	0.0124	0.0729	0.0870	0.0002	0.0034	11.9	0.0011
	25	Sweepers/Scrubbers	Sweepers/Scrubbers0016	0.0237	0.0808	0.1495	0.0002	0.0056	19.6	0.0021
	50	Sweepers/Scrubbers	Sweepers/Scrubbers0026	0.0308	0.2762	0.1942	0.0004	0.0033	31.6	0.0028
	120	Sweepers/Scrubbers	Sweepers/Scrubbers0051	0.0395	0.4895	0.2530	0.0009	0.0068	75.0	0.0036
	175	Sweepers/Scrubbers	Sweepers/Scrubbers0121	0.0565	0.8005	0.2201	0.0016	0.0084	139	0.0051
	250	Sweepers/Scrubbers	Sweepers/Scrubbers0176	0.0587	0.3179	0.1898	0.0018	0.0062	162	0.0053
Sweepers/Scrubbers Composite		Sweepers/Scrubbers	Sweepers/Scrubbers0251	0.0410	0.4840	0.2255	0.0009	0.0061	78.5	0.0037
Tractors/Loaders/Backhoes	25	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0000	0.0191	0.0653	0.1209	0.0002	0.0045	15.9	0.0017
	50	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0026	0.0316	0.2678	0.1895	0.0004	0.0037	30.3	0.0029
	120	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0051	0.0281	0.3379	0.1761	0.0006	0.0055	51.7	0.0025
	175	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0121	0.0420	0.5839	0.1613	0.0011	0.0072	101	0.0038
	250	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0176	0.0633	0.3389	0.2157	0.0019	0.0073	172	0.0057
	500	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0251	0.1263	0.6506	0.4127	0.0039	0.0144	345	0.0114
	750	Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0501	0.1896	0.9760	0.6256	0.0058	0.0216	517	0.0171
Tractors/Loaders/Backhoes Composite		Tractors/Loaders/Backhoes	Tractors/Loaders/Backhoes0751	0.0336	0.3586	0.1857	0.0008	0.0059	66.8	0.0030
Trenchers	15	Trenchers	Trenchers0000	0.0099	0.0517	0.0617	0.0001	0.0024	8.5	0.0009
	25	Trenchers	Trenchers0016	0.0397	0.1355	0.2509	0.0004	0.0094	32.9	0.0036
	50	Trenchers	Trenchers0026	0.0687	0.3197	0.2467	0.0004	0.0140	32.9	0.0062
	120	Trenchers	Trenchers0051	0.0625	0.4341	0.3863	0.0008	0.0259	64.9	0.0056
	175	Trenchers	Trenchers0121	0.1009	0.8327	0.6152	0.0016	0.0338	144	0.0091
	250	Trenchers	Trenchers0176	0.1247	0.4925	0.8480	0.0025	0.0309	223	0.0112
	500	Trenchers	Trenchers0251	0.1661	0.7370	1.0663	0.0031	0.0400	311	0.0150
	750	Trenchers	Trenchers0501	0.3147	1.3882	2.0666	0.0059	0.0766	587	0.0284
Trenchers Composite		Trenchers	Trenchers0751	0.0674	0.4085	0.3481	0.0007	0.0215	58.7	0.0061
Welders	15	Welders	Welders0000	0.0075	0.0381	0.0468	0.0001	0.0020	6.2	0.0007
	25	Welders	Welders0016	0.0141	0.0473	0.0876	0.0001	0.0035	11.3	0.0013
	50	Welders	Welders0026	0.0280	0.2077	0.1684	0.0003	0.0053	26.0	0.0025
	120	Welders	Welders0051	0.0223	0.2476	0.1601	0.0005	0.0073	39.5	0.0020
	175	Welders	Welders0121	0.0430	0.5400	0.2396	0.0011	0.0111	98.2	0.0039
	250	Welders	Welders0176	0.0423	0.2236	0.2294	0.0013	0.0069	119	0.0038
	500	Welders	Welders0251	0.0585	0.3040	0.2969	0.0016	0.0095	168	0.0053
Welders Composite				0.0214	0.1745	0.1373	0.0003	0.0052	25.6	0.0019

Source: File off-road-mobile-source-emission-factors-(scenario-years-2007-2025).xls, downloaded from http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/off-road-mobile-source-emission-factors

Table 54

Highest (Most Conservative) EMFAC2007 (version 2.3)
Emission Factors for On-Road Passenger Vehicles & Delivery Trucks

Projects in the SCAQMD (Scenario Years 2007 - 2026)
Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

Vehicle Class:
Passenger Vehicles (<8500 pounds) & Delivery Trucks (>8500 pounds)

The following emission factors were compiled by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model, taking the weighted average of vehicle types and simplifying into two categories:
Passenger Vehicles & Delivery Trucks.

These emission factors can be used to calculate on-road mobile source emissions for the vehicle categories listed in the tables below, by use of the following equation:
Emissions (pounds per day) = N x TL x EF
where N = number of trips, TL = trip length (miles/day), and EF = emission factor (pounds per mile)

This methodology replaces the old EMFAC emission factors in Tables A-9-5-J-1 through A-9-5-L in Appendix A9 of the current SCAQMD CEQA Handbook. All the emission factors account for the emissions from start, running and idling exhaust. In addition, the ROG emission factors include diurnal, hot soak, running and resting emissions, and the PM10 & PM2.5 emission factors include tire and brake wear.

Scenario Year: 2025			
All model years in the range 1981 to 2025			
Passenger Vehicles (pounds/mile)		**Delivery Trucks (pounds/mile)**	
CO	**0.00342738**	CO	**0.00595363**
NOx	**0.00028846**	NOx	**0.00615945**
ROG	**0.00043545**	ROG	**0.00092178**
SOx	**0.00001070**	SOx	**0.00002761**
PM10	**0.00009679**	PM10	**0.00028425**
PM2.5	**0.00006418**	PM2.5	**0.00020958**
CO2	**1.11078571**	CO2	**2.88143570**
CH4	**0.00003641**	CH4	**0.00003765**

Source: File on-road-vehicles-(scenario-years-2007-2026).xls, downloaded from http://www.aqmd.gov/home/rules-compliance/ceqa/

Table 55

Highest (Most Conservative) EMFAC2007 (version 2.3)
Emission Factors for On-Road Heavy-Heavy-Duty Diesel Trucks

Projects in the SCAQMD (Scenario Years 2007 - 2026)
Derived from Peak Emissions Inventory (**Winter**, **Annual**, **Summer**)

Vehicle Class:
Heavy-Heavy-Duty Diesel Trucks (33,001 to 60,000 pounds)

The following emission factors were compiled by running the California Air Resources Board's EMFAC2007 (version 2.3) Burden Model and extracting the **Heavy-Heavy-Duty Diesel Truck (HHDT)** Emission Factors.

These emission factors can be used to calculate on-road mobile source emissions for the vehicle/emission categories listed in the tables below, by use of the following equation:

Emissions (pounds per day) = N x TL x EF

where N = number of trips, TL = trip length (miles/day), and EF = emission factor (pounds per mile)

The **HHDT-DSL** vehicle/emission category accounts for all emissions from heavy-heavy-duty diesel trucks, including start, running and idling exhaust. In addition, ROG emission factors account for diurnal, hot soak, running and resting emissions, and the PM10 & PM2.5 emission factors account for tire and brake wear.

The **HHDT-DSL, Exh** vehicle/emission category includes only the exhaust portion of PM10 & PM2.5 emissions from heavy-heavy-duty diesel trucks.

Scenario Year: 2025
All model years in the range 1981 to 2025

HHDT-DSL (pounds/mile)		HHDT-DSL, Exh (pounds/mile)	
CO	**0.00431086**	PM10	**0.00034397**
NOx	**0.00932573**	PM2.5	**0.00031664**
ROG	**0.00080206**		
SOx	**0.00004018**		
PM10	**0.00048541**		
PM2.5	**0.00036326**		
CO2	**4.19512979**		
CH4	**0.00003697**		

Source: File heavy-heavy-duty-on-road-vehicles-(scenario-years-2007-2026).xls, downloaded from http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/emfac-2007-(v2-3)-emission-factors-(on-road)

Table 56
Motor Vehicle Entrained Road Dust Emission Factors

Vehicle Type	Surface	Silt Loading (sL, g/m2) or Silt Content (s, %)[a]	Average Weight (W) (tons)[b]	Un-controlled PM10 Emission Factor (lb/VMT)[c]	Un-controlled PM2.5 Emission Factor (lb/VMT)[c]	Control Efficiency (%)[d]	Controlled PM10 Emission Factor (lb/VMT)[e]	Controlled PM2.5 Emission Factor (lb/VMT)[e]
1/2-Ton Pick-up Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1/2-Ton Pick-up Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
1-Ton Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
10-cu. yd. Concrete Mixer Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
10-cu. yd. Concrete Mixer Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
10-cu. yd. Dump Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
10-cu. yd. Dump Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
1-Ton Crew Cab Flat Bed, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Crew Cab Flat Bed, 4x4	Unpaved	7.5	5	1.24E+00	1.24E-01	0%	1.24E+00	1.24E-01
1-Ton Crew Cab, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Crew Cab, 4x4	Unpaved	7.5	5	1.24E+00	1.24E-01	0%	1.24E+00	1.24E-01
1-Ton Flat Bed, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
1-Ton Flat Bed, 4x4	Unpaved	7.5	5	1.24E+00	1.24E-01	0%	1.24E+00	1.24E-01
3/4-Ton Pick-up Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
3/4-Ton Pick-up Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
3/4-Ton Truck, 4x4	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
3/4-Ton Truck, 4x4	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
40' Flat Bed Pole Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
40' Flat Bed Pole Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Asphalt Delivery Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Asphalt Delivery Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Carry-all Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Carry-all Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Concrete Mixer Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Concrete Mixer Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Concrete Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Concrete Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Crew Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crew Truck	Unpaved	7.5	5	1.24E+00	1.24E-01	0%	1.24E+00	1.24E-01
Crew Vehicle	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crew Vehicle	Unpaved	7.5	5	1.24E+00	1.24E-01	0%	1.24E+00	1.24E-01
Crewcab Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crewcab Truck	Unpaved	7.5	5	1.24E+00	1.24E-01	0%	1.24E+00	1.24E-01
Crushed Rock Delivery Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Crushed Rock Delivery Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Dump Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Dump Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Dump Truck (Trash)	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Dump Truck (Trash)	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Extendable Flat Bed Pole Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Extendable Flat Bed Pole Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Flat Bed Truck/Trailer	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Flat Bed Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Flatbed Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Flatbed Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Fuel, Helicopter Support Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Fuel, Helicopter Support Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Jet A Fuel Truck	Paved	0.035	3.4	9.22E-04	0.00E+00	0%	9.22E-04	0.00E+00
Jet A Fuel Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Low Bed Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Low Bed Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Lowboy Truck/Trailer	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Lowboy Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Maintenance Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00

Table 56
Motor Vehicle Entrained Road Dust Emission Factors

Vehicle Type	Surface	Silt Loading (sL, g/m2) or Silt Content (s, %)[a]	Average Weight (W) (tons)[b]	Un-controlled PM10 Emission Factor (lb/VMT)[c]	Un-controlled PM2.5 Emission Factor (lb/VMT)[c]	Control Efficiency (%)[d]	Controlled PM10 Emission Factor (lb/VMT)[e]	Controlled PM2.5 Emission Factor (lb/VMT)[e]
Maintenance Truck	Unpaved	7.5	10	1.69E+00	1.69E-01	0%	1.69E+00	1.69E-01
Pipe Truck/Trailer	Paved	0.035	3.4	9.22E-04	0.00E+00	0%	9.22E-04	0.00E+00
Pipe Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Reel Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Reel Truck	Unpaved	7.5	10	1.69E+00	1.69E-01	0%	1.69E+00	1.69E-01
Stake Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Stake Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Stakebed Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Stakebed Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Truck, Semi Tractor	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Truck, Semi Tractor	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Van	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Van	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
Water Truck	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Water Truck	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Wire Truck/Trailer	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Wire Truck/Trailer	Unpaved	7.5	17	2.14E+00	2.14E-01	0%	2.14E+00	2.14E-01
Worker Commute	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Worker Commute	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
Transmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Transmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
Subtransmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Subtransmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
Substation Site Visit	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Substation Site Visit	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
Transmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Transmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
Subtransmission Line Inspection	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Subtransmission Line Inspection	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01
Substation Site Visit	Paved	0.035	3.2	8.01E-04	0.00E+00	0%	8.01E-04	0.00E+00
Substation Site Visit	Unpaved	7.5	3.2	1.01E+00	1.01E-01	0%	1.01E+00	1.01E-01

[a] Paved road silt loading from ARB Emission Inventory Methodology 7.9, Entrained Paved Road Dust (1997) for collector roads,
http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-9.pdf
Unpaved road silt content from SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden

[b] Average paved on-road vehicle weight in Riverside County from ARB Emission Inventory Methodology 7.9, Entrained Paved Road Dust (1997)
Unpaved worker commuting weight on access road assumed to be same as paved road weight
Unpaved weight for other trucks is based on upper limit of 33,000 lbs for medium heavy-duty trucks.

[c] Equations:

$EF(paved) = k_p (sL/2)^{0.65} (W/3)^{1.5} - C$ — Ref: AP-42, Section 13.2.1, "Paved Rods," November 2006

$EF (unpaved) = k_u (s/12)^a (W/3)^b$ — Ref: AP-42, Section 13.2.2, "Unpaved Rods," November 2006

Constants:

k_p =	0.016	(Particle size multiplier for PM10)
	0.0024	(Particle size multiplier for PM2.5)
C =	0.00047	(Exhaust, brake wear and tire wear adjustment, PM10)
	0.00036	(Exhaust, brake wear and tire wear adjustment, PM2.5)
k_u =	1.5	(Particle size multiplier for PM)
	0.15	(Particle size multiplier for PM2.5)
a =	0.9	for PM10
	0.9	for PM2.5
b =	0.45	for PM10
	0.45	for PM2.5

[d] Control efficiency from watering unpaved roads twice per day, from Table XI-D, Mitigation Measure Exmaples,
Fugitive Dust from Unpaved Roads, http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html

[e] Controlled emission factor [lb/mi] = Uncontrolled emission factor [lb/mi] x (1 - Control efficiency [%] / 100)

Table 57
Fugitive Dust Emission Factors
Soil Dropping During Excavation

Emission Factor [lb/cu. yd] = 0.0011 x (mean wind speed [mi/hr] / 5)$^{1.3}$ / (moisture [%] / 2)$^{1.4}$ x (number drops per ton) x (density [ton/cu. yd])
Reference: AP-42, Equation (1), Section 13.2.4, November 2006

Parameter	Value	Basis
Mean Wind Speed	12	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G, default
Moisture	15	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G-1, moist soil
Number Drops	4	Assumption
Soil Density	1.215	Table 2.46, Handbook of Solid Waste Management

PM10 Emission Factor (Uncontrolled)	9.94E-04	lb/cu. yd
Reduction from Watering Twice/Day[b]	0%	
Controlled PM10 Emission Factor	9.94E-04	lb/cu. yd
Controlled PM2.5 Emission Factor[a]	2.07E-04	lb/cu. yd

[a] PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

[b] Watering is assumed to be used to maintain moist conditions, so no further reduction from watering is included.

Emissions [pounds per day] = Controlled emission factor [pounds per cubic yard] x Volume soil handled [cubic yards per day]

Table 57
Fugitive Dust Emission Factors
Storage Pile Wind Erosion

Emission Factor [lb/day-acre] = 0.85 x (silt content [%] / 1.5) x (365 / 235) x (percentage of time unobstructed wind exceeds 12 mph / 15)
Reference: SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-E

Parameter	Value	Basis
Silt Content	7.5	SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden
Pct. time wind > 12 mph	100	Worst-case assumption

PM10 Emission Factor (Uncontrolled)	44.0	lb/day-acre
Reduction from Watering Twice/Day	0%	
Controlled PM10 Emission Factor	44.0	lb/day-acre
Controlled PM2.5 Emission Factor[a]	9.2	lb/day-acre

[a] PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

Emissions [pounds per day] = Controlled emission factor [pounds per acre-day] x Storage pile surface area [acres]

Table 57
Fugitive Dust Emission Factors
Bulldozing, Scraping and Grading

Emission Factor [lb/hr] = 0.75 x (silt content [%])$^{1.5}$ / (moisture)$^{1.4}$
Reference: AP-42, Table 11.9-1, July 1998

Parameter	Value	Basis
Silt Content	7.5	SCAQMD CEQA Handbook, (1993) Table A9-9-E-1 for overburden
Moisture	15	SCAQMD CEQA Air Quality Handbook (1993), Table 9-9-G-1, moist soil

PM10 Emission Factor (Uncontrolled)	0.348	lb/hr
Reduction from Watering Twice/Day	0%	
Controlled PM10 Emission Factor	0.348	lb/hr
Controlled PM2.5 Emission Factor[a]	0.072	lb/hr

[a] PM2.5 emission factor [lb/hr] = PM10 emission factor [lb/hr] x PM2.5 fraction of PM10

PM2.5 Fraction of PM10 in Construction Dust = 0.208 from Appendix A, Final–Methodology to Calculate Particulate Matter (PM) 2.5 and PM 2.5 Significance Thresholds, SCAQMD, October 2006

[b] Watering is assumed to be used to maintain moist conditions, so no further reduction from watering is included.

Emissions [pounds per day] = Controlled emission factor [pounds per hour] x Bulldozing, scraping or grading time [hours/day]