APPENDIX A

NOTICE OF PREPARATION AND SCOPING COMMENTS

ALAMEDA COUNTY COMMUNITY DEVELOPMENT AGENCY

PLANNING DEPARTMENT

Chris Bazar
Agency Director

Albert Lopez
Planning Director

224 West Winton Ave
Room 111

Hayward, California
94544-1215

phone
510.670.5400
fax
510.785-8793

www.acgov.org/cda

October 20, 2021

FROM: Nisha Chauhan, Senior Planner

TO: Interested Parties, Responsible Agencies and Community Members

SUBJECT: Notice of Preparation (Notice) of an Environmental Impact Report and Notice of Virtual Scoping Meeting for **Alameda Grant Line Solar 1** Project.

SUMMARY:

The County of Alameda (County) is issuing this notice to advise other agencies and the public that the County will be preparing an Environmental Impact Report (EIR) for the Alameda Grant Line Solar 1 (Project) within the East County area of unincorporated Alameda County. The EIR will be prepared in compliance with the California Environmental Quality Act (CEQA) and all relevant state and Federal laws. The County will serve as the CEQA lead agency for preparation of the EIR.

The County is issuing this Notice to alert interested parties and solicit agency and public input regarding the scope and content of the environmental analysis. It is also intended to advise the public that outreach activities conducted by the County and its representatives will be considered in the preparation of the EIR.

DATES: Due Date for Comments and Public Scoping Meeting Date/Details

Written comments on the scope of the Alameda Grant Line Solar 1 EIR, including the project objectives, impacts to be evaluated, methodologies to be used in the evaluations, and the alternatives to be considered, should be provided to the County by **November 19, 2021.** Due to the COVID-19 pandemic, a scoping meeting Zoom Webinar will be held on October 28, 2021, at 1:30 PM. The Webinar information is below:

Please click or enter the link below to join the webinar:

https://us02web.zoom.us/j/92158285462

Or by phone: 1 (669) 900 9128 or 1 (346) 248 7799 Webinar ID: 921 5828 5462

Details of the webinar will also be posted on the County's website:

www.acgov.org/cda/planning/landuseprojects/currentprojects.htm

The project objectives, description of the proposed project and alternatives currently under consideration will be presented in the scoping meeting video presentation and slides.

ADDRESSES:

Written comments on the project scope

should be sent to:

Nisha Chauhan Senior Planner
ATTN: Alameda Grant Line Solar Project EIR
Alameda County
CommunityDevelopment Agency
224 W. Winton Avenue, Suite 111
Hayward, CA 94544

Or, via email with the subject line "Alameda Grant Line Solar 1 Project EIR" to: nisha.chauhan@acgov.org

FOR FURTHER INFORMATION CONTACT: Nisha Chauhan, Planning Department, Alameda County Community Development Agency, 224 W. Winton Avenue, Suite 111, Hayward, CA 94544, or at 510- 670-6541

Attachments:
Project Description
Environmental Analysis

3. *Project Description*

Soltage, LLC is proposing to construct, install, operate, and maintain an approximately 2 MW alternating current (AC) solar photovoltaic (PV) facility known as the Alameda Grant Line Solar 1 (project). The project is located on a 23.07-acre site at West Grant Line Road and Great Valley Parkway in eastern unincorporated Alameda County, adjacent to the unincorporated community of Mountain House in San Joaquin County.

The proposed project was awarded a 15-year Power Purchase Agreement (PPA) with PG&E under their Electrical Renewable Market Adjusting Tariff (REMAT) program, which is a program specifically designed for small utility-scale local renewable energy projects (<5MW) that benefit the local communities around it by delivering renewable energy via the distribution grid. The project would have a PPA with PG&E and is anticipated to commence delivery in early 2023.

The power generated by the proposed project will be transmitted by Pacific Gas and Electric's (PG&E) distribution system at 12 kilovolts (kV) via the Herdlyn 1102 substation, located approximately 4.5 miles north of the project site, on Byron Highway near Clifton Court Forebay. The proposed project will interconnect to the local PG&E distribution grid immediately adjacent to the site, thereby providing clean, renewable energy to the electrical grid. The project would involve the construction of three new on-site utility poles along West Grant Line Road, which PG&E would connect its distribution grid to via an overhead distribution line extension from the existing 12kV pole on the south side of West Grant Line Road.

This chapter provides a detailed description of the proposed project, including the location, setting, characteristics of the project site, a project construction schedule, and a listing of required permits and approvals.

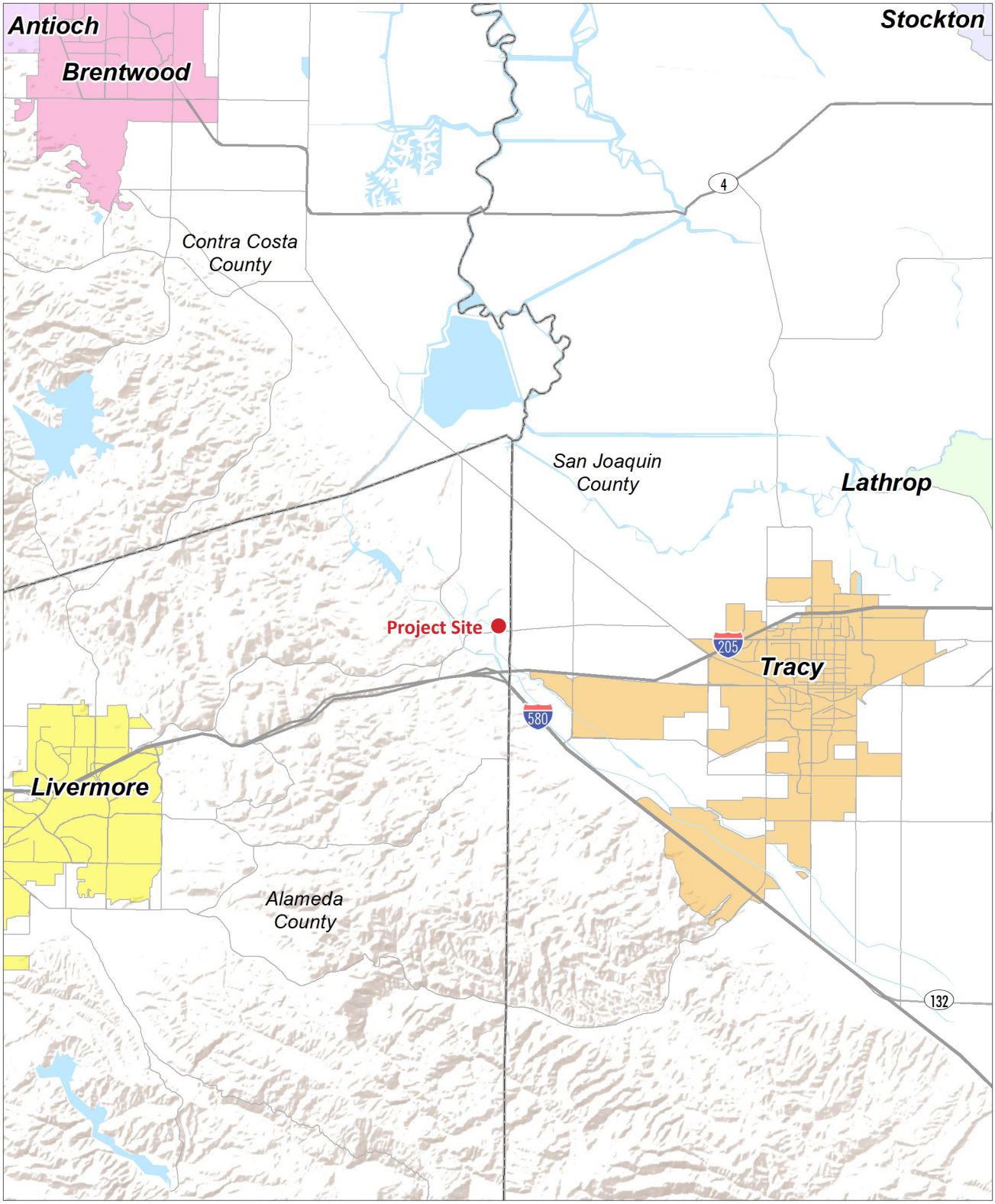
3.1 PROJECT SITE LOCATION AND CHARACTERISTICS

3.1.1 PROJECT SITE LOCATION AND SETTING

As shown on Figure 3-1, *Regional Location*, the project site is located in eastern Alameda County, at the San Joaquin County boundary, west of the City of Tracy. Alameda County is bordered by Contra Costa County to the north, San Joaquin County to the east, Santa Clara County to the south, and the City and County of San Francisco to the west. Regional access to Alameda County is provided via Interstate-80 (I-80), I-880, I-680, I-580 and I-205. Direct access to the project site is provided via the I-205 interchange at Mountain House Parkway.

PROJECT DESCRIPTION

As shown on Figures 3-2, *Local Vicinity*, and 3-3, *Aerial Photograph*, the project site is located in a rural agricultural area at the intersection of West Grant Line Road and Great Valley Parkway, adjacent to the unincorporated community of Mountain House in San Juaquin County. The project site is bounded by orchard land to the north, vacant agricultural land to the south, and single-family housing to the east across Great Valley Parkway. The Delta Mendota Canal is located west of the project site. Local vehicular access to the project site is provided via Mountain House Parkway and West Grant Line Road.



Source: ESRI, 2021.
Note: Unincorporated county areas are shown in white.

Project Site County Boundaries

0 3
Scale (Miles)

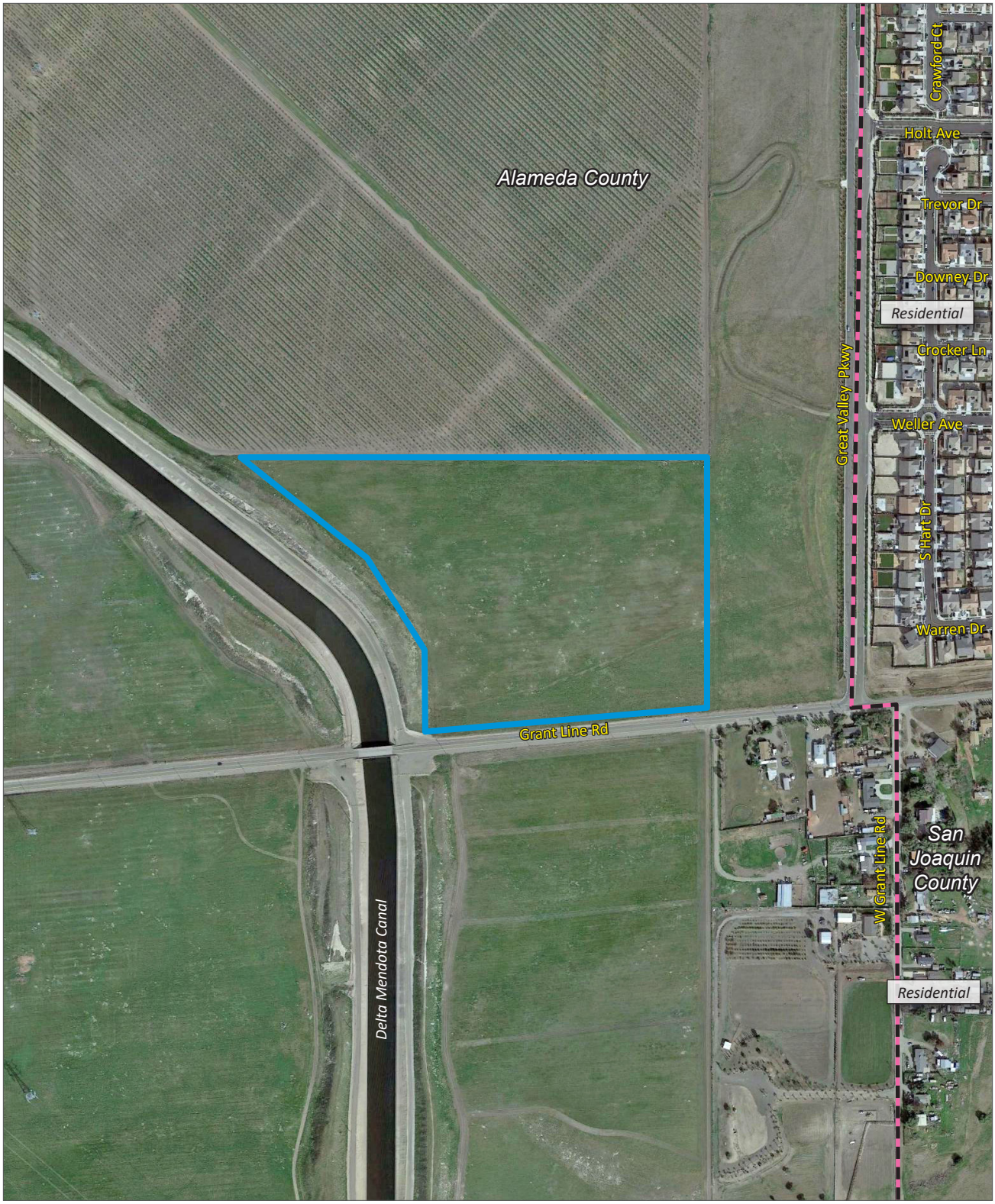
Figure 3-1
Regional Location

Source: ESRI, 2021.

0 2,000
Scale (Feet)

Project Boundary
County Boundary

Figure 3-2
Local Vicinity



Project Boundary

County Boundary

Source: Google Earth, 2021.

0 500

Scale (Feet)

Figure 3-3

Aerial Photograph

3.1.2 EXISTING SITE CONDITIONS

The 23.07-acre project site is assigned Assessor's Parcel Number (APN) 99B-7650-7-1. The project site is undeveloped.

3.1.3 GENERAL PLAN LAND USE AND ZONING DESIGNATION

3.1.3.1 GENERAL PLAN

The project site is located within the Alameda County *East County Area Plan* (ECAP), which amended the Alameda County General Plan in 2000 by voter-approved Measure D. The ECAP Planning Area encompasses 418 square miles in eastern Alameda County. The ECAP includes policies that address landscaping, grading, storm drainage, and flood control which are intended to preserve the rural, pastoral, character of the County lands, outside of the County's Urban Growth Boundary.

The ECAP land use designation on the project site is *Large Parcel Agriculture*. This designation permits, subject to the provisions of Measure D, agricultural uses, agricultural processing facilities (for example wineries, olive presses), limited agricultural support service uses (for example animal feed facilities, silos, stables, and feed stores), secondary residential units, visitor-serving commercial facilities (by way of illustration, tasting rooms, fruit stands, bed and breakfast inns), recreational uses, public and quasi-public uses, solid waste landfills and related waste management facilities, quarries, windfarms and related facilities, utility corridors, and similar uses compatible with agriculture.

3.1.3.2 ZONING

The project site is zoned Agricultural (A) District. Per Alameda County Municipal Code (ACMC) Section 17.06.030, the uses permitted in the A zoning district include one-family dwelling or one-family mobile home; one secondary dwelling unit; crop, vine or tree farm, truck garden, plant nursery, greenhouse, apiary, aviary, hatchery, horticulture; raising or keeping of poultry, fowl, rabbits, sheep or goats or similar animals; grazing, breeding or training of horses or cattle; winery or olive oil mill; fish hatcheries; and public or private hiking trails. Per ACMC Section 17.06.040, conditional uses may also include privately owned wind-electric generators. The County Planning Commission made findings in 2008 pursuant to ACMC Sections 17.54.050 and 17.54.060 regarding district classifications of uses not listed within the Ordinance.[1] The Planning Commission made findings that a solar electric facility would not be contrary to the specific intent clauses or performance standards established for the A District and could be permitted under a conditional use permit. The County reiterated these findings to reconfirm the conditional permissibility of similar solar uses within the A District in 2011[2] and 2012.[3]

[1] County of Alameda Planning Commission, June 16, 2008, Meeting Minutes.

[2] County of Alameda East County Board of Zoning Adjustments, December 15, 2011, Resolution No. Z-11-72, PLN2011-00009.

[3] County of Alameda Board of Supervisors, February 28, 2012, Planning Meeting, Summary Action Minutes.

3.2 PROJECT OBJECTIVES

The project objectives are listed below:

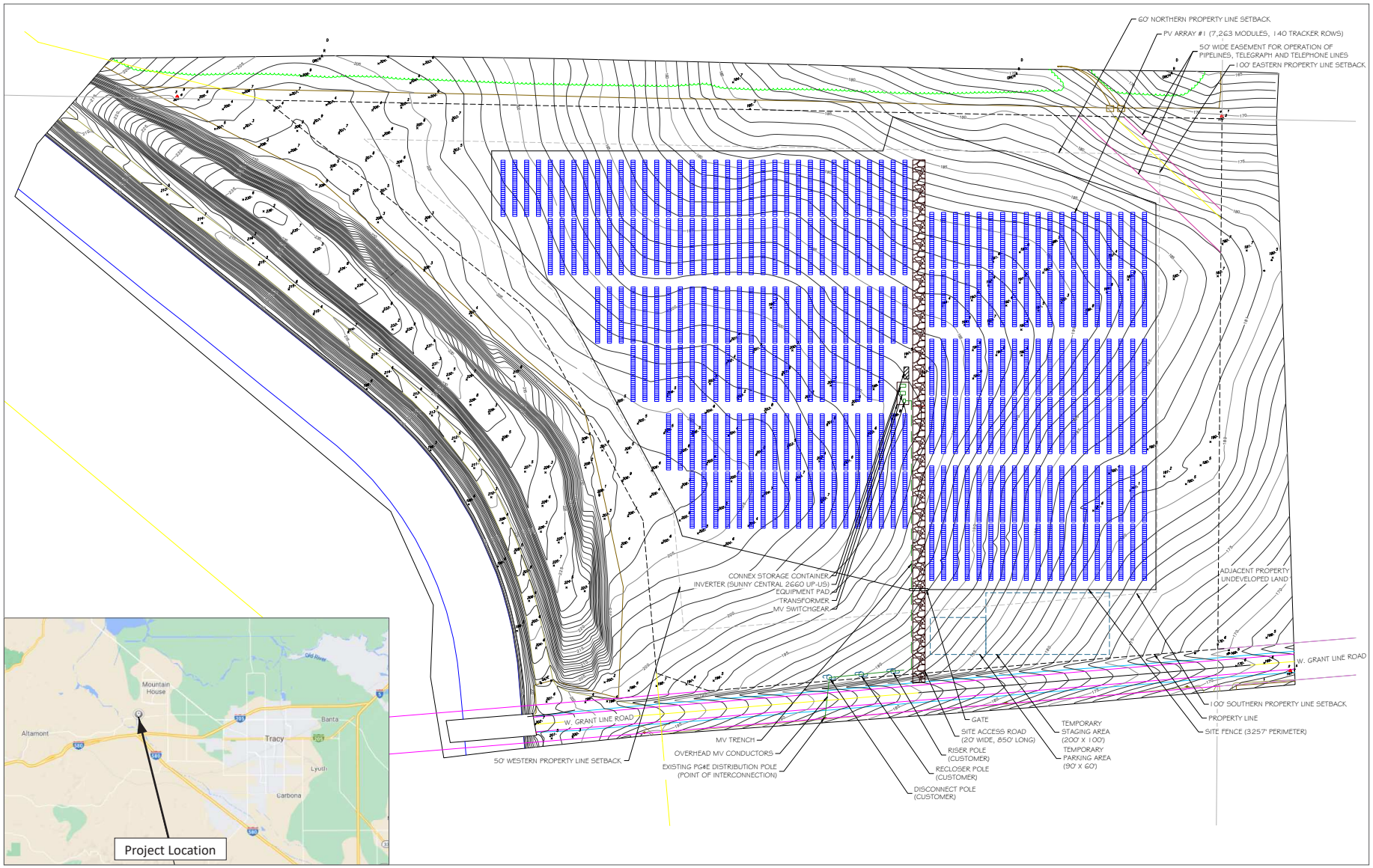
- Assist California in meeting renewable energy generation goals under Senate Bill (SB) 100. SB 100 requires 100 percent of all electric retail sales to end-use customers to come from renewable energy and zero-carbon resources by 2045;
- Create construction jobs and permanent jobs in the San Francisco Bay Area;
- Complete construction and achieve commercial operation in accordance with the schedule under the PPA;
- Locate solar power plant facilities as near as possible to electrical load to avoid capacity constraints of the transmission gird by utilizing distribution grid, and to provide system reliability;
- Utilize existing utility facilities, roads, and other infrastructure to the extent feasible to minimize impacts;
- Contribute to Alameda County climate change and renewable energy goals by generating fossil-free clean power for use by Alameda County and Bay Area residents;
- Site the project in an area with excellent solar energy resource capabilities, in order to maximize productivity from the photovoltaic panels;
- Minimize environmental impacts associated with solar development, construction, and operation, through low-impact design, short construction timeline with minimal ground disturbance, low impervious surfaces, the continued use of existing habitat by present wildlife, and ease of decommissioning at the end of the project's life in order to restore the site to its original conditions;
- Achieve economies of scale to provide approximately 2 MW's of affordable, local, wholesale solar electricity to Bay Area residents; and
- Help Bay Area Load Serving Entities in fulfilling their local renewable energy procurement goals.

3.3 PROPOSED PROJECT

The proposed project would consist of solar panels producing DC voltage that would be converted to AC voltage through one inverter and one transformer. As shown on Figure 3-4, *Alameda Grant Line Solar Groundmount Array Layout*, the inverter and transformer would be located in the center of the site mounted on a pad foundation. The inverter and transformer specifications will be submitted upon final design.

Although the specific panel technology that will be used has not been selected, Soltage is considering the Trina Solar Duomax Twin Bifacial Dual Glass 144 Half-Cell Module, 380-405W – DEG15HC.20(II) or similar model for the proposed project. Each panel consists of a module assembly (with frame) that is approximately 80 inches by 40 inches in size. The solar panels will be mounted on a steel racking frame that is positioned three to nine feet above ground to allow for vegetation control and periodic maintenance. The panels would include a single axis tracking system that is mounted on steel posts driven

into the ground and would have a +/- 60-degree range of motion driven by electric motors. As shown on Figure 3-4, *Alameda Grant Line Solar Groundmount Array Layout*, the solar arrays will be in three rows with the longest row in the rear. Final panel selection will be made during final design due to the ever-changing nature of the technology, however the panel used will be similar to the Trina Solar Duomax Twin module.



Source: Soltage LLC, 2021.

0 280
Scale (Feet)

SYMBOL LEGEND		
SYMBOL	NAME	DESCRIPTION
	TRACKER PV MOD.	TRINA SOLAR TSM-DE15H(II)

PV SYSTEM SUMMARY TABLE						
Array ID	Inverter ID	Mod Qty.	kW size	GCR	Tilt	Azimuth
1	Inv 1	7263	2868.89	34.7%	±60°	180°

NOTE:
SITE DIMENSIONS DERIVED FROM TOPOGRAPHICAL/GEOLOGICAL SURVEY

TOTAL SITE AREA: 1,004,825 sqft. / 23.068 Acres
USEABLE OPEN SPACE: 1,004,825 sqft. / 23.068 Acres
AREA INSIDE FENCING: 615416 sqft. / 14.128 Acres
PERCENTAGE OF SITE UTILIZED: 61.25%

Figure 3-4
Alameda Grant Line Solar 1 - Groundmount Array Layout

3.3.1 SITE PREPARATION, CONSTRUCTION, AND SOLAR INSTALLATION

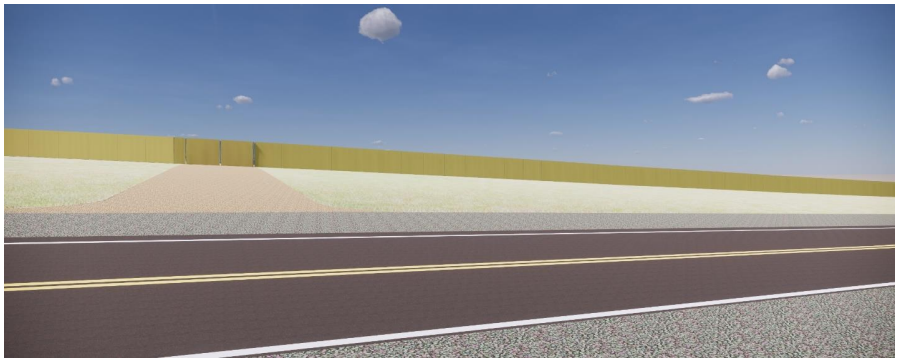
Construction of the proposed project would occur in one phase over a 3- to 4-month period. Site preparation would involve minor excavation to construct the gravel access road and electrical pads. All other areas of the site will be minimally cleared and grubbed as needed with minimal ground disturbance. Additional facilities within the project footprint necessary for the photovoltaic system includes internal vehicular access ways to facilitate construction and maintenance of the solar arrays and panels, temporary parking, an equipment laydown staging area to be used during construction and routine maintenance, and additional chain-link fencing that surrounds the solar arrays within the site boundary. The proposed project would introduce 500 square feet of impervious concrete for the inverter and transformer pad for use as a base for the inverter and transformer. Other impervious surfaces include, the gravel access road entrance, the level spreader, the storage container pad and solar array piers. As shown on Figure 3-4, the gravel access road will run north to south through the middle of the project site. The crushed aggregate rock used for the gravel access road would be delivered to the project site, requiring approximately 25 to 30 haul trips. The total estimated amount of impervious surface for the project is 2,200 square feet. Equipment used during the construction phase of the proposed project includes a backhoe, skid steer, telehandler, excavator, front loader, compactor, and pile driver.

The project utilizes 100-foot setbacks from the southern and eastern site boundaries to minimize the visual impact of the project from West Grant Line Rd and the housing development east of the site in San Joaquin County. The western and northern boundary setbacks are 50’ and 60’ respectively. Furthermore, the project will include a chain link fence with plastic slats matching the color of the landscape on the southern and eastern portion of the project site between the project site and West Grant Line Road to further reduce visual impact of the solar panels from the road. The proposed fence would be 9 to 10 feet high, located 100 feet north of the site’s southern boundary, and extend easterly east along the southern boundary of the project site. There will be a continuous fence installed around the perimeter of the entire solar arrays to prevent the public or unauthorized members from exposure to electrical hazards and equipment. Figure 3-5 depicts renderings of the proposed fencing that would surround the site and Figure 3-6 includes fence prototypes to be used for the proposed project.

Site preparation and construction activities would adhere to the requirements of ACMC Chapter 16.36, Grading Erosion and Sediment Control, and Section 17.64.150, Stormwater management.

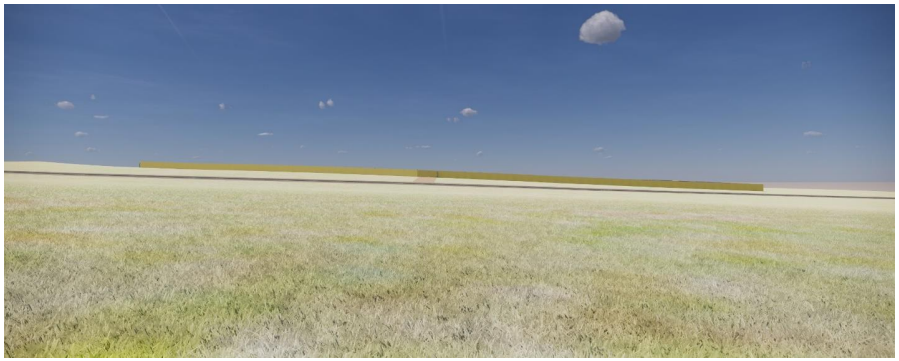
An electrical-powered video surveillance system would be installed on-site for security purposes. The system would connect to a central system at the equipment pad. A cellular radio (cell modem) would be installed to provide remote internet connection for monitoring and other internet reliant devices and systems.

No security or other nighttime lighting is proposed as part of the project.



View of Southern Fence line of Project from West Grant Line Road (looking North)

View of Eastern Fence line of Project from West Grant Line Road (looking West)

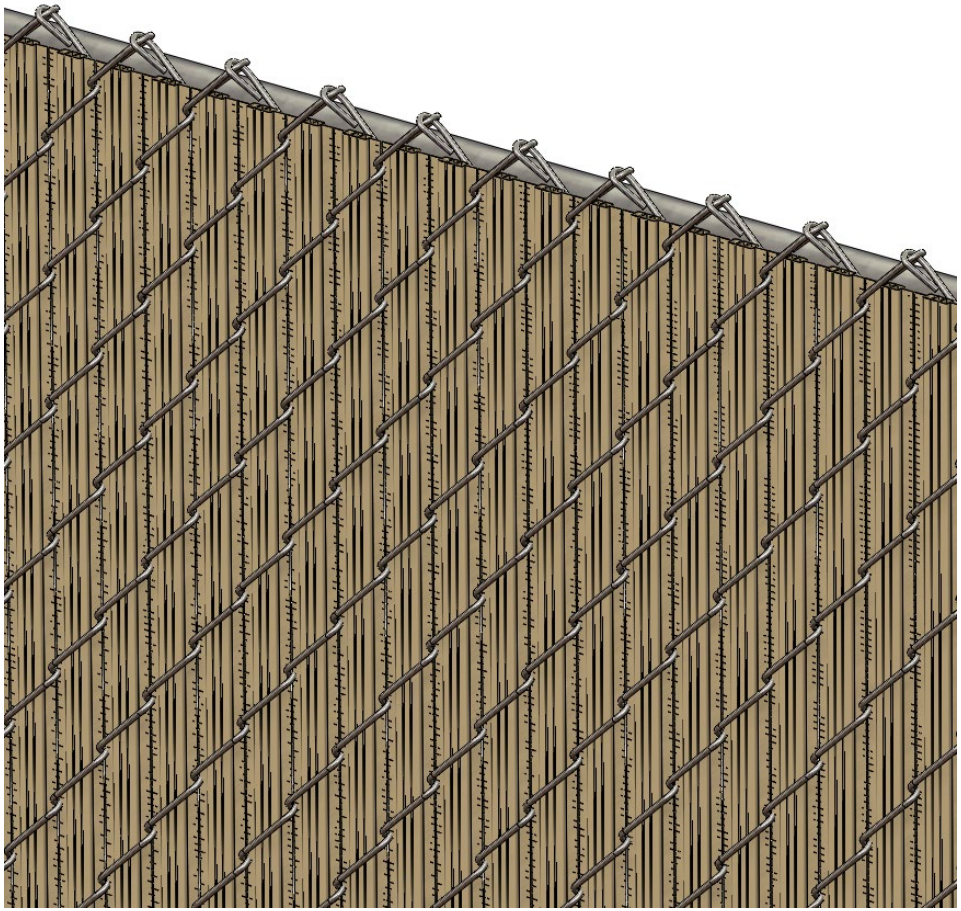


View of Southern Fence line of Project from Parcel opposite the road of the Project (across from West Grant Line Road looking North)

View of entire Eastern Fence line of Project from further east of the Project site along West Grant Line Road (looking West)

Source: Soltage, 2021.

Figure 3-5
Project Fencing Renderings



Source: Soltage, 2021.

Figure 3-6
Fence Prototypes

3.3.2 SITE ACCESS

Access to the project site would be provided via a gated, graveled driveways located on West Grant Line Road. The proposed gravel access road would be overlaid with 304 cubic yards of crushed aggregate rock. Internal vehicular access ways would remain un-graveled and would connect to the gravel access road throughout the site.

3.3.3 LIGHTING

Existing sources of lighting in the vicinity of the project include exterior lighting from nearby residential development. No on-site lighting, including security or emergency lighting, is proposed as part of the project because the proposed project would be inactive during the nighttime. PV facilities are most efficient in terms of generating electricity when they absorb as much sunlight as possible and reflect as little sunlight as possible.[4] As such, the iridescent blue panels are textured with indentations to reduce the amount of sunlight that is reflected off the surface and are coated with anti-reflective materials that maximize light absorption and reduce glare as much as possible.[5] Therefore, no light or glare will be produced from the proposed project.

3.3.4 PROJECT OPERATION

The project will interconnect to the PG&E distribution electrical grid on the North side of West Grant Line Road, via an overhead wire, which PG&E will construct and maintain during the life of the project. The project will erect three wooden utility poles along the southern edge of the project site, where the project's 12kV electrical output will be connected. PG&E's interconnection facilities will connect to the project at one of these wooden utility poles.

During the operation period of the project, the solar modules will be washed one to two times per year with an electronic cleaning system. This cleaning system dramatically reduces the amount of water needed to clean the modules. The water source is from the orchard located immediately north of the project, which is owned by the same property owner. It is expected that water for washing will be delivered by a 500- gallon water truck with one trip per cleaning event.

3.3.5 PROJECT DECOMMISSIONING

The project is anticipated to have an expected useful life of at least 40 years. Once the expected useful life of the solar PV facility is over, it would either be refurbished and repowered or disassembled and decommissioned by the project owner. If refurbishing and repowering the solar PV facility is elected,

[4] SunShot, United States Department of Energy, Meister Consultants Group, Solar and Glare, June 2014, http://solaroutreach.org/wp-content/uploads/2014/06/Solar-PV-and-Glare-_Final.pdf, accessed April 9, 2018.

[5] SunPower, PV Systems, Low Levels of Glare and Reflectance vs. Surrounding Environment, https://us.sunpower.com/sites/sunpower/files/media-library/white-papers/wp-pv-systems-low-levels-glare-reflectance-vs-surrounding-environment.pdf, accessed April 9, 2018.

Soltage would be required to obtain all required agreements with the landowner and all required permit approvals.

Project decommissioning would occur in accordance with the terms of the CUP and would involve the removal of all above-ground facilities and fencing, buried electrical conduits, and concrete foundations in accordance with a decommissioning plan, further described below. Equipment associated with the solar PV facility would be recycled, repurposed, or disposed of off-site, as appropriate and in accordance with all then-applicable laws and regulations.

In the event that activities associated with decommissioning involve exposure and disturbance of soils, measures for erosion and sediment control would be implemented in accordance with a future, separate, Stormwater Pollution Prevention Plan (SWPPP) specifically tailored for decommissioning. It is anticipated that decommissioning activities would involve the use of heavy equipment and labor similar to that used for construction of the project.

Post decommissioning, all areas compacted during original construction or by equipment used for decommissioning would be restored in a manner comparable to adjacent properties, or to the zoning or general plan land use designation applicable to the site at the time of decommissioning or to pre-project conditions. A decommissioning plan would be prepared and submitted to Alameda County that includes steps that would be taken to restore the site to pre-project conditions to the extent feasible.

3.4 REQUIRED PERMITS AND APPROVALS

The County of Alameda is the Lead Agency for the preparation and certification of the Focused EIR. Where appropriate, responsible, trustee, and other agencies will be consulted during the Focused EIR process. Subsequent development entitlements for the project may require approval of State, federal, and regional responsible and trustee agencies that may rely on the Focused EIR for decisions in their areas of expertise.

Approval of the project would require the following permits and approvals from the County of Alameda:

- Conditional Use Permit
- Variance
- Building Permit
- Grading Permit
- Encroachment Permit
- Fire Clearance and Approval

4. Environmental Analysis

4.1 INTRODUCTION

This section describes the existing environmental conditions in the project area and environmental impacts that could occur with implementation of the proposed project pursuant to Appendix F, Energy Conservation, and Appendix G, Environmental Checklist, of the CEQA Guidelines as amended per Assembly Bill 52 (Tribal Cultural Resources) and the California Supreme Court in a December 2015 opinion [California Building Industry Association (CBIA) v. Bay Area Air Quality Management District (BAAQMD), 62 Cal. 4th 369 (No. S 213478)]. Where appropriate, this Initial Study includes a general discussion of the environmental effects associated with potential future installation of the proposed PV facility on the project site.

4.2 SOURCES

All documents cited in this analysis and used in its preparation are hereby incorporated by reference into this Initial Study. Copies of documents referenced herein are available for review at the Alameda County Planning Department (224 West Winton Avenue, Room 111, Hayward, CA 94544), the East County Office Martinelli Center (3585 Greenville Road, Livermore, CA, 94550), and on the County website (https://www.acgov.org/cda/planning/).

4.3 ENVIRONMENTAL ANALYSIS AND FINDINGS

I. AESTHETICS

Except as provided in Public Resources Code Section 21099 (transit priority area/major transit stop), would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Have a substantial adverse effect on a scenic vista?	■	❒	❒	❒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?	■	❒	❒	❒
c) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	■	❒	❒	❒

Except as provided in Public Resources Code Section 21099 (transit priority area/major transit stop), would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	■	❒	❒	❒

DISCUSSION

a) Would the proposed project have a substantial adverse effect on a scenic vista?

This threshold will be assessed in the full project EIR.

b) Would the proposed project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

This threshold will be assessed in the full project EIR.

c) If the proposed project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

This threshold will be assessed in the full project EIR.

d) Would the proposed project create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

This threshold will be assessed in the full project EIR.

MITIGATION MEASURES

Any necessary mitigation measures will be included in the project EIR.

II. AGRICULTURAL AND FORESTRY RESOURCES

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	■	❒	❒	❒

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	■	❒	❒	❒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	❒	❒	❒	■
d) Result in the loss of forest land or conversion of forest land to non-forest use?	❒	❒	❒	■
e) 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 of conversion of forest land to non-forest use?	■	❒	❒	❒

DISCUSSION

a) *Would the proposed project convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*

This threshold will be assessed in the full project EIR.

b) *Would the proposed project conflict with existing zoning for agricultural use, or a Williamson Act contract?*

This threshold will be assessed in the full project EIR.

c) *Would the proposed project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?*

Neither the project site nor the immediately surrounding areas are zoned for forest land, timberland, or timber production. Additionally, there are no lands within Alameda County zoned for or currently featuring timberland or timber production.[1] The proposed project would therefore not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production. Therefore, there would be *no impact*.

[1] Alameda County, East County Area Plan, Land Use Diagram, page 136.

d) *Would the proposed project result in the loss of forest land or conversion of forest land to non-forest use?*

There is no forest land on the project site or in close proximity to the project site. Therefore, the project would not result in the loss of forest land or conversion of forest land to non-forest use. Accordingly, there would be *no impact*.

e) *Would the proposed project 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 of conversion of forest land to non-forest use?*

This threshold will be assessed in the full project EIR.

MITIGATION MEASURES

Any necessary mitigation measures will be included in the project EIR.

III. AIR QUALITY

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	■	❒	❒	❒
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project area is in non-attainment under applicable federal or State ambient air quality standards?	■	❒	❒	❒
c) Expose sensitive receptors to substantial pollutant concentrations?	■	❒	❒	❒
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	■	❒	❒	❒

DISCUSSION

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

This threshold will be assessed in the full project EIR.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project area is in non-attainment under applicable federal or State ambient air quality standards?

This threshold will be assessed in the full project EIR.

c) Would the project expose sensitive receptors to substantial pollutant concentrations?

This threshold will be assessed in the full project EIR.

d) Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

This threshold will be assessed in the full project EIR.

MITIGATION MEASURES

Any necessary mitigation measures will be included in the project EIR.

IV. BIOLOGICAL RESOURCES

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on a plant or animal population, or essential habitat, defined as a candidate, sensitive or special-status species?	■	❒	❒	❒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community type?	■	❒	❒	❒
c) Have a substantial adverse effect on State or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	■	❒	❒	❒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species, their wildlife corridors or nursery sites?	■	❒	❒	❒
e) Conflict with any local ordinances or policies protecting biological resources?	■	❒	❒	❒
f) Conflict with an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or State habitat conservation plan?	■	❒	❒	❒

DISCUSSION

a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on a plant or animal population, or essential habitat, defined as a candidate, sensitive or special-status species?

This threshold will be assessed in the full project EIR.

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community type?

This threshold will be assessed in the full project EIR.

c) Would the project have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

This threshold will be assessed in the full project EIR.

d) Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species, their wildlife corridors or nursery sites?

This threshold will be assessed in the full project EIR.

e) Would the project conflict with any local ordinances or policies protecting biological resources?

This threshold will be assessed in the full project EIR.

f) Would the project conflict with an adopted Habitat Conservation Plan, Natural Community Conservation Plan or other approved local, regional, or State habitat conservation plan?

This threshold will be assessed in the full project EIR.

MITIGATION MEASURES

Any necessary mitigation measures will be included in the project EIR.

V. CULTURAL RESOURCES

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	❒	❒	❒	■
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	❒	❒	■	❒
c) Disturb any human remains, including those interred outside of formal cemeteries?	❒	❒	■	❒

REGULATORY FRAMEWORK

Federal

American Indian Religious Freedom Act and Native American Graves and Repatriation Act

The American Indian Religious Freedom Act recognizes that Native American religious practices, sacred sites, and sacred objects have not been properly protected under other statutes. It establishes as national policy that traditional practices and beliefs, sites (including right of access), and the use of sacred objects shall be protected and preserved. Additionally, Native American remains are protected by the Native American Graves and Repatriation Act of 1990.

Paleontological Resources Preservation Act

The federal Paleontological Resources Preservation Act of 2002 limits the collection of vertebrate fossils and other rare and scientifically significant fossils to qualified researchers who have obtained a permit from the appropriate state or federal agency. Additionally, it specifies these researchers must agree to donate any materials recovered to recognized public institutions, where they will remain accessible to the public and to other researchers. This Act incorporates key findings of a report, *Fossils on Federal Land and Indian Lands*, issued by the Secretary of Interior in 2000, which establishes that most vertebrate fossils and some invertebrate and plant fossils are considered rare resources.[2]

State

Public Resources Code Section 5097.5

California PRC Section 5097.5 prohibits "knowing and willful" excavation or removal of any "vertebrate paleontological site…or any other archaeological, paleontological or historical feature, situated on public lands, except with express permission of the public agency having jurisdiction over such lands." Public lands are defined to include lands owned by or under the jurisdiction of the State or any city, county, district, authority, or public corporation, or any agency thereof.

State Laws Pertaining to Human Remains

Any human remains encountered during ground-disturbing activities are required to be treated in accordance with California Code of Regulations Section 15064.5(e) (CEQA), Public Resources Code Section 5097.98, California Health and Safety Code Section 7050.5. California law protects Native American burials, skeletal remains, and associated grave goods regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. Specifically, Section 7050.5 of the California Health and Safety Code states that in the event of discovery or recognition of any human remains in any location

[2] U.S. Department of the Interior. *Fossils on Federal & Indian Lands, Report of the Secretary of the Interior*, May 2000. https://www.blm.gov/sites/blm.gov/files/programs_paleontology_quick%20links_Assessment%20of%20Fossil%20Management%20on%20Federal%20&%20Indian%20Lands,%20May%202000.pdf, accessed September 24, 2021.

other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the remains are discovered has determined whether or not the remains are subject to the coroner's authority. If the human remains are determined to be of Native American origin, the county coroner must contact the California Native American Heritage Commission (NAHC) within 24 hours of this identification. An NAHC representative will then identify a Native American Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. In addition, CEQA Guidelines Section 15064.5 specifies the procedures to be followed in case of the discovery of human remains on non-federal land. The disposition of Native American burials falls within the jurisdiction of the NAHC.

Assembly Bill 52

Assembly Bill 52 (AB 52), the Native American Historic Resource Protection Act, sets forth a proactive approach intended to reduce the potential for delay and conflicts between Native American and development interests. Projects subject to AB 52 are those that file a notice of preparation for an EIR or notice of intent to adopt a negative or mitigated negative declaration on or after July 1, 2016. AB 52 adds tribal cultural resources (TCR) to the specific cultural resources protected under CEQA. Under AB 52, a TCR is defined as a site, feature, place, cultural landscape (must be geographically defined in terms of size and scope), sacred place, or object with cultural value to a California Native American tribe that is either included or eligible for inclusion in the California Register, or included in a local register of historical resources. A Native American Tribe or the lead agency, supported by substantial evidence, may choose at its discretion to treat a resource as a TCR. AB 52 also mandates lead agencies to consult with tribes, if requested by the tribe, and sets the principles for conducting and concluding consultation.

Local

East County Area Plan

The ECAP includes the following policies specific to cultural resources and applicable to the proposed project.

- Policy 136: The County shall identify and preserve significant archaeological and historical resources, including structures and sites which contribute to the heritage of East County.
- Policy 137: The County shall require development to be designed to avoid cultural resources or, if avoidance is determined by the County to be infeasible, to include implement appropriate mitigation measures that offset the impacts.

Alameda County Municipal Code

The overall purpose to ACMC Chapter 17.62, Historic Preservation Ordinance, is to outline a consistent process for making determinations of historical significance and identify significant architectural, historic, prehistoric and cultural structures, sites, resources and properties within Alameda County. ACMC Section 17.62.040, Cultural resource surveys, requires the County to maintain a list of cultural resources surveys to generate an inventory of potential historic resources collectively known as the *Alameda County*

Register. The project site is located within the Historical and Cultural Resource Survey, East Alameda County, prepared by Michael R. Corbett in June 2005.[3]

EXISTING CONDITIONS

Paleontological Resources

Paleontological resources (fossils) are the remains and/or traces of prehistoric plant and animal life exclusive of human remains or artifacts. Fossil remains such as bones, teeth, shells, and wood are found in the geologic deposits (rock formations) in which they were originally buried. Paleontological resources represent a limited, non-renewable, sensitive scientific and educational resource.

The potential for fossil remains at a location can be predicted through previous correlations that have been established between the fossil occurrence and the geologic formations within which they are buried. For this reason, knowledge of the geology of a particular area and the paleontological resource sensitivity of particular rock formations, make it possible to predict where fossils will or will not be encountered.

The natural geology of the project site is comprised of Holocene and/or Pleistocene (2.5 million years ago to present) alluvium, lake, playa, and terrace deposits. These deposits primarily consist of non-marine sedimentary rocks but can include marine deposits near the coast.[4] A previous study conducted by Far Western Anthropological Research Group Inc., indicated that buried prehistoric archaeological sites are likely to be found within or underneath Holocene-age depositional land forms. In addition, prehistoric settlements associated with these landforms tend to be located near San Francisco and San Pablo bays and along major, inland watercourses. Although Holocene-age landforms have the potential to contain buried archaeological deposits, the probability of encountering such resources varies significantly.

Archaeological Resources

At the time of European settlement, the project site was included in the territory controlled by the Costanoan or Ohlone Native Americans whose territory extended along the Pacific coast from San Francisco Bay to Point Sur and inland to the coast range of mountains. The Ohlone were hunter-gatherers and maintained organized complex social structures with as many as 30 or 40 villages consisting of up to 15 families. Sites were often situated near sources of fresh water in ecotones where plant and animal life were diverse and abundant. There are no known archaeological remains on the project site; however, given the County's rich Native American history, it is possible that prehistoric and, to a lesser extent, historic-period archeological resources could be found on the project site.

Historical Resources

Historic resources include sites, structures, districts, landmarks, or other physical evidence of past human activity generally greater than 50 years old. The project site is located within the East Alameda County

[3] Alameda County Municipal Code, Title 17 (Zoning), Chapter 17.62 (Historic Preservation Ordinance).

[4] California Department of Conservation, Geologic Map of California (2010), https://maps.conservation.ca.gov/cgs/gmc/, accessed on September 24, 2021.

Survey area which has a history of farming and ranching. The area was formally established and named Murray Township in 1853 after an early settler named Michael Murray. The population grew shortly after, and settlers quickly established ranches. Trails that connected the ranchos were expanded into roads capable of carrying freight wagons, carriages, and horse and buggy traffic.[5] To recognize the importance of individual properties, historic districts, and contributing resources as key components of the County's heritage, the County compiled a list of County landmarks and contributing buildings known as the *Alameda County Register*. The project site is not recognized as a landmark.[6]

DISCUSSION

a) Would the project cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

The types of cultural resources that meet the definition of historical resources under CEQA Section 21084.1 generally consist of districts, sites, buildings, structures, and objects that are significant for their traditional, cultural, and/or historical associations. Under CEQA, both prehistoric and historic-period archaeological sites may qualify based on historical associations.[7] As such, the two main historical resources that are subject to impact, and that may be impacted by implementation of the proposed project, are historical archaeological deposits and historical architectural resources. Impacts to archaeological resources are discussed under Criterion (b).

As described above, the project site is not recognized as a historic landmark.[8] With no historical resources available on the project site, there would *no impact.*

b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Archaeological deposits that meet the definition of historical resource under CEQA Section 21084.1 or CEQA Guidelines Section 15064.5 could be present within the project site and could be damaged or destroyed by ground-disturbing construction activities (e.g., site preparation and grading) associated with the proposed project. Should this occur, the ability of the deposits to convey their significance, either as containing information about prehistory or history, or as possessing traditional or cultural significance to Native American or other descendant communities, would be materially impaired.

As described above, Alameda County was inhabited by the Ohlone Native Americans. Therefore, it is possible that unknown buried archaeological materials could be found during ground-disturbing activities, including unrecorded Native American prehistoric archaeological materials. While the ECAP includes

[5] Historical and Cultural Resource Survey, East Alameda County, Michael R. Corbett, June 17, 2005.

[6] Alameda County Landmarks & Contributing Buildings, Identified in 2005-2008 Comprehensive Survey, https://www.acgov.org/cda/planning/landuseprojects/documents/phrcList.pdf, accessed on September 24, 2021.

[7] California Code of Regulations (CCR), Title 14, Chapter 3, Section 15064.5(c), Determining the Significance of Impacts on Historical and Unique Archaeological Resources.

[8] Alameda County Landmarks & Contributing Buildings, Identified in 2005-2008 Comprehensive Survey, https://www.acgov.org/cda/planning/landuseprojects/documents/phrcList.pdf, accessed on September 24, 2021.

policies that require the protection of archeological resources, ground-disturbing activities associated with the proposed project could have the potential to uncover and damage or destroy unknown resources. Consequently, without mitigation the proposed project could result in significant impacts to archaeological resources. However, the impact would be *less than significant* with implementation of Mitigation Measure CULT (b), listed below.

c) Would the project disturb any human remains, including those interred outside of formal cemeteries?

Human remains associated with pre-contact archaeological deposits could exist on the project site and could be encountered during ground-disturbing activities. Any human remains encountered during ground-disturbing activities are required to be treated in accordance with California Code of Regulations Section 15064.5(e) (CEQA), Public Resources Code Section 5097.98, and California Health and Safety Code Section 7050.5, which state the mandated procedures of conduct following the discovery of human remains. Descendant communities may ascribe religious or cultural significance to such remains, and may view their disturbance as an unmitigable impact. Consequently, without mitigation the proposed project could result in significant impacts with respect to human remains. However, the impact would be *less than significant* with implementation of Mitigation Measure CULT (c), as shown below.

MITIGATION MEASURES

Mitigation Measure CULT (b): If any prehistoric or historic subsurface cultural resources are discovered during ground-disturbing activities, all work within 50 feet of the resources shall be halted and a qualified archaeologist shall be consulted to assess the significance of the find according to CEQA Guidelines Section 15064.5. If any find is determined to be significant, representatives from the County and the archaeologist would meet to determine the appropriate avoidance measures or other appropriate mitigation. All significant cultural materials recovered shall be, as necessary and at the discretion of the consulting archaeologist, subject to scientific analysis, professional museum curation, and documentation according to current professional standards. In considering any suggested mitigation proposed by the consulting archaeologist to mitigate impacts to historical resources or unique archaeological resources, the County shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, proposed project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) would be instituted. Work may proceed on other parts of the project site while mitigation for historical resources or unique archaeological resources is being carried out.

Mitigation Measure CULT (c): Procedures of conduct following the discovery of human remains have been mandated by Health and Safety Code Section 7050.5, Public Resources Code Section 5097.98 and the California Code of Regulations Section 15064.5(e) (CEQA). According to the provisions in CEQA, if human remains are encountered at the site, all work in the immediate vicinity of the discovery shall cease and necessary steps to ensure the integrity of the immediate area shall be taken. The Alameda County Coroner shall be notified immediately. The Coroner shall then determine whether the remains are Native American. If the Coroner determines the remains are Native American, the Coroner shall notify the Native American Heritage Commission (NAHC) within 24 hours, who will, in turn, notify the person the NAHC identifies as the Most Likely Descendant (MLD) of any human remains. Further actions shall be

determined, in part, by the desires of the MLD. The MLD has 48 hours to make recommendations regarding the disposition of the remains following notification from the NAHC of the discovery. If the MLD does not make recommendations within 48 hours, the owner shall, with appropriate dignity, reinter the remains in an area of the property secure from further disturbance. Alternatively, if the owner does not accept the MLD's recommendations, the owner or the descendent may request mediation by the NAHC.

VI. ENERGY

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	❒	❒	■	❒
b) Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?	❒	❒	❒	■

REGULATORY FRAMEWORK

Federal

Energy Independence and Security Act of 2007

The Energy Independence and Security Act of 2007 (Public Law 110-140) seeks to provide the nation with greater energy independence and security by increasing the production of clean renewable fuels; improving vehicle fuel economy; and increasing the efficiency of products, buildings, and vehicles. It also seeks to improve the energy performance of the federal government. The act sets increased CAFE standards; the Renewable Fuel Standard; appliance energy-efficiency standards; building energy-efficiency standards; and accelerated research and development tasks on renewable energy sources (e.g., solar energy, geothermal energy, and marine and hydrokinetic renewable energy technologies), carbon capture, and sequestration.[9]

State

Renewables Portfolio Standard

The California Renewables Portfolio Standard (RPS) was established in 2002 under Senate Bill (SB) 1078 and was amended in 2006, 2011, and 2018. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase the use of eligible renewable energy resources to 33 percent of total procurement by 2020. The California Public Utilities Commission is

[9] United States Environmental Protection Agency, 2019, Summary of the Energy Independence and Security Act Public Law 110-140 (2007), https://www.epa.gov/laws-regulations/summary-energy-independence-and-security-act, accessed September 29, 2021.

required to provide quarterly progress reports on progress toward RPS goals. This has accelerated the development of renewable energy projects throughout California. SB 350 (de Leon) was signed into law September 2015 and establishes tiered increases to the RPS—40 percent by 2024, 45 percent by 2027, and 50 percent by 2030. SB 350 also set a new goal to double the energy-efficiency savings in electricity and natural gas through energy efficiency and conservation measures. SB 100 (de Leon) passed in 2018, established RPS requirements of 44 percent by 2024, 50 percent by 2026, 52 percent by 2027, and 60 percent by 2030 and also puts California on the path to 100-percent fossil-fuel-free electricity by the year 2045.[10]

Local

Alameda County Municipal Code

ACMC Chapter 15.08, Building Code, includes mandatory requirements for the installation of photovoltaic solar energy systems.[11] The proposed projects are to result in designs that consume less energy than they would under the existing State Energy Code.

EXISTING CONDITIONS

The project site is located in a rural agricultural area and is generally undeveloped with no history of energy consumption.

DISCUSSION

a) Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

The proposed project would be generating renewable energy, and thus would offset energy consumed during project construction and generate net negative energy use. The proposed solar PV facility would connect to an existing PG&E distribution line and generate electrical energy that would be used by local consumers. Therefore, the impact would be *less than significant*.

b) Would the project conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

The proposed project would generate renewable energy, in line with the goals of State plans. Additionally, the proposed solar PV facility would connect to an existing PG&E distribution line and generate electrical energy that would be used by local consumers. Therefore, there would be *no impact*.

[10] California Energy Commission, 2017, 2016 Appliance Efficiency Regulations, https://documents.pub/document/2016-appliance-efficiency-regulations-i-abstract-the-current-appliance-efficiency.html, accessed September 29, 2021.

[11] Alameda County Municipal Code, Title 15 (Building and Construction), Chapter 15.08 (Building Code).

MITIGATION MEASURES

No mitigation measures are required.

VII. GEOLOGY AND SOILS

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving:				
i) 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?	❒	❒	❒	■
ii) Strong seismic ground shaking?	❒	❒	❒	■
iii) Seismic-related ground failure, including liquefaction?	❒	❒	❒	■
iv) Landslides, mudslides or other similar hazards?	❒	❒	❒	■
b) Result in substantial soil erosion or the loss of topsoil?	❒	❒	■	❒
c) 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 off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	❒	❒	❒	■
d) Be located on expansive soil, as defined by Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	❒	❒	■	❒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	❒	❒	❒	■
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	❒	❒	■	❒

REGULATORY FRAMEWORK

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures used for human occupancy.[12] The main purpose of the act is to prevent the construction of buildings used for human occupancy on top of the traces of active faults. Although the act

[12] Originally titled the *Alquist-Priolo Special Studies Zones Act* until renamed in 1993, Public Resources Code Division 2, Chapter 7.5, Section 2621.

addresses the hazards associated with surface fault rupture, it does not address other earthquake-related hazards, such as seismically-induced ground shaking, liquefaction, or landslides.[13]

The law requires the State Geologist to establish regulatory zones (known as Earthquake Fault Zones or Alquist-Priolo Zones) around the surface traces of active faults, and to publish appropriate maps that depict these zones.[14] The maps are then distributed to all affected cities, counties, and State agencies for their use in planning and controlling new or renewed construction. In general, construction within 50 feet of an active fault zone is prohibited. The project site is located within the Clifton Bay Forebay 7.5-minute Quadrangle Alquist-Priolo Earthquake Fault Zone. The Clifton Bay Forebay 7.5-minute Quadrangle covers approximately 59 square miles of land in Contra Costa, Alameda, and San Joaquin Counties. The areas subject to seismic hazard within the quadrangle includes a small fraction of the unincorporated census-designated place of Byron, Contra Costa County.[15]

California Building Code

The State of California provides minimum standards for building design and construction through Title 24 of the California Code of Regulations (CCR). The California Building Code is located in Part 2 of Title 24. The California Building Code is updated every three years, and the most recent current version went into effect in January 2017. The California Building Code contains specific requirements for seismic safety, excavation, foundations, retaining walls, and site demolition. It also regulates grading activities, including drainage and erosion control.

Local

Alameda County General Plan

The Alameda County General Plan Safety Element, adopted in 2013, provides a policy framework to resolve development issues that arise from known or previously unknown hazards. The Safety Element is organized into four chapters that include descriptive information, analysis and policies pertaining to geologic, seismic, flood, and fire hazards within the County. The focus of the Safety Element is to minimize human injury, loss of life, property damage, and economic and social dislocation due to natural and human-made hazards. The Safety Element includes the following policies under Goal 1 specific to geology and soils, and applicable to the proposed project.

- P2: Structures should be located at an adequate distance away from active fault traces, such that surface faulting is not an unreasonable hazard.
- P6: The County shall not approve new development in areas with potential for seismic and geologic hazards unless the County can determine that feasible measures will be implemented to

[13] California Geological Survey, Alquist-Priolo Earthquake Fault Zones, https://www.conservation.ca.gov/cgs/alquist-priolo, accessed on September 24, 2021.

[14] Public Resources Code, Division 2, Geology, Mines and Mining, Chapter 7.5, Earthquake Fault Zoning, Section 2622(a).

[15] California Geological Survey, Department of Conservation, Seismic Hazard Zone Report for the Clifton Court Forebay 7.5-Minute Quadrangle, Contra Costa County, California, https://www.conservation.ca.gov/cgs/Documents/Publications/SHZR/SHZR_131_Clifton_Court_Forebay_a11y.pdf, accessed on September 24, 2021

reduce the potential risk to acceptable levels, based on site-specific analysis. The County shall review new development proposals in terms of the risk caused by seismic and geologic activity.

- P7: The County, prior to approving new development, shall evaluate the degree to which the development could result in loss of lives or property, both within the development and beyond its boundaries, in the event of a natural disaster.
- P11: All construction in unincorporated areas shall conform to the Alameda County Building Ordinance, which specifies requirements for the structural design of foundations and other building elements within seismic hazard areas.

East County Area Plan

The ECAP includes the following policies specific to geology and soils, and applicable to the proposed project.

- Policy 134: The County shall not approve new development in areas with potential natural hazards (flooding, geologic, wildland fire, or other environmental hazards) unless the County can determine that feasible measures will be implemented to reduce the potential risk to acceptable levels, based on site-specific analysis.
- Policy 135: The County, prior to approving new development, shall evaluate the degree to which the development could result in loss of lives or property, both within the development and beyond its boundaries, in the event of a natural disaster.
- Policy 309: The County shall not approve new development in areas with potential for seismic and geologic hazards unless the County can determine that feasible measures will be implemented to reduce the potential risk to acceptable levels, based on site-specific analysis. The County shall review new development proposals in terms of the risk caused by seismic and geologic activity.
- Policy 310: The County, prior to approving new development, shall evaluate the degree to which the development could result in loss of lives or property, both within the development and beyond its boundaries, in the event of a natural disaster.

Alameda County Municipal Code

The ACMC provisions apply to building structure and safety with regards to reducing impacts related to geologic hazards. Like similar jurisdictional authorities that issue building permits, the County is required to enforce the California Building Standards Code (which includes the current CBC). The County has adopted all sections of the CBC Title 24, Part 2, in Chapter 15.08, Building Code.[16]

EXISTING CONDITIONS

Faults

The County has been subjected to numerous seismic events, originating both on faults within the County and in other parts of the region. Six major Bay Area earthquakes have occurred since 1800 that have affected the County, and at least two of the faults that produced them run through or into the County.

[16] Alameda County Municipal Code, Title 15 (Buildings and Construction), Chapter 15.08 (Building Code).

Active faults within the County include the Hayward-Rodgers Creek fault system, Calaveras fault, and the Greenville-Las Positas fault. Potentially active faults within the County include the Verona fault, Williams fault, Midway fault, and Mocho fault. The Working Group of California Earthquake Probabilities has determined that earthquakes of equally destructive forces are a certainty within the region. According to their findings, the Hayward-Rodgers Creek fault system is estimated to have a probability of 31% of producing an earthquake of a magnitude of 6.7 (M 6.7) or higher within the next 30 years, this probability is the highest of the Bay Area faults.[17] In the event of an M 6.8 earthquake on the Hayward-Rodgers Creek fault system, the seismic forecasts presented on ABAG's interactive GIS website (developed by a cooperative working group that included the USGS and the California Geological Survey (CGS) suggest that the project site is expected to experience "strong" shaking.[18] However, no mapped earthquake faults run through or adjacent to the project site.[19] Thus, surface fault rupture is not considered a significant hazard within the project area.

Liquefaction

Liquefaction typically occurs in areas where moist, fine-grained, cohesionless sediment or fill materials are subjected to strong, seismically-induced ground shaking. Under certain circumstances, the ground shaking can temporarily transform an otherwise solid material to a fluid state. Liquefaction is a serious hazard because buildings in areas that experience liquefaction may subside and suffer major structural damage. Liquefaction is most often triggered by seismic shaking, but it can also be caused by improper grading, landslides, or other factors. In dry soils, seismic shaking may cause soil to consolidate rather than flow, a process known as densification. According to hazard maps published by the CGS, the project site lies within an area susceptible to very low category of liquefaction.[20] Such areas require stronger shaking events to cause liquefaction. Geologic map units included in the Moderate category include latest Pleistocene and Holocene Bay and other estuarine mud, alluvial fan and levee deposits, and stream terrace deposits.

Landslides

Landslides are gravity-driven movements of earth materials that can include rock, soil, unconsolidated sediment, or combinations of these materials. The rate of landslide movement can vary considerably. Some landslides move rapidly, as in a soil or rock avalanche, while other landslides creep or move slowly for extended periods of time. The susceptibility of a given area to landslides depends on many variables, although the general characteristics that influence landslide hazards are well understood. Some of the more important factors that can increase the likelihood of landslides are: 1) loose slope materials such as unconsolidated soil and weakly indurated or highly fractured bedrock; 2) steep slopes; 3) the orientation

[17] Alameda County, Safety Element of the General Plan, https://www.acgov.org/cda/planning/generalplans/documents/SafetyElementAmendmentFinal.pdf, pages 3 to 7.

[18] Association of Bay Area Governments (ABAG), 2013, Interactive Hazards Map, Earthquake Shaking Scenarios., https://abag.ca.gov/our-work/resilience/data-research/hazard-viewer, accessed on September 24, 2021.

[19] California Department of Conservation, Earthquake Zones of Required Investigation, https://maps.conservation.ca.gov/cgs/EQZApp/, accessed September 24, 2021.

[20] Association of Bay Area Governments (ABAG), 2013, Interactive Hazards Map, Earthquake Shaking Scenarios., https://abag.ca.gov/our-work/resilience/data-research/hazard-viewer, accessed on September 24, 2021.

of planar elements in earth materials such as bedding, foliation, joints, etc.; 4) increased moisture in soil or bedrock; 5) sparse vegetation; 6) eroded slopes or man-made cuts; and 7) strong seismic shaking. Due to the prevailing gentle topography and lack of steep slopes, earthquake-induced landslides are unlikely to occur at the project site or in the immediate vicinity.

Soils

The volume of expansive soils can change dramatically depending on moisture content. When wet, these soils can expand; conversely, when dry, they can contract or shrink. Sources of moisture that can trigger this shrink-swell phenomenon include seasonal rainfall, landscape irrigation, utility leakage, and/or perched groundwater. Expansive soils are typically very fine-grained with a high to very high percentage of clay, typically montmorillonite, smectite, or bentonite clay. The dominant soil type on the project site is Linne clay loam. Linne clay loam is well drained with a medium runoff potential and a very low capacity to transmit water.[21]

DISCUSSION

a) Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving: (i) 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; (ii) Strong seismic ground shaking; (iii) Seismic-related ground failure, including liquefaction; (iv) Landslides, mudslides or other similar hazards?

As discussed in Section 5.1, the California Supreme Court in a December 2015 opinion (*CBIA v. BAAQMD*) confirmed that CEQA, with several specific exceptions, is concerned with the impacts of a project on the environment, and not the effects the existing environment may have on a project. Therefore, the introduction of structures to existing seismic hazards would not be considered an impact under CEQA. Nevertheless, the County currently has policies that address existing seismic hazards and new development. The impact analysis for this criterion, presented below, is followed by an assessment of the proposed project's mandatory compliance with relevant ECAP and Countywide policies.

i. The project site is located on a parcel that is not in an earthquake fault zone but has not been evaluated for liquefication or seismic landslide hazards. However, the proposed project would not introduce residential development on the project site or expose people to strong seismic ground shaking. In addition, the project would not exacerbate this existing hazard pursuant to the CBIA v. BAAQMD case. Therefore, there would be *no impact.*

ii. An earthquake of moderate to high magnitude generated within the San Francisco Bay region could cause considerable ground shaking at the project site. The degree of shaking is dependent on the magnitude of the event, the distance to its zone of rupture, and local geological conditions. In the event of an M 6.8 earthquake on the Hayward-Rodgers Creek fault system the project site is expected

[21] United States Department of Agriculture (USDA), Natural Resources Conservation Service, Web Soil Survey, http://websoilsurvey.nrcs.usda.gov/app, accessed on September 24, 2021.

to experience "strong" shaking.[22] Because the project site is located in a seismically active region, strong ground shaking would be expected during the lifetime of the proposed project. However, the project would not exacerbate this existing hazard pursuant to the CBIA v. BAAQMD case. Therefore, there would be *no impact*.

iii. The project site is located within an area susceptible to very low category of liquefaction. Accordingly, a strong seismic event could cause liquefaction on the project site.[23] However, the project would not exacerbate this existing hazard pursuant to the CBIA v. BAAQMD case. Therefore, there would be *no impact*.

iv. The topography of the project site is generally flat, and the proposed project would not result in an erosion or landslide hazard. Therefore, there would be *no impact*.

The proposed project would be required to implement measures to avoid significant hazards from site soils and geologic conditions in compliance with the County's ECAP and Countywide policies, and the ACMC (listed above), which are required for all projects in Alameda County. Compliance with these regulations is required of all projects in the County as conditions of project approval; therefore, there would be *no impact* with respect to geologically-related hazards.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Compliance with existing regulatory requirements such as the CBC, and implementation of erosion control best management practices during construction on the project site would reduce the impacts associated with soil erosion or the loss of topsoil. Frequently-implemented soil stabilization best management practices include hydroseeding and short-term biodegradable erosion control blankets; linear sediment barriers such as silt fences, sandbag barriers, or straw bale barriers; fiber rolls, gravel bag berms, and check dams to break up slope length or flow; silt fences or other means of inlet protection at storm drain inlets; post-construction inspection of all drainage infrastructure for accumulated sediment; and clearing of accumulated sediment in such drainage structures. It should be noted that the proposed project would result in a minimal amount of grading on the project site. Therefore, adherence to existing regulatory requirements would ensure that the impacts associated with substantial erosion or the loss of topsoil resulting from construction of the proposed project would be *less than significant*.

c) Would the project 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 off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

As previously discussed, the potential for landslides is judged low in light of the essentially flat topography. Furthermore, existing developments in the immediate vicinity of the project site constructed on sites typified by similar topography and underlying geology, have not experienced landslides, lateral spreading,

[22] Association of Bay Area Governments (ABAG), 2013, Interactive Hazards Map, Earthquake Shaking Scenarios., https://abag.ca.gov/our-work/resilience/data-research/hazard-viewer, accessed on September 24, 2021.

[23] Association of Bay Area Governments (ABAG), 2013, Interactive Hazards Map, Earthquake Shaking Scenarios., https://abag.ca.gov/our-work/resilience/data-research/hazard-viewer, accessed on September 24, 2021.

subsidence, liquefaction, or collapse.[24] Given this experience, the proposed project is unlikely to result in significant adverse impacts related to unstable geologic units or soil. Therefore, there would be *no impact.*

d) Would the project be located on expansive soil, as defined by Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

As described above, the dominant soil type on the project site is Linne clay loam. In light of the on-site clay loam characteristics, the soil is considered to be potentially expansive and subject to expansion and contraction as a result of seasonal or human-made soil moisture. Expansive soils can undergo significant volume changes as a result of wetting or drying. This volume change can cause damage to foundations and pavement, however the proposed project does not include paved roadways or parking areas, and the only foundations would be the 500 square foot concrete pad for the inverter and transformer. The adverse effects of expansive soils can be avoided through proper subsoil preparation, drainage, and foundation design. In order to design a suitable foundation, expansive soils need to be recognized through appropriate sampling and soils testing. Such testing is generally part of a detailed, design-level geotechnical investigation performed prior to construction. Procedures employed in expansive soils testing are found in many codes and regulations. For example, Chapter 18, Sections 1803.5.3 and 1808.6 of the CBC set forth investigation and foundation requirements related to expansive soils. Adherence to these regulatory requirements would ensure that the impacts would be *less-than-significant* level.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

The proposed project would not require the construction or use of septic tanks or alternative wastewater disposal systems. Therefore, there would be *no impact*.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

A records search, additional research, field survey, and Native American Sacred Lands File search were conducted for the Phase I Cultural Resources Assessment of the project area.[25] Although the project area transects a very small portion of a linear cultural resource (Grant Line Road), the resource itself is marginal. With the exception of a single isolated artifact, no resources are documented within a half-mile of the project area, no previously undocumented resources were identified by the survey and parcel soils predate human occupation of the region. While no paleontological resources have been identified on the project site, because the proposed project requires excavation where no such excavation has previously occurred fossils of potential scientific significance that have not been recorded could be encountered. Therefore, ground-disturbing construction associated with development under the proposed project could cause damage to, or destruction of, paleontological resources. Impacts to paleontological resources

[24] U.S. Geologic Survey, U.S. Landslide Inventory Map, https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=ae120962f459434b8c904b456c82669d, accessed on September 24, 2021.

[25] PlaceWorks, LSA, September 2021, *Phase I Cultural Resources Assessment*

or site or unique geologic features on-site would be reduced to a *less-than-significant* level with implementation of Mitigation Measure GEO (f), listed below.

MITIGATION MEASURES

Mitigation Measure GEO (f): The construction contractor shall incorporate the following in all grading, demolition, and construction plans:

- In the event that fossils or fossil-bearing deposits are discovered during grading, demolition, or building, excavations within 50 feet of the find shall be temporarily halted or diverted.
- The contractor shall notify the City of Cupertino Building Department and a City-approved qualified paleontologist to examine the discovery.
- The paleontologist shall document the discovery as needed, in accordance with Society of Vertebrate Paleontology standards (Society of Vertebrate Paleontology 1995), evaluate the potential resource, and assess the significance of the finding under the criteria set forth in CEQA Guidelines Section 15064.5.
- The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find.
- If the project applicant determines that avoidance is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of the proposed project based on the qualities that make the resource important. The excavation plan shall be submitted to the City for review and approval prior to implementation.

VIII. GREENHOUSE GAS EMISSIONS

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	■	❒	❒	❒
b) Conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	■	❒	❒	❒

DISCUSSION

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

This threshold will be assessed in the full project EIR.

b) Would the project conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?

This threshold will be assessed in the full project EIR.

MITIGATION MEASURES

Any necessary mitigation measures will be included in the project EIR.

IX. HAZARDS AND HAZARDOUS MATERIALS

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?	❒	❒	■	❒
b) 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?	❒	❒	■	❒
c) Emit hazardous emissions or handle hazardous materials, substances or waste within one-quarter mile of an existing or proposed school?	❒	❒	❒	■
d) Be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?	❒	❒	❒	■
e) For a project 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, result in a safety hazard for people living or working in the project area?	❒	❒	❒	■
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	❒	❒	❒	■
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	❒	❒	■	❒

REGULATORY FRAMEWORK

Federal

The storage, use, generation, transport, and disposal of hazardous materials and waste are highly regulated under federal and state laws. Key federal regulations and policies related to development include the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, and the Resource Conservation and Recovery Act (RCRA). Laws and regulations established by the USEPA are enforced in Alameda County by the California Environmental Protection Agency (discussed below).

State

California Environmental Protection Agency

The California Environmental Protection Agency was created in 1991 by Executive Order W-5-91. Several State regulatory boards, departments, and offices were placed under the Agency's umbrella to create a cabinet-level voice for the protection of human health and the environment and to assure the coordinated deployment of State resources. The California Environmental Protection Agency also oversees the unified hazardous waste and hazardous materials management regulatory program (Unified Program).

California Department of Toxic Substances Control

The California DTSC, which is a department of California Environmental Protection Agency, is authorized to carry out the federal hazardous waste program in California to protect people from exposure to hazardous wastes. The department regulates hazardous waste, cleans up existing contamination, and looks for ways to control and reduce the hazardous waste produced in California. Permitting, inspection, compliance, and corrective action programs ensure that people who manage hazardous waste follow federal and State requirements and other laws that affect hazardous waste specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning.

California Building Code

The State of California provides minimum standards for building design and construction through Title 24 of the CCR. The California Building Code is located in Part 2 of Title 24 and is adopted by reference in Chapter 15.08, Building Code, of the ACMC. The California Building Code is updated every three years. Commercial and residential buildings are plan-checked by County building officials for compliance with the typical fire safety requirements of the California Building Code.

California Fire Code

ACMC Chapter 6.04 adopts the California Fire Code by reference. The California Fire Code adopts by reference the International Fire Code (IFC) with necessary State amendments. Updated every three years, the California Fire Code includes provisions and standards for emergency planning and preparedness, fire service features, fire protection systems, hazardous materials, fire flow requirements, and fire hydrant locations and distribution. Typical fire safety requirements include installation of sprinklers in all high-rise buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildlife hazard areas.

California Emergency Management Agency

The California Emergency Management Agency (CalEMA) was established as part of the Governor's Office on January 1, 2009—created by AB 38 (Nava), which merged the duties, powers, purposes, and responsibilities of the former Governor's Office of Emergency Services with those of the Governor's Office

of Homeland Security. The California Emergency Management Agency is responsible for the coordination of overall State agency response to major disasters in support of local government. The agency is responsible for assuring the State's readiness to respond to and recover from all hazards—natural, human-made, emergencies, and disasters—and for assisting local governments in their emergency preparedness, response, recovery, and hazard mitigation efforts.

California Department of Forestry and Fire Protection

The CAL FIRE has mapped fire threat potential throughout California.[26] CAL FIRE ranks fire threat based on the availability of fuel and the likelihood of an area burning (based on topography, fire history, and climate). The rankings include no fire threat, moderate, high, and very high fire threat. Additionally, CAL FIRE produced the *2019 Strategic Fire Plan for California*, which contains goals, objectives, and policies to prepare for and mitigate for the effects of fire on California's natural and built environments.[27]

Regional

San Francisco Bay Regional Water Quality Control Board

The Porter-Cologne established the State Water Resource Board (SWRCB) and the San Francisco Bay RWQCB, which regulates water quality in the project area. The San Francisco Bay RWQCB has the authority to require groundwater investigations when the quality of groundwater or surface waters of the State is threatened, and to require remediation actions, if necessary.

Bay Area Air Quality Management District

The BAAQMD has primary responsibility for control of air pollution from sources other than motor vehicles and consumer products, which are the responsibility of California Environmental Protection Agency and CARB. The BAAQMD is responsible for preparing attainment plans for non-attainment criteria pollutants, control of stationary air pollutant sources, and the issuance of permits for demolition and renovation activities affecting asbestos containing materials (District Regulation 11, Rule 2) and lead (District Regulation 11, Rule 1).

Local

Alameda County General Plan

The Safety Element includes the following policies under **Goal 1** specific to hazards and hazardous materials, and applicable to the proposed project.

- **P1**: Uses involving the manufacture, use or storage of highly flammable (or toxic) materials and highly water reactive materials should be located at an adequate distance from other uses and

[26] California Department of Forestry and Fire Protection (CAL FIRE), Fire Hazard Severity Zone Viewer, https://egis.fire.ca.gov/FHSZ/, accessed on September 27, 2021.

[27] California Department of Forestry and Fire Protection (CAL FIRE), *2019 Strategic Fire Plan for California,* https://www.fire.ca.gov/about-us/strategic-plan/, accessed on September 27, 2021.

should be regulated to minimize the risk of on-site and off-site personal injury and property damage. The transport of highly flammable materials by rail, truck, or pipeline should be regulated and monitored to minimize risk to adjoining uses.

- P4: New or expanding businesses shall be required to demonstrate compliance with the hierarchy of waste management strategies listed in Policy 1 (P1) of this Goal as a condition of receiving land use and business permits.
- P8: Developers shall be required to conduct the necessary level of environmental investigation to ensure that soil, groundwater and buildings affected by hazardous material releases from prior land uses and lead or asbestos in building materials will not have a negative impact on the natural environment or health and safety of future property owners or users. This shall occur as a pre-condition for receiving building permits or planning approvals for development on historically commercial or industrial parcels.
- P9: The safe transport of hazardous materials through the unincorporated areas shall be promoted by implementing the following measures:
    - Maintain formally-designated hazardous material carrier routes to direct hazardous materials away from populated and other sensitive areas.
    - Maintain formally-designated hazardous material carrier routes to direct hazardous materials away from populated and other sensitive areas.
    - Maintain formally-designated hazardous material carrier routes to direct hazardous materials away from populated and other sensitive areas.
    - Encourage businesses to ship hazardous materials by rail.

Alameda County Department of Environmental Health

The Alameda County Department of Environmental Health (ACDEH) Certified Unified Program Agency (CUPA) is the administrative agency that coordinates and enforces numerous local, state, and federal hazardous materials management and environmental protection programs in the county. As the local CUPA, the ACDEH administers the following programs:

- Hazardous Materials Business Plan Program
- Hazardous Waste Generator Program
- Underground Storage Tank Program
- California Accidental Release Program
- Tiered Permitting Program
- Aboveground Storage Tank Program

Alameda County Emergency Operations Plan

An Emergency Operations Plan (EOP) is required for each local government in California. The guidelines for the plan come from the Federal Emergency Management Agency (FEMA), and are modified by the State Office of Emergency Services (OES) for California needs and issues. The purpose of the plan is to provide a legal framework for the management of emergencies and guidance for the conduct of business

in the Emergency Operations Center (EOC). The *Alameda County Emergency Operations Plan* was adopted by the Board of Supervisors on December 8, 2012.[28]

EXISTING CONDITIONS

Hazardous Materials Sites

The term "hazardous material" is defined in different ways for different regulatory programs. The California Health and Safety Code Section 25501 definition of a hazardous material is: "any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment." The DTSC divides hazardous material sites into three categories: clean-up sites, permitted sites, and other sites. Sites listed within these three categories can be at various stages of evaluation or clean up, from the beginning to the end of the process. California Government Code Section 65962.5 requires the California Environmental Protection Agency to compile, maintain, and update specified lists of hazardous material release sites. The CEQA Statute (PRC Section 21092.6) requires the Lead Agency to consult the lists compiled pursuant to Government Code Section 65962.5 to determine whether a proposed project and any alternatives are identified as contaminated sites.

The required lists of hazardous material release sites are commonly referred to as the "Cortese List" after the legislator who authored the legislation. Those requesting a copy of the Cortese List are referred directly to the appropriate information resources contained on internet websites hosted by the boards or departments referenced in the statute, including DTSC's online EnviroStor database and the SWRCB's online GeoTracker database. These two databases include hazardous material release sites, along with other categories of sites or facilities were reviewed to identify known or suspected sources of contamination. A search of DTSC's EnviroStor and SWRCBs GeoTracker database on September 27, 2021 revealed that there are no listings within the project site and no open cases in close proximity to the project site. [29, 30]

Schools

The project site is not located within 0.25 miles from a school. The closest school, Peter Hansen Elementary School, is located approximately 0.35 miles to the northeast of the site.

Aircraft Hazards

The project site is not located within 2 miles of a public airport or public use airport. The closest airport to the project site is Byron Airport, located 5 miles northwest of the project. The closest private aircraft

[28] County of Alameda, Alameda County Emergency Operations Plan, December 2012, https://www.acgov.org/ready/documents/EmergencyOperationsPlan.pdf, accessed on September 27, 2021.

[29] State Water Resources Control Board, GeoTracker, http://www.geotracker.waterboards.ca.gov, accessed on September 27, 2021.

[30] Department of Toxic Substances Control, EnviroStor, http://www.envirostor.dtsc.ca.gov, accessed on September 27, 2021.

facility is the PG&E Livermore Training Center Heliport located approximately 8 miles southwest of the proposed project site.[31] Tracy Municipal Airport, a public-use airport is located 8 miles southeast of the project site.[32]

DISCUSSION

a) Would the project create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?

The proposed PV facility would not involve the routine transport of hazardous waste, thus, no impacts to the public or the environment would occur. Potential impacts during construction of the proposed project could include potential spills associated with the use of fuels and lubricants in construction equipment. These potential impacts would be short-term in nature and would be reduced to less-than-significant levels through compliance with applicable local, State, and federal regulations, as well as the use of standard equipment operating practices by experienced, trained personnel. Additionally, during the operation phase of the proposed project, common cleaning substances, PV facility maintenance products, and similar items could be used on the project site. These potentially hazardous materials, however, would not be of a type or occur in sufficient quantities to pose a significant hazard to public health and safety or the environment. Compliance with the applicable laws, regulations, and conditions of approval, would minimize hazards associated with the routine transport, use, or disposal of hazardous materials to the maximum extent practicable. Therefore, impacts would be *less than significant*.

b) Would the project 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?

As discussed in Criterion (a) of this section, the operation phase of the proposed project could involve the use of common cleaning substances and PV facility maintenance products; however, these potentially hazardous substances would not be of a type or occur in sufficient quantities on-site to pose a significant hazard to public health and safety or the environment. The use of these materials would be subject to existing federal and State regulations. Compliance with these regulations would ensure that the risk of accidents and spills are minimized to the maximum extent practicable. Therefore, impacts related to accidental release of hazardous materials would be *less than significant*.

c) Would the project emit hazardous emissions or handle hazardous materials, substances or waste within 0.25 miles of an existing or proposed school?

The project site is not located within 0.25 miles of a school. The closest school, Peter Hansen Elementary School, is located approximately 0.35 miles to the northeast of the site. Therefore, there would be *no impact*.

[31] California Public and Private Airports, Alameda County Public and Private Airports, http://www.tollfreeairline.com/california/alameda.htm, accessed on September 27, 2021.

[32] AirNav, Airport information, http://www.airnav.com/airports/us/CA, accessed on September 27, 2021.

d) Would the project be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment?

Based on information gathered from a review of the applicable regulatory databases, including EnviroStor and the GeoTracker, described above, to identify known or suspected sources of contamination, it was determined that the project site does not contain any known hazardous materials spills or storage sites. Additionally, the Phase I Environmental Site Assessment conducted for this project found no recognized environmental conditions (RECs).[33] Therefore, there would be *no impact*.

e) For a project 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 living or working in the project area?

The project site is not located within 2 miles of a public airport or public use airport. The closest airports to the project site are Byron Airport, located 5 miles northwest, and Tracy Municipal Airport, located 8 miles southeast.[34] Therefore, there would be *no impact*.

f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The proposed project would not involve any material changes to public streets, roads, or evacuation infrastructure and it would not include the construction of any features that might impair the implementation of any relevant emergency operation plan. Furthermore, the proposed project would not change existing emergency response and rescue access routes within Alameda County. Therefore, there would be *no impact*.

g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

The project site is located within an area of moderate Fire Hazard Severity for the Local Responsibility Area, but does not contain any areas of moderate, high, or very high Fire Hazard Severity for the State Responsibility Area.[35] Therefore, the impact would be *less than significant*.

MITIGATION MEASURES

No mitigation measures are required.

[33] PlaceWorks, June 2021, *Phase I Environmental Site Assessment Report*

[34] AirNav, Airport information, http://www.airnav.com/airports/us/CA, accessed on September 27, 2021.

[35] California Department of Forestry and Fire Protection (CAL FIRE), Fire Hazard Severity Zone Viewer, https://egis.fire.ca.gov/FHSZ/, accessed on September 29, 2021.

X. HYDROLOGY AND WATER QUALITY

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	❒	❒	■	❒
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	❒	❒	■	❒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: i) Result in substantial erosion or siltation on- or off-site; ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; iii) 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; or iv) Impede or redirect flood flows?	❒	❒	■	❒
d) In a flood hazard, tsunami, or seiche zones, risk the release of pollutants due to project inundation?	❒	❒	❒	■
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	❒	❒	❒	■

REGULATORY FRAMEWORK

Federal

Clean Water Act

The Clean Water Act (CWA) of 1977, as administered by the USEPA, seeks to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The CWA employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The CWA authorizes the USEPA to implement water-quality regulations. The National Pollutant Discharge Elimination System (NPDES) permit program under Section 402(p) of the CWA controls water pollution by regulating stormwater discharges into the waters of the United States. California has an approved State NPDES program. The USEPA has delegated authority for water permitting to the SWRCB and the San Francisco Bay Regional Water Quality Control Board (RWQCB).

Section 303(d) of the CWA requires that each state identify water bodies or segments of water bodies that are "impaired" (i.e., not meeting one or more of the water-quality standards established by the state). These waters are identified in the Section 303(d) list as waters that are polluted and need further attention to support their beneficial uses. Once the water body or segment is listed, the state is required to establish Total Maximum Daily Load (TMDL) for the pollutant causing the conditions of impairment. TMDL is the maximum amount of a pollutant that a water body can receive and still meet water-quality standards. Typically, TMDL is the sum of the allowable loads of a single pollutant from all contributing point and non- point sources. The intent of the 303(d) list is to identify water bodies that require future development of a TMDL to maintain water quality. In accordance with Section 303(d), the RWQCB has identified impaired water bodies within its jurisdiction, and the pollutants or stressors responsible for impairing the water quality.

National Pollutant Discharge Elimination System

The CWA-established NPDES permit program regulates municipal and industrial discharges to surface waters of the United States from their municipal separate storm sewer systems (MS4s). Under the NPDES program, all facilities that discharge pollutants into waters of the United States are required to obtain a NPDES permit. Requirements for stormwater discharges are also regulated under this program.

Alameda County lies within the jurisdiction of San Francisco Bay RWQCB (Region 2) and is subject to the waste discharge requirements of the Municipal Regional Stormwater Permit (MRP; Order No. R2-2015-0049) and NPDES Permit No. CAS612008, which was issued on November 19, 2015 and became effective as of January 1, 2016. The permit governs a variety of activities in the Alameda County such as industrial and commercial businesses, new and redevelopment projects, construction sites, storm drain operation and maintenance, creek monitoring, pesticide applications, and illegal dumping of water and other pollution in the County's storm drain.

National Flood Insurance Program

The National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973 mandate the Federal Emergency Management Agency (FEMA) to evaluate flood hazards. FEMA provides Flood Insurance Rate Maps (FIRMs) for local and regional planners to promote sound land use and floodplain development and identify potential flood areas based on current conditions. To delineate a FIRM, FEMA conducts engineering studies called Flood Insurance Studies (FISs). Using information gathered in these studies, FEMA engineers and cartographers delineate Special Flood Hazard Areas on FIRMs. The project site is identified in FIRM No. 06001C0225G. According to the FIRM, the project site is located outside of the 100-year floodplain in an area of minimal flood hazard.[36]

[36] Federal Emergency Management Agency, Flood Map Service Center, https://msc.fema.gov/portal/home, accessed on September 27, 2021.

State Regulations

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Act is the basic water-quality control law for California. Under this Act, the SWRCB has ultimate control over State water rights and water-quality policy. In California, the California EPA has delegated authority to issue NPDES permits to the SWRCB. The SWRCB, through its nine RWQCBs, carries out the regulation, protection, and administration of water quality in each region. Each regional board is required to adopt a Water Quality Control Plan, or Basin Plan, that recognizes and reflects the regional differences in existing water quality, the beneficial uses of the region's ground and surface water, and local water-quality conditions and problems. The county is within the San Francisco Bay Basin[37] and is under the jurisdiction of the San Francisco Bay RWQCB (Region 2) which monitors surface water quality through implementation of the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) and designates beneficial uses for surface water bodies and groundwater within the San Francisco Bay region. The Basin Plan for the San Francisco Basin was last updated on May 4, 2017 and will continue to be updated as deemed necessary to maintain pace with technological, hydrological, political, and physical changes in the region.[38] This Basin Plan describes the water quality that must be maintained to support the designated beneficial uses and provides programs, projects, and other actions necessary to achieve the standards established in the Basin Plan. The Basin Plan also contains water quality criteria for groundwater.

Statewide General Construction Permit

Construction projects of one acre or more are regulated under the General Construction Permit (GCP), Order No. 2012-0006-DWQ, issued by the SWRCB. Under the terms of the permit, applicants must file Permit Registration Documents (PRDs) with the SWRCB prior to the start of construction. The PRDs include a Notice of Intent (NOI), risk assessment, site map, Storm Water Pollution Prevention Plan (SWPPP), annual fee, and a signed certification statement. The PRDs are submitted electronically to the SWRCB via the Stormwater Multiple Application and Report Tracking System (SMARTS) website.

The SWPPP must demonstrate conformance with applicable Best Management Practices (BMPs), including a site map that shows the construction site perimeter, existing and proposed buildings, lots, roadways, stormwater collection and discharge points, general topography both before and after construction, and drainage patterns across the project location. The SWPPP must list BMPs that would be implemented to prevent soil erosion and discharge of other construction-related pollutants that could contaminate nearby water resources. Additionally, the SWPPP must contain a visual monitoring program, a chemical monitoring program for nonvisible pollutants if there is a failure of the BMPs, and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment. Some sites may require implementation of a Rain Event Action Plan (REAP). The GCP also requires applicants to

[37] California Regional Water Quality Control Board, 2017. San Francisco Basin (Region 2), Water Quality Control Plan (Basin Plan), https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/basinplan/web/fig/fig_1-01.pdf, accessed on September 27, 2021.

[38] California Regional Water Quality Control Board, 2017. San Francisco Basin (Region 2), Water Quality Control Plan (Basin Plan), May 2017, https://www.waterboards.ca.gov/sanfranciscobay/basin_planning.html, accessed on September 27, 2021.

comply with post-construction runoff reduction requirements. Since the proposed project would disturb more than one acre, it would be subject to these requirements.

Local

Alameda County General Plan

The Safety Element includes the following policies under Goal 3 specific to hydrology and water quality, and applicable to the proposed project.

- P2: Surface runoff from new development shall be controlled by on-site measures including, but not limited to structural controls and restrictions regarding changes in topography, removal of vegetation, creation of impervious surfaces, and periods of construction such that the need for off-site flood and drainage control improvements is minimized and such that runoff from development will not result in downstream flood hazards.
- P9: Development shall comply with applicable NPDES requirements.
- P12: The County shall require new development to pay their fair share of storm drainage and flood control improvements.
- P13: The County shall regulate new development on a case-by-case basis to ensure that project storm drainage facilities shall be designed so that peak rate flow of storm water from new development will not exceed the rate of runoff from the site in its undeveloped state.

East County Area Plan

The ECAP includes the following policies specific to hydrology and water quality, and applicable to the proposed project.

- Policy 306: The County shall protect surface and groundwater resources by:
    - preserving areas with prime percolation capability and minimizing placement of potential sources of pollution in such areas;
    - minimizing sedimentation and erosion through control of grading, quarrying, cutting trees, removal of vegetation, placement of roads and bridges, use of off-road vehicles, and animal-related disturbance of the soil;
    - not allowing the development of septic systems, automobile dismantlers, waste disposal facilities, industries utilizing toxic chemicals, and other potentially polluting substances in Creekside, reservoir, or high groundwater table areas when polluting substances could come in contact with flood waters, permanently or seasonally high groundwaters, flowing stream or creek waters, or reservoir waters; and,
    - avoiding establishment of excessive concentrations of septic systems over large land areas.

Alameda County Municipal Code

ACMC Chapter 15.36, Grading Erosion and Sediment, includes regulations for work on private property within the unincorporated area of the county in order to safeguard life, limb, health, property, and public welfare; to protect creeks, watercourses, and other drainage facilities from illicit discharges of surface

runoff generated in or draining through the permit work area; and to ensure that the construction and eventual use of a graded site is in accordance with the county general plan and all applicable county ordinances.[39]

EXISTING CONDITIONS

Surface Water

The project site lies within the Lower Old River of the San Joaquin Delta Watershed which spans 104 square miles and encompasses the northeastern tip of the county.[40]

Groundwater

According to the California Division of Water Resources (DWR), the project site is located within the San Joaquin Valley-Tracy groundwater subbasin.[41] The groundwater subbasin covers 539 square miles and is defined by the areal extent of unconsolidated to semi consolidated sedimentary deposits that are bounded by the Diablo Range on the west; to the Mokelumne and San Joaquin Rivers on the north; the San Joaquin River to the east; and the San Joaquin-Stanislaus County line on the south. The Tracy Subbasin is drained by the San Joaquin River and one of its major westside tributaries, Corral Hallow Creek. The total storage capacity of the groundwater basin is estimated at about 1,300,000 acre-feet. There is insufficient published data available to provide a groundwater budget for the subbasin.[42]

Flooding

FEMA prepares maps of the 100-year floodplains for communities in the United States. For areas within the 100-year floodplain, there is a one percent chance of flooding for any given year and these areas are considered to be at high-risk. Maps are also available for 500-year floods, which mean that in any given year, the risk of flooding in the designated area is 0.2 percent. Areas within the 100-year floodplain that are financed by federally backed mortgages are subject to mandatory federal insurance requirements and building standards to reduce flood damage. According to FEMA, the project site is outside of the 100-year floodplain.[43]

[39] Alameda County Municipal Code, Title 15 (Building and Construction), Chapter 15.36 (Grading Erosion and Sediment).

[40] Alameda Countywide Clean Water Program, Public Draft SWRP, https://www.cleanwaterprogram.org/images/2018-10_PUBLIC_DRAFT_ACCWP_SWRPApp1-4.pdf, accessed on September 27, 2021.

[41] California Division of Water Resources, Groundwater Basin Boundary Assessment Tool, https://gis.water.ca.gov/app/bbat/, accessed on September 27, 2021.

[42] California Division of Water Resources, California's Groundwater Bulletin 118, San Joaquin River Hydrologic Region, San Joaquin Valley Groundwater Basin, Tracy Subbasin, https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5_022_15_TracySubbasin.pdf, accessed on September 27, 2021.

[43] Federal Emergency Management Agency, Flood Map Service Center, https://msc.fema.gov/portal/home, accessed on September 27, 2021.

Dam inundation

Dam failure is the uncontrolled release of impounded water behind a dam. Flooding, earthquakes, blockages, landslides, lack of maintenance, improper operation, poor construction, vandalism, and terrorism can all cause a dam to fail.[44] The project site is not located within a dam inundation zone.[45]

DISCUSSION

a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Clearing, grading, excavation, and construction activities have the potential to impact water quality through soil erosion and increased silt and debris discharged into runoff. Additionally, the use of construction materials such as fuels, solvents, and paints may present a risk to surface water quality. Temporary storage of construction materials and equipment in work areas or staging areas could create the potential for a release of hazardous materials, trash, or sediment to the storm drain system.

The proposed project would disturb less than one acre of soil on the project site. Therefore, given the relatively low area of disturbance, the proposed project would not be required to comply with the NPDES General Construction Permit (GCP).

All development projects within Alameda County must also comply with the ACMC Chapter 15.36, Grading Erosion and Sediment, which requires projects within the County to ensure that the construction and eventual use of a graded site is in accordance with the Alameda County general plan and all applicable county ordinances.[46] Therefore, the proposed project would not contribute to an exceedance of stormwater runoff off-site. Furthermore, during project operation the project would not be a point-source generator of water pollutants and would therefore not violate any water quality standard. Accordingly, the proposed project would not violate any water quality standards or waste discharge requirements and impacts would be *less than significant*.

b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

The proposed project would introduce 2,200 square feet (0.417 acres) of impervious surface on the project site which represents approximately 0.20 percent of the 23.07-acre site. Accordingly, the vast majority of the project site would remain permeable and available for groundwater recharge. Water for project operation and irrigation would be delivered to the project site via a 500-gallon water truck; no connections to municipal water or groundwater wells are proposed. The water used during construction and water operation would be provided from the orchard located immediately north of the project, which

[44] California Office of Emergency Services, 2013, *California Multi-Hazard Mitigation Plan.*

[45] Alameda County, Safety Element of the General Plan, https://www.acgov.org/cda/planning/generalplans/documents/SafetyElementAmendmentFinal.pdf, pages 42 to 44.

[46] Alameda County Municipal Code, Title 15 (Building and Construction), Chapter 15.36 (Grading Erosion and Sediment).

is owned by the same property owner. Therefore, the proposed project would not deplete groundwater supplies or interfere substantially with groundwater recharge and impacts would be *less than significant*.

c) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would: (i) Result in substantial erosion, siltation, or flooding on- or off-site; (ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; (iii) 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; (iv) Impede or redirect flood flows?

i. As described under Criterion (b) of this section, the proposed project would not substantially increase the amount of impervious surface area on the project site. In addition, the proposed project would be required to comply with the requirements of ACMC Chapter 15.36 to ensure the adequate control of runoff and prevention of onsite flooding. Therefore, the potential impacts related to substantial erosion, siltation, or flooding on- or off-site would be *less than significant.*

ii. As described under Criterion (b) of this section, the proposed project would not substantially increase the amount of impervious surface area on the project site. In addition, the proposed project would be required to comply with the requirements of ACMC Chapter 15.36 to ensure the adequate control of runoff and prevention of onsite flooding. Therefore, the potential impacts related to the rate or amount of surface runoff in a manner that would result in flooding on- or off-site would be *less than significant.*

iii. As described under Criterion (b) of this section, the proposed project would not substantially increase the amount of impervious surface area on the project site. In addition, the proposed project would be required to comply with the requirements of ACMC Chapter 15.36 to ensure the adequate control of runoff and prevention of onsite flooding. Therefore, the potential impacts related to existing or planned stormwater drainage systems and additional sources of polluted runoff would be *less than significant*.

iv. The most recent FIRM shows that the project site is located outside of the 100-year floodplain. Therefore, there would be *no impact*.

d) In a flood hazard, tsunami, or seiche zones, risk the release of pollutants due to project inundation?

The project site is not located in a flood hazard, tsunami, or seiche zones. Therefore, there would be *no impact*.

e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

There are no water quality control plans or sustainable groundwater management plans within the area of the proposed project. In addition, given that the proposed project would entail usage of 1,000 gallons of

water per year from the adjoining orchard's supply, there would be *no impact* to groundwater resources on the project site or vicinity.

MITIGATION MEASURES

No mitigation measures are required.

XI. LAND USE AND PLANNING

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Physically divide an established community?	❒	❒	■	❒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	■	❒	❒	❒

DISCUSSION

a) Would the project physically divide an established community?

The proposed project would develop the 23.07-acre site with a solar PV facility. The proposed project would retain the existing roadway patterns, and would not introduce any new major roadways or other physical features through existing residential neighborhoods or other communities that would create new barriers. Therefore, the proposed project would not divide any established community and impacts would be *less than significant.*

b) Would the project cause a significant environmental impact due to a conflict with any applicable land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

This threshold will be assessed within the full project EIR.

MITIGATION MEASURES

Any necessary mitigation measures will be included in the project EIR.

XII. MINERAL RESOURCES

Would the proposed project:	Potentially Significant Impact	Less-Than-Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) 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?	❒	❒	❒	■
b) 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?	❒	❒	❒	■

REGULATORY FRAMEWORK

State

Surface Mining and Reclamation Act of 1974

The CGS classifies lands into Aggregate and Mineral Resource Zones (MRZs) based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act of 1974. These MRZs identify whether known or inferred significant mineral resources are present in areas. Lead agencies are required to incorporate identified MRZs resource areas delineated by the State into their General Plans.[47]

Local

Alameda County Municipal Code

ACMC Chapter 6.80, Surface Mining and Reclamation, regulates surface mining operations and reclamation of Mined Lands within the unincorporated area of the County pursuant to the California Surface Mining and Reclamation Act of 1975 in order to ensure the continued availability of important mineral resources. Pursuant to Section 6.80.031, Mineral Resource Protection, mine development is encouraged in compatible areas and incompatible land uses that may impede or preclude mineral extraction or where processing is discouraged.

EXISTING CONDITIONS

The California Department of Conservation, Geological Survey (CGS) classifies lands into Aggregate and Mineral Resource Zones (MRZs) based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act of 1974.[48] These MRZs identify whether

[47] Public Resources Code Section 2762(a)(1).

[48] Public Resources Code, Division 2, Geology, Mines and Mining, Chapter 9, Surface Mining and Reclamation Act of 1975, Article 4, State Policy for the Reclamation of Mined Lands, Section 2762(a)(1).

known or inferred significant mineral resources are present in areas. The study area does not contain areas for mineral resources where there is adequate information indicating significant mineral deposits or the high likelihood of significant mineral deposits present.[49] In addition, the ECAP does not assign land use designations for mineral resources within eastern Alameda County.

DISCUSSION

a) – b) Would the project 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 or result in the loss of availability of a locally important mineral resources recovery site delineated on a local general plan, specific plan, or other land use plan?

As discussed above, the project site is not identified as containing any mineral deposits. Therefore, there would be *no impact.*

MITIGATION MEASURES

No mitigation measures are required.

XIII. NOISE

Would the proposed project result in:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?	■	❒	❒	❒
b) Generation of excessive groundborne vibration or groundborne noise levels?	■	❒	❒	❒
c) For a project located within the vicinity of a private airstrip or 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, would the project expose people residing or working in the project area to excessive noise levels?	■	❒	❒	❒

[49] California Department of Conservation, 2016. Mines Online. https://maps.conservation.ca.gov/mol/Index.html, accessed September 30, 2021.

DISCUSSION

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, State, or federal standards?

This threshold will be assessed in the full project EIR.

b) Would the project expose people to or generate excessive groundborne vibration or ground borne noise levels?

This threshold will be assessed in the full project EIR.

c) For a project located within the vicinity of a private airstrip or 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, would the project expose people residing or working in the project area to excessive noise levels?

This threshold will be assessed in the full project EIR.

MITIGATION MEASURES

Any necessary mitigation measures will be included in the project EIR.

XIV. POPULATION AND HOUSING

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Induce substantial unexpected population growth or growth for which inadequate planning has occurred, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	❒	❒	❒	■
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	❒	❒	❒	■

EXISTING CONDITIONS

The population of Alameda County in 2019 was estimated at 1,671,329 with a total of 622,922 housing units. The average number of persons per household in Alameda County was estimated at 2.82.[50] The

[50] United States Census Bureau, Quick Facts, Alameda County, https://www.census.gov/quickfacts/alamedacountycalifornia, accessed on September 28, 2021.

project site is located in a rural agricultural area and is generally undeveloped. No additional housing is proposed as part of the project.

DISCUSSION

a) Would the project induce substantial unexpected population growth or growth for which inadequate planning has occurred, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

The proposed project, a solar PV facility, would not involve new housing or employment centers; thus, the proposed project would not induce substantial population growth in the area. Therefore, there would be *no impact.*

b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

The proposed project, would not involve new housing or employment centers; thus the proposed project would result in no impact related to population growth. The existing single-family home would remain on-site and no additional housing is proposed as part of the project thus, no housing or residents would be displaced. Therefore, there would be *no impact.*

MITIGATION MEASURES

No mitigation measures are required.

XV. PUBLIC SERVICES

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Result in substantial adverse physical impacts associated with the provision of 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 public services:				
Fire protection?	❒	❒	❒	■
Police protection?	❒	❒	❒	■
Schools?	❒	❒	❒	■
Libraries?	❒	❒	❒	■

REGULATORY FRAMEWORK

State

California Fire Code

As discussed in Section IX, Hazards and Hazardous Materials, ACMC Chapter 6.04 adopts the California Fire Code by reference. The California Fire Code adopts by reference the International Fire Code (IFC) with necessary State amendments. Updated every three years, the California Fire Code includes provisions and standards for emergency planning and preparedness, fire service features, fire protection systems, hazardous materials, fire flow requirements, and fire hydrant locations and distribution. Typical fire safety requirements include installation of sprinklers in all high-rise buildings; the establishment of fire resistance standards for fire doors, building materials, and particular types of construction; and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildlife hazard areas.

Local

East County Area Plan

The ECAP includes the following policies specific to public services and applicable to the proposed project.

- Policy 241: The County shall provide effective law enforcement, fire, and emergency medical services to unincorporated areas.
- Policy 242: The County shall reserve adequate sites for sheriff, fire, and emergency medical facilities in unincorporated locations within East County.

EXISTING CONDITIONS

Fire Protection Services

Fire protection service for the project site is provided by Alameda County Fire Department (ACFD). The ACFD protects approximately 508 square miles and a daytime population of approximately 394,000 people. The ACFD has 29 stations within Alameda County and provides all-risk emergency services to the unincorporated areas of Alameda County (excluding Fairview), the cities of San Leandro, Dublin, Newark, Union City and Emeryville, the Lawrence Berkeley National Laboratory and the Lawrence Livermore National Laboratory. Fire Station No. 20, located at 7000 East Avenue in Livermore, is the closest station to the project site.[51]

Police Protection Services

Police protection service for the project site is provided by the Alameda County Sheriff's Office (Sheriff's Office). The Sheriff's Office provides law enforcement services to unincorporated areas of the Alameda

[51] Alameda County Fire Department, About Us, https://fire.acgov.org/AboutUs/aboutus.page, accessed on September 28, 2021.

County, Hayward, Cherryland, Ashland, San Lorenzo, San Leandro, Sunol, Pleasanton and Livermore. The Sheriff's Office has 5 locations within Alameda County and has over 1,500 employees, both sworn and professional staff. The Sheriff's Office nearest the project site is located at 6361 Clark Avenue in Dublin.[52]

School Services

The project site is located within the Lammersville Joint Unified School District (LUSD) boundary.[53] LUSD currently operates seven K-8 elementary schools, and one high school. The closest K-8 elementary school is Peter Hansen Elementary located at 1400 S. Durant Terrace in Mountain House, 0.35 miles northeast of the project site. The closest high school is Mountain House High School located at 1090 S. Central Parkway in Mountain House, 0.76 miles northeast of the project site.[54]

Library Services

The Alameda County Library System operates 10 library branches within Alameda County. The closest library to the project site is the Dublin library located at 200 Civic Plaza in Dublin.

DISCUSSION

a) *Would the project result in substantial adverse physical impacts associated with the provision of 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 public services: fire protection, police protection, schools, and libraries?*

The primary purpose of a public services impact analysis is to examine the impacts associated with physical improvements to public service facilities required to maintain acceptable service ratios, response times or other performance objectives. Public service facilities need improvements (i.e., construction, renovation or expansion) as demand for service increases. Increased demand is typically driven by increases in population. The proposed project would have a significant environmental impact if it would exceed the ability of public service providers to adequately serve residents, thereby requiring construction of new facilities or modification of existing facilities.

As discussed in Section X, Hydrology and Water Quality, any refuse generated by project construction or decommissioning of the project would be delivered to an existing land fill with adequate capacity. Alameda County is primarily served by the Vasco Road Sanitary Landfill and the Altamont Landfill and Resource Recovery. The Vasco Road landfill has a permitted capacity of 2,518 tons of solid waste per day

[52] Alameda County Sheriff's Office, About Us, https://www.alamedacountysheriff.org/about-us/facility-directory-table-list/-sortn-FCPhone/-sortd-desc/-selcat-15, accessed on September 28, 2021.

[53] Lammersville Unified School District, About LUSD District Boundaries, https://www.lammersvilleschooldistrict.net/apps/pages/index.jsp?uREC_ID=1210612&type=d&pREC_ID=1446502, accessed on September 28, 2021.

[54] Lammersville Unified School District, Schools, https://www.lammersvilleschooldistrict.net/, accessed on September 28, 2021.

and a remaining permitted capacity of 7,379,000 cubic yard with an estimated "cease of operation date" of December 31, 2022.[55] The Altamont Landfill and Resource Recovery has a permitted capacity of 11,150 tons of solid waste per day and a remaining permitted capacity of 65,400,000 cubic yard with an estimated "cease of operation date" of December 1, 2070.[56]

Additionally, as discussed above in Section XIV, Population and Housing, the proposed project would not result in a net increase of residents at the project site or elsewhere in the region because it does not propose housing and is not a major regional employer. Therefore, the proposed project would not impact fire or police protection services, schools or library services. Accordingly, there would be *no impact* with respect to public services.

MITIGATION MEASURES

No mitigation measures are required.

XVI. PARKS AND RECREATION

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) 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?	❒	❒	❒	■
b) Result in substantial adverse physical impacts associated with the provision of new or physically altered park and recreational facilities, or result in the need for new or physically altered park and recreational facilities, the construction of which could cause significant environmental impacts?	❒	❒	❒	■

REGULATORY FRAMEWORK

Local

Alameda County General Plan

The Alameda County General Plan Recreation Element (Countywide Recreation Element), adopted in 1956 and amended in 1994, provides a framework for private and public acquisition and development of recreation areas and facilities. It contains general planning objectives related to promote and preserve recreational opportunities throughout the County.

[55] CalRecycle, SWIS Facility/Site Activities: Vasco Road Sanitary Landfill (01-AA-0010), https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/9?siteID=8, accessed on September 28, 2021.

[56] CalRecycle, SWIS Facility/Site Activities: Altamont Landfill and Resource Recovery (01-AA-0009), https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/7?siteID=7, accessed on September 28, 2021.

East County Area Plan

The ECAP includes the following policies specific to parks and recreation, and applicable to the proposed project.

- Policy 52: The County shall preserve open space areas for the protection of public health and safety, provision of recreational opportunities, production of natural resources (e.g., agriculture, windpower, and mineral extraction), protection of sensitive viewsheds, preservation of biological resources, and the physical separation between neighboring communities.
- Policy 54: Policy 54: The County shall approve only open space, park, recreational, agricultural, limited infrastructure, public facilities (e.g., limited infrastructure, hospitals, research facilities, landfill sites, jails, etc.) and other similar and compatible uses outside the Urban Growth Boundary.

EXISTING CONDITIONS

Alameda County contains numerous recreational facilities, including major parks and open space areas, local parks, and private recreational facilities. The closest parks to the project site include Altamont Creek Park, Summit Park, and Christensen Park.

DISCUSSION

a) – b) *Would the project 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? Does the proposed project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?*

Increased demand for existing neighborhood and regional parks or other recreational facilities is typically driven by increases in population. The proposed project, a solar PV facility, would not result in a net increase of residents at the project site or elsewhere in the region because it does not include recreational facilities or require the construction or expansion of recreational facilities. Therefore, the proposed project would not contribute to the deterioration of existing facilities nor require the construction or expansion of existing recreational facilities. Accordingly, there would be *no impact* with respect to parks and recreation.

MITIGATION MEASURES

No mitigation measures are required.

XVII. TRANSPORTATION

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	❒	❒	■	❒
b) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	❒	❒	■	❒
c) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	❒	❒	■	❒
d) Result in inadequate emergency access?	❒	❒	❒	■

REGULATORY FRAMEWORK

Local

East County Area Plan

The ECAP includes the following policies specific to transportation and circulation, and applicable to the proposed project.

- Policy 183: The County shall seek to minimize traffic congestion levels throughout the East County street and highway system.
- Policy 184: The County shall seek to minimize the total number of Average Daily Traffic (ADT) trips throughout East County.
- Policy 190: The County shall require new non-residential developments in unincorporated areas to incorporate Transportation Demand Management (TDM) measures and shall require new residential developments to include site plan features that reduce traffic trips such as mixed-use development and transit-oriented development projects.
- Policy 193: The County shall ensure that new development pays for roadway improvements necessary to mitigate the exceedance of traffic Level of Service standards (as described below) caused directly by the development. The County shall further ensure that new development is phased to coincide with roadway improvements so that (1) traffic volumes on intercity arterials significantly affected by the project do not exceed Level of Service D on major arterial segments within unincorporated areas, and (2) that traffic volumes on Congestion Management Program (CMP) designated roadways (e.g., Interstate Highways 580 and 680 and State Highway 84) significantly affected by the project do not exceed Level of Service E within unincorporated areas. If LOS E is exceeded, Deficiency Plans for affected roadways shall be prepared in conjunction with the Congestion Management Agency. LOS shall be determined according to Congestion Management Agency adopted methodology. The County

shall encourage cities to ensure that these Levels of Service standards are also met within unincorporated areas.

Alameda County Congestion Management Program

The Alameda County Congestion Management Program (CMP) identifies countywide strategies to respond to future transportation on needs and procedures to reduce congestion. The CMP identifies existing and desired traffic conditions on a variety of roadways throughout the county. All freeways and state highways, and selected arterial roadways, are designated elements of the CMP Roadway System. The nearest CMP roadways to the project site is North Front Road-Altamont Pass Road-Grant Line and I-580.

EXISTING CONDITIONS

Roadways and Intersections

Roadways near the project site are shown on Figure 3-1, *Regional Location*, Figure 3-2, *Local Vicinity*, and on Figure 3-3, *Aerial Photograph,* in Chapter 3, Project Description.

- Grant Line Road near the project site is a two-lane east-west roadway. The intersection of Grant Line Road and Great Valley Parkway is unsignalized with a stop at the eastbound approach at Great Valley Parkway.
- Great Valley Parkway is a four-lane north-south local roadway. The intersection of Grant Line Road and Great Valley Parkway is unsignalized with a stop at the southbound approach at Grant Line Road.
- Interstate 580 (I-580) provides regional access to the vicinity of the project. I-580 at Grant Line Road is a freeway with five westbound lanes and four eastbound lanes.

Bicycle and Pedestrian Facilities

There are no bicycle lanes or sidewalks on any of the roadways near the project site.

Public Transit

There are no public transit stops near the project site.

DISCUSSION

a) Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Construction

Construction of the proposed project is expected to occur in one phase over a 3- to 4- month period. Site Construction of the proposed project would occur in one phase over a 3- to 4-month period. Site preparation would involve minor excavation to construct the gravel access road and electrical pads. No

soil import or export is required. The crushed aggregate rock used for the gravel access road would be delivered to the project site, requiring approximately 25 to 30 haul trips.

Construction of the project is estimated to generate up to five to ten trips per day (five worker commute trips and one haul trip). These trips are nominal and would represent a small fraction of the capacity of Grant Line Road and Great Valley Parkway. These trips would be temporary in nature (for up to 4 months) and would be dispersed throughout the day.

Operation

Project operation would generate occasional trips by project maintenance workers to perform routine maintenance and repairs, and a 500-gallon water truck that would make deliveries to the project site approximately 2 times per year and would not affect the capacity of the roadway system.

Given the low volumes of project construction traffic, and even lower volumes of projected operational traffic, the project would not be in conflict with any program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. Therefore, *no impact* would occur.

Pedestrian, Bicycle Facilities, and Public Transit

There are no bike lanes or sidewalks on any of the roadways near the project site. Project construction would generate a limited number of trips and project operation would generate minimal trips. No public transit routes operate near the project site. Therefore, there would be *no impact* with respect to bicycle or pedestrian facilities or public transit.

b) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

According to the California Office of Planning and Research *Technical Advisory on Evaluating Transportation Impacts*,[57] "absent substantial evidence indicating a project would generate a potentially significant level of VMT, or inconsistency with a Sustainable Communities Strategy (SCS) or general plan, projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact." Therefore, given that there would be minimal operational traffic, VMT impacts would be *less than significant*.

c) Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Site access would be via proposed earthen driveways intersecting Grant Line Road. The intersections would be at right angles and their designs would not create hazards. Project access would be reviewed and approved in conformance to Alameda County roadway design and sight distance standards. A review of aerial photography and photos taken at the project site indicate that the road is flat and at grade, no

[57] Governor's Office of Planning and Research, Technical Advisory on Evaluating Transportation Impacts in CEQA, November 2017, http://www.opr.ca.gov/docs/20171127_Transportation_Analysis_TA_Nov_2017.pdf.

major obstructions, sharp curves and hazards are present in the vicinity of the site. Project development would not place incompatible uses on area roadways. Impacts would be *less than significant*.

d) Would the project result in inadequate emergency access?

Project development would not impact emergency access. Construction equipment and materials would be staged on-site and not on public roadways. A 20-foot wide gravel access road running north to south through the middle of the project site will be conducted to provide access to all project components. Therefore, *no impact* would occur.

MITIGATION MEASURES

No mitigation measures are required.

XVIII. TRIBAL CULTURAL RESOURCES

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is: i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resource Code Section 5024.1. In applying the criteria set forth in subdivision (c) of the Public Resource Code Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance to a California Native American tribe.	■	❒	❒	❒

DISCUSSION

a) *Would the proposed project cause a substantial adverse change in the significance of a Tribal Cultural Resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural*

landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is:

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?

This threshold will be assessed in the full project EIR.

ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resource Code Section 5024.1. In applying the criteria set forth in subdivision (c) of the Public Resource Code Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance to a California Native American tribe?

This threshold will be assessed in the full project EIR.

MITIGATION MEASURES

Any necessary mitigation measures will be included in the project EIR.

XIX. UTILITIES AND SERVICE SYSTEMS

Would the proposed project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	❒	❒	❒	■
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	❒	❒	■	❒
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	❒	❒	❒	■
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	❒	❒	■	❒
e) Comply with federal, state, and local statutes and regulations related to solid waste?	❒	❒	■	❒

REGULATORY FRAMEWORK

State

California Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, which was passed in California in 1969 and amended in 2013, the State Water Resources Control Board (SWRCB) has authority over State water rights and water quality policy. This act divided the State into nine regional basins, each under the jurisdiction of a RWQCB to oversee water quality on a day-to-day basis at the local and regional level. RWQCBs engage in a number of water quality functions in their respective regions. RWQCBs regulate all pollutant or nuisance discharges that may affect either surface water or groundwater. Alameda County is overseen by the San Francisco Bay RWQCB.

Groundwater Management Act (1992)

The Groundwater Management Act of the California Water Code (Assembly Bill [AB] 3030), signed into law on September 26, 1992, and effective on January 1, 1993, provides guidance for applicable local agencies to develop voluntary Groundwater Management Plans (GMP) in State-designated groundwater basins. The GMPs can allow agencies to raise revenue to pay for measures influencing the management of the basin, including extraction, recharge, conveyance, facilities' maintenance, and water quality.[58]

Sustainable Groundwater Management Act (2014)

The Sustainable Groundwater Management Act of 2014 (SGMA) consists of three legislative bills, Senate Bill (SB) 1168, AB 1739, and SB 1319. The legislation provides a framework for long-term sustainable groundwater management across California. Under the roadmap laid out by the legislation, local and regional authorities in medium and high priority groundwater basins will form Groundwater Sustainability Agencies (GSAs) that oversee the preparation and implementation of a local Groundwater Sustainability Plan (GSP). The project site is located within the Alameda County Flood Control and Water Conservation District, Zone 7 (Zone 7 Water Agency) GSA formed in 2016.[59] Groundwater Sustainability Plans will have to be developed and in place by 2022. GSAs will have until 2040 to achieve groundwater sustainability.[60]

State Updated Model Water Efficient Landscape Ordinance

The updated Model Water Efficient Landscape Ordinance requires cities and counties to adopt updated water efficient landscape ordinances by February 1, 2016 or to adopt a different ordinance that is at least

[58] Department of Water Resources Planning and Local Assistance Central District, Groundwater, *Groundwater Management*, http://www.cd.water.ca.gov/groundwater/gwab3030.cfm, accessed on May 14, 2018.

[59] Alameda County Flood Control and Water Conservation District, Zone 7, Decision to Become the Exclusive Groundwater Sustainability Agency For Livermore Valley Groundwater Basin (DWR Basin 2-10), file:///C:/Users/cgarcia/Downloads/153_Zone_7_Water_Agency_GSA_2017-01-20%20(1).pdf, accessed on May 10, 2018.

[60] UC Davis, Division of Agriculture and Natural Resources, 2014. Groundwater web page, http://groundwater.ucdavis.edu/SGMA/, accessed on June 26, 2017.

as effective in conserving water as the updated Model Ordinance. The Water Efficient Landscape Policy is adopted in ACMC Chapter 17.64, Water Efficient Landscape. Pursuant to ACMC Sections 17.64.090 and 17.64.100, project applicants are required to submit a landscape plan that irrigation plan to the County for review to ensure that it meets California Code of Regulation requirements.

Assembly Bill 939

AB 939 established the California Integrated Waste Management Board and required all California counties to prepare integrated waste management plans. AB 939 also required all municipalities to divert 25 percent of their solid waste from landfill disposal by January 1, 1995. Fifty percent of the waste stream was to be diverted by the year 2000.

EXISTING CONDITIONS

There is no active irrigation system on the project site. The proposed project would not disrupt these services. The proposed PV facility would not require connections to municipal water, sewer service, or natural gas. Water for project operation and irrigation would be replenished from the orchard located immediately north of the project, which is owned by the same property owner, and be delivered to the project site approximately two times per year via a 500-gallon water truck. The proposed PV facility would connect to an existing PG&E distribution line and generate electrical energy. Given the rural nature of the project site, stormwater runoff drains primarily through natural drainage swales and ditches.

Alameda County is primarily served by the Vasco Road Sanitary Landfill and the Altamont Landfill and Resource Recovery. The Vasco Road landfill has a permitted capacity of 2,518 tons of solid waste per day and a remaining permitted capacity of 7,379,000 cubic yard with an estimated "cease of operation date" of December 31, 2022.[61] The Altamont Landfill and Resource Recovery has a permitted capacity of 11,150 tons of solid waste per day and a remaining permitted capacity of 65,400,000 cubic yard with an estimated "cease of operation date" of December 1, 2070.[62]

[61] CalRecycle, SWIS Facility/Site Activities: Vasco Road Sanitary Landfill (01-AA-0010), https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/9?siteID=8, accessed on September 28, 2021.

[62] CalRecycle, SWIS Facility/Site Activities: Altamont Landfill and Resource Recovery (01-AA-0009), https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/7?siteID=7, accessed on September 28, 2021.

DISCUSSION

a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?

The proposed project, a solar PV facility, would not generate wastewater. Therefore, there would be *no impact.*

b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

As stated in the Existing Conditions section, the proposed project would not require connections to municipal water. Water for project operation and irrigation would be replenished from the orchard located immediately north of the project, which is owned by the same property owner, and be delivered to the project site approximately two times per year via a 500-gallon water truck. Therefore, the proposed project would be anticipated to use up to 1,000 gallons per year. Alameda County Flood Control and Water Conservation District, Zone 7, directly serves 13 retail municipal connections, including commercial and institutional water uses, the total population served through direct connections is less than 3,000 with a five-year (2016 – 2020) average retail water demand of approximately 800 acres feet per year (AFY), or 260.7 million gallons per year (gpy). Therefore, the water use by the proposed project represents a nominal amount of water in comparison to overall water use in the service area of Zone 7. Furthermore, the 2020 Urban Water Management Plan (UWMP) for Zone 7 states that Zone 7's future water supplies are expected to keep pace with water demands through temporary water transfers and long-term projects.[63] Therefore, project operation would be anticipated to have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years. Therefore, the impact would be *less than significant*.

c) Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

The proposed project, a solar PV facility, would not generate wastewater. Therefore, there would be *no impact*.

d) Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

The proposed project would not demolish any structures and the project components would all be delivered for on-site assembly. Refuse generated by project construction would be delivered to either the Vasco Road Sanitary Landfill or the Altamont Landfill and Resource Recovery both of which service

[63] Alameda County Flood Control and Water Conservation District - Zone 7, 2021, https://www.zone7water.com/sites/main/files/file-attachments/0_final_2020_uwmp.pdf?1624903044, accessed October 20, 2021.

Alameda County. Project operation and maintenance would generate a minimal amount of solid waste per year. As discussed above, both the Vasco Road Sanitary Landfill or the Altamont Landfill and Resource Recovery have adequate capacity to serve Alameda County. Therefore, implementation of the project would not generate solid waste that exceeds State or local standards, or exceeds the capacity of the landfill, or otherwise impairs the attainment of solid waste reduction goals. The impact would be *less than significant*.

e) Would the project comply with federal, state, and local statutes and regulations related to solid waste?

The proposed project would be required to comply with local, State, and federal solid waste regulations. As discussed in Criterion (f) of this section, the proposed project would not demolish any structures and refuse generated by project construction would be delivered to an existing landfill with adequate capacity. In addition, project operation would generate a minimal amount of solid waste. Therefore, the impact would be *less than significant*.

XX. WILDFIRE

If located in or near State responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	❒	❒	■	❒
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	❒	❒	■	❒
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	❒	❒	■	❒
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	❒	❒	■	❒

REGULATORY FRAMEWORK

Federal

Healthy Forests Restoration Act

The Healthy Forests Restoration Act (US Code Title 16, Chapter 84, Section 6501) was approved on December 3, 2003 to reduce wildfire risk to communities, municipal water supplies, and other at-risk federal land through planning, prioritizing, and hazardous fuel reduction projects. This act provides regulations for the protection of watersheds, forests, and rangeland, such as the land surrounding the

proposed project, from catastrophic wildfires across the landscape. This includes improving systems to detect insect and disease infestations in hardwood forests.

National Cohesive Wildland Fire Management Strategy

In the Federal Land Assistance, Management, and Enhancement Act of 2009 (FLAME Act), Congress mandated the development of a national cohesive wildland fire management strategy for all lands within the United States. The strategy includes a set of guidelines for safe and effective response to wildfires, including structural protections and wildfire prevention to maximize the effectiveness of response efforts. This strategy also provides guidance on vegetation and fuels management, including designing and placing fuel treatments; increasing use of prescribed burns; and expanding the use of all methods to improve the resiliency of forests.

State

Fire Hazard Severity Zones

The California Department of Forestry and Fire Protection (CAL FIRE) designates fire hazard severity zones as authorized under California Government Code Sections 51175 et seq. CAL FIRE considers many factors such as fire history, existing and potential fuel (natural vegetation), flame length, blowing embers, terrain, and typical weather for the area. There are three hazard zones in state responsibility areas: moderate, high and very high. CAL FIRE designates FHSZs within three types of areas depending on what level of government is financially responsible for fire protection:

- LRA: Local Responsibility Area: cities and counties are financially responsible for wildfire protection.
- SRA: State Responsibility Area.
- FRA: Federal Responsibility Area.

Building Standards for Structures in Fire Hazard Severity Zones

California Building Code (California Code of Regulations, Title 24, Part 2) Chapter 7A

Chapter 7A of the California Building Code (CBC), Materials and Methods for Exterior Wildfire Exposure, prescribes building materials and construction methods for new buildings in a Fire Hazard Severity Zone. Chapter 7A contains requirements for roofing; attic ventilation; exterior walls; exterior windows and glazing; exterior doors; decking; protection of underfloor, appendages, and floor projections; and ancillary structures. The CBC is updated on a three-year cycle; the current 2019 CBC took effect in January 2020.

California Fire Code (California Code of Regulations, Title 24, Part 9) Chapter 49

Chapter 49 of the California Fire Code (CFC), Requirements for Wildland-Urban Interface Fire Areas, prescribes construction materials and methods in fire hazard severity zones; requirements generally parallel CBC Chapter 7A. The CFC is updated on a three-year cycle; the current 2019 CFC took effect in January 2020.

Defensible Space

California Public Resources Code Sections 4291 et seq. requires that brush, flammable vegetation, or combustible growth within 100 feet of buildings be removed. Vegetation that is more than 30 feet from the building, less than 18 inches high, and important for soil stability, may be maintained; as may single specimens of trees or other vegetation that is maintained so as to manage fuels and not form a means of rapid fire transmission from other nearby vegetation to a structure. Requirements regarding hazardous vegetation and fuel management are also contained in Sections 4906 and 4907 of the California Fire Code.

California Public Resources Code Section 4290 requires that all parcels one acre or larger shall provide a minimum 30-foot setback for buildings from all property lines and/or the center of the road.

EXISTING CONDITIONS

Wildland fire protection in California is the responsibility of either the State, local government, or the federal government. State Responsibility Areas (SRA) are the areas where the State of California has the primary financial responsibility for the prevention and suppression of wildland fires. The SRA includes a 31-million-acre area, in which the State Department of Forestry and Fire Protection (CAL FIRE) provides a basic level of wildland fire prevention and protection services. Local Responsibility Areas (LRA) include lands within incorporated cities, cultivated agriculture lands, and portions of the desert. LRA fire protection is typically provided by city fire departments, fire protection districts, counties, or by CAL FIRE under contract to local government.[64] CAL FIRE determines fire hazard zones within the LRA using an extension of the SRA Fire Hazard Severity Zone model as the basis. The LRA hazard rating reflects flame and ember intrusion from adjacent wildlands and from flammable vegetation in the urban area.

CAL FIRE designates fire hazard severity zones (FHSZs) as authorized under California Government Code Sections 51175 et seq. CAL FIRE considers many factors such as fire history, existing and potential fuel (natural vegetation), flame length, blowing embers, terrain, and typical weather for the area. There are three types of FHSZs: moderate, high, and very high.

According to the California Office of Emergency Services, a Wildland-Urban Interface (WUI) is defined as any area where structures and other human development meet or intermingle within wildland vegetation.[65] Developments in the wildland-urban interface exacerbate fire occurrence and fire spread in several ways, including:

- Increased numbers of human-caused wildfires.
- Wildfires become harder to fight.
- Firefighting resources are diverted from containing the wildfire to protecting lives and homes.

[64] California Department of Forestry and Fire Prevention (CAL FIRE), Office of the State Fire Marshall, Fire Hazard Severity Zones, https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/wildfire-prevention-engineering/fire-hazard-severity-zones/, accessed September 29, 2021.

[65] Cal OES. 2018. California State Hazard Mitigation Plan.

- Letting natural fires burn becomes impossible; leading to buildup of fuel, increasing wildfire hazard further.[66]

The project site is located within an LRA and the ACFD currently provides fire protection and emergency medical services to the city and project site. The nearest SRA is approximately 1 mile to the west and is designated as a Moderate FHSZ. The nearest Very High FHSZ within the Alameda County LRA is located approximately 4 miles to the southwest.[67] The project site is located within the CalOES defined WUI, which is an area of transition between wildland (unoccupied land) and land with human development (occupied land);[68] therefore, impacts related to wildfire are discussed below.

Wildland Fires

The severity of the wildfire hazard is determined by the relationship between three factors: fuel classification, topography, and critical fire weather frequency. The project site is located within an area of moderate Fire Hazard Severity for the Local Responsibility Area, but does not contain any areas of moderate, high, or very high Fire Hazard Severity for the State Responsibility Area.[69]

DISCUSSION

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

The Alameda County Office of Emergency Services is responsible for coordinating agency response to disasters or other large-scale emergencies in the County of Alameda. The Alameda County EOP establishes emergency planning, mitigation, response, and recovery policies within the city.

As described in Section IX, Hazards and Hazardous Materials, the proposed project would not block roads or impede emergency access to surrounding properties or neighborhoods during either construction or operation of the project. During demolition and construction, vehicles, equipment, and materials would be staged and stored on a portion of the project site and no staging would occur in the public right-of-way.

As stated in Section IX, Hazards and Hazardous Materials, the proposed project would not interfere or impair with an adopted emergency response plan, or emergency evacuation plan; therefore, impacts would be *less than significant*.

[66] Radeloff, Volker; Helmers, David; Kramer, H., et al. 2018. Rapid Growth of the US Wildland-Urban Interface Raises Wildfire Risk. Proceedings of the National Academy of Sciences (PNAS): Volume 115 No. 13., https://www.pnas.org/content/pnas/115/13/3314.full.pdf, accessed on September 29, 2021.

[67] California Department of Forestry and Fire Protection (CAL FIRE), Fire Hazard Severity Zone Viewer, https://egis.fire.ca.gov/FHSZ/, accessed on September 29, 2021.

[68] CAL FIRE. 2018. Wildland-Urban Interface Fire Threat. http://www.arcgis.com/home/item.html?id=d45bf08448354073a26675776f2d09cb, accessed September 29, 2021.

[69] California Department of Forestry and Fire Protection (CAL FIRE), Fire Hazard Severity Zone Viewer, https://egis.fire.ca.gov/FHSZ/, accessed on September 29, 2021.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

The project site is characterized as generally flat and surrounding by low topographic relief. Prevailing winds in the area derive from the west from February to November, and from the north from November to February, with the windier part of the year occurring from April to September with wind speeds averaging 7.7 miles per hour.[70] The project site is not located within an SRA or Very High FHSZ in an LRA.

The proposed landscaping solar panels will be mounted on a steel racking frame that is positioned three to nine feet above ground to allow for vegetation control and periodic maintenance, as discussed in Chapter 3, Project Description. ACMC Chapter 6.04, Alameda County Fire Code, would require the proposed project to comply with the 2019 California Fire Code and 2015 International Fire Code, which provide specific regulations governing conditions hazardous to life and property from fire or explosion.[71] Therefore, the proposed project would have fire prevention and management measures and would not expose occupants and the surrounding neighborhoods to pollutant concentrations or the uncontrolled spread of wildfire. Impacts would be *less than significant,* and no mitigation would be required.

c) Require the installation of maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines, or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

As discussed in Chapter 3, Project Description, the project will erect three wooden utility poles along the southern edge of the project site, where the project's 12kV electrical output will be connected. PG&E's interconnection facilities will connect to the project at one of these wooden utility poles. Therefore, installation and maintenance of infrastructure would not exacerbate wildfire risks and new infrastructure would not cause temporary or ongoing impacts on the environment. Impacts would be *less than significant*.

d) Expose people or structure to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire instability, or drainage changes?

As stated in criterion b), the project site is characterized as generally flat and is surrounded by low topographic relief. The project site is not located within a floodplain or an area that has a high potential for landslides. As discussed in Section X, Hydrology and Water Quality, the proposed project would introduce 2,200 square feet (0.417 acres) of impervious surface on the project site which represents approximately 0.20 percent of the 23.07-acre site. Accordingly, the vast majority of the project site would remain permeable. Therefore, the proposed project would not expose people or structures to flooding or landslides that result from post-fire instability and runoff, and impacts would be *less than significant*.

[70] Weather Spark. 2019. https://weatherspark.com/y/1090/Average-Weather-in-Mountain-House-California-United-States-Year-Round, September 29, 2021.

[71] Alameda County Municipal Code, Title 6 (Health and Safety), Chapter 6.04 (Alameda County Fire Code).

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	■	❒	❒	❒
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	■	❒	❒	❒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	■	❒	❒	❒

DISCUSSION

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

This threshold will be assessed in the full project EIR.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

This threshold will be assessed in the full project EIR.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

This threshold will be assessed in the full project EIR.

From: Chauhan, Nisha, CDA
To: Sean Anayah; Steve Noack
Subject: Fwd: Letter from FOL attached and pasted below
Date: Friday, November 19, 2021 4:27:16 PM
Attachments: FOL Letter To BOS re Solage .pdf

More comments

Nisha Chauhan, AICP
Senior Planner
Alameda County Planning Department
Phone: (510) 670-6541
Hours: Mon-Friday 8:30am-5:00pm

The Planning Department is working normal business hours and remotely in compliance with the Shelter in Place Order issued by the County Public Health Officer

---

From: David Rounds <d.michael.rounds@gmail.com>
Sent: Friday, November 19, 2021 4:25:09 PM
To: Chauhan, Nisha, CDA <nisha.chauhan@acgov.org>
Cc: Jean King <whjaking@comcast.net>; Michael Fredrich <mffredrich@comcast.net>; Dick Schneider <richS59354@aol.com>
Subject: Letter from FOL attached and pasted below

Nisha Chauhan Senior Planner
ATTN: Alameda Grant Line Solar Project EIR
Alameda County Community Development Agency
224 W. Winton Ave., Suite 111
Hayward, CA 94544

19 November 2021

Submitted via email to nisha.chauhan@acgov.org

Re.: Soltage Alameda Grant Line Solar 1 EIR

Dear Mr. Chauhan:

Friends of Livermore submit these scoping comments on the proposed Environmental Impact Report for the above referenced project. In addition to topics already checked for environmental analysis in the Notice of Preparation, the following subjects must be addressed.

1. Agriculture and Forestry Resources: The potential cumulative impact on agricultural land of this project must be addressed. This is the first solar power plant proposed for this immediate area. On the Alameda County side of the county line, the surrounding area is mainly in agricultural use (orchards to the north and vacant agricultural land to the south). If this project generates significantly more revenue than current agricultural production, there will be incentive to convert additional agricultural acreage to power plant use. This could result in a significant cumulative loss of productive agricultural land and must be analyzed.

2. Biological Resources: The East Alameda County Conservation Strategy (EACCS) and the East Bay Regional Conservation Investment Strategy (EBRICS) describe the project site as potential habitat for eight (8) special status species: California red-legged frog, Tri-colored blackbird, Western burrowing owl, Swainson's hawk, San Joaquin kit fox, American badger, Golden eagle, and California tiger salamander. These are species threatened with extinction. Protocol level surveys must be carried out for these species at appropriate times of the year and in representative climatological years (e.g. rainfall) to determine presence and potential impacts to these species. The EACCS sets forth acreage mitigation ratios for biological habitat impacts for each of its focal species. These mitigation ratios should be described in the EIR and appropriate mitigation acreages listed for each impacted species. Potential cumulative impacts to special status species and their habitats must also be evaluated. Should solar power generation be more lucrative than current agricultural use leading to additional projects being proposed in this area, cumulative impacts to protected species could be considerable.

3. Land Use and Planning: Section 3.1.3 of the Notice of Preparation describes actions taken by the Planning Commission, Board of Zoning Adjustments, and Board of Supervisors in 2008, 2011, and 2012, respectively, that determined solar facilities to be similar to explicitly listed permitted uses. Were these legislative actions that set countywide policy? If so, were policy level environmental impact reports duly noticed, prepared, and adopted? If the referenced actions dealt only with specific projects on specific parcels, and they were not legislative enactments, what precedent value do they hold for the current project?

Alameda County is currently preparing a countywide solar policy for possible adoption within a year. An Environmental Impact Report for the proposed solar policy is contemplated. The policy may set forth locations where solar photovoltaic projects are permitted and where they are not permitted. Public workshops will be part of the process. This would seem to indicate that a countywide solar policy has not yet been adopted and therefore prior case-by-case decisions are irrelevant to the current project.

Should this project be approved before the solar policy is adopted and it is inconsistent with the adopted policy, it would become a non-conforming use. What are the implications for this project as a non-conforming use? If a significant proportion of the solar arrays were damaged or destroyed, could they be rebuilt or replaced? Could the capacity of the power plant be increased? What other problems would the facility face as a non-conforming use?

We look forward to these subjects being evaluated as part of the EIR as well as others noted in the Notice of Preparation.

Sincerely,

David Rounds,
Friends of Livermore

** This email was sent from an external source. If you do not know the sender, do not click on links or attachments. **

From: Chauhan, Nisha, CDA
To: Sean Anayah; Steve Noack
Subject: FW: Revised comments---Alameda Grant Line Solar 1 Project Eir
Date: Friday, November 19, 2021 4:53:58 PM

More comments.

From: BERNARD CABANNE <bcabanne@comcast.net>
Sent: Friday, November 19, 2021 4:53 PM
To: Chauhan, Nisha, CDA <nisha.chauhan@acgov.org>; BERNARD CABANNE <bcabanne@comcast.net>; donna.cabanne@gmail.com
Subject: Revised comments---Alameda Grant Line Solar 1 Project Eir

November 18,2021

Albert Lopez, Planning Director
Nisha Chauhan Senior Planner
Re:Alameda Grant Line Solar 1 Project EIR

To Planning Director Lopez and Senior Planner Chauhan:

I am submitting these comments as a member of the Sierra Club, a member of the Center for Biodiversity and a 40 year resident of Livermore.
Please note the following comments and issues regarding the Grant Line Solar I Project EIR---Soltage,Inc.

In preliminary planning documents, the county proposes to include the following areas in the Draft EIR; Aesthetics, Air Quality, Biological Resources, Green House Gas Emissions and Noise. These areas are not sufficient to analyze the true impacts of the proposed project.
Hazards and Hazardous Materials, Hydrology and Water Quality, Geology, and Wildfires must be added as well.

Air Quality. The project will add further emissions to a non-attainment air basin and one of the dirtiest air basins in the state triggered by violations of air standards in Livermore. The county must study and analyse the use of non-diesel construction equipment as a means to reduce the air impacts to the area during construction and operation.

Biological Resources: This area has documented sightings of Bald Eagles, Kites,

Cooper's Hawks and other endangered and special species status wildlife. How will the installation of these solar panels and the reflected glare and heat cause disruptions to nesting and habitat corridors? The California Department of Fish and Game and the US Fish and Wildlife Service should be consulted to evaluate the potential for biological impacts and possible mitigations.

Greenhouse Gas Emissions. The project proposes to reduce emissions but will likely increase impacts during construction. Who will receive the added electricity? The applicant stated in a hearing that the company has no control over the final destination of the energy.
In fact, the project is closer and immediately adjacent to homes, schools, and business in Mountain House in San Joaquin County. Furthermore, the project is only accessible by driving on roads and using an entrance in San Joaquin County.
Why should Alameda County lose agricultural lands, agricultural resources and open space to most likely provide energy for a neighboring county? Mountain House and Tracy--which approved 22 new housing projects in the last year--could provide their own energy and be energy sufficient using rooftop solar.

If the energy is being generated for Alameda County users, why place a solar plant at the farthest point east in the county miles and miles from any Alameda County users? Of course, this maximizes profits from PG % E due to long distance transmission fees it can impose on users but it is not a good deal for Alameda County. Alameda County will endure the negative impacts but have NO CONTROL over the benefits.
This does NOT support local control or small businesses the way roof top solar would.

Geology
Initial findings did not list all the local faults and recent earthquakes including many in Livermore. This section warrants further data and analysis before stating impacts are less than significant.

Hazards and Hazardous Materials. All solar panels are coated with teflon and release PFAs, teflon contamination-the forever chemical, when washed. Solar panels must be washed frequently to ensure minimum energy production. The Tri-Valley has some of the highest PFAs readings in the nation (Consumer Reports) and this project is sited near the Altamont Landfill that also has a moderate to high PFAs contamination level. Livermore Airport has a high PFAs level and Pleasanton was forced to close down a major deep well and lose 20% of their water resources due to unacceptably high PFAS readings. How will the proposed project capture the wash water to ensure it does not
seep into deep wells in the vicinity? Some of these deep wells are the only source of water for nearby farmers and ranchers. Have PFAs readings been taken for the project area? Who would be responsible for possible clean-up? This could include hauling all wash water from panels to a class one hazardous landfill. The state will be releasing clean-up requirements for PFAs soon. The life of the project is 40 years; the county needs to be sure it will be compliant and able to meet any PFAS clean up mandates required by the state. Further study is required in this area.

Water Quality. Water Quality could be impacted by the release of teflon contaminants during frequent washings. (See above comments)
This project will drain into the San Joaquin-Tracy sub-basin which is under the jurisdiction of the Central Water Board. Has the Central Water Board been contacted about the project and its potential impacts? If not, why not? Has the Central Water Board examined or commented on storm drainage and other drainage issues concerning the project?

Wildfires. Initial findings fail to address the severity of prevailing winds in the Altamont Pass that frequently reach 40 to 60 miles per hour in the spring, summer and fall. In recent years, these winds have significantly increased in velocity and duration. It is unacceptable to allow the project to use an existing overhead transmission line, and add three new utility poles in this area. The existing line was intended for the limited rural population, not for industrial use. Any new transmission lines must go underground as required by the state due to the occurrence of such lines causing fires in the Tri-Valley. In fact, PG& E was forced to remove miles of overhead lines in South Livermore because the wildfire threat is so great. The county needs to document all the fires that have taken place within a ten mile vicinity of the project in the last ten years.There are no nearby fire stations.

WIND FARMS This area is far better suited to additional wind farms that produce clean energy, can co-exist with grazing year round, and do not pose a fire risk. When expanding the adjacent Haggerty Wind Farm Center, former Supervisor Haggerty said "Wind is the future energy for this area". This alternative must be studied and analyzed more extensively.

Other concerns that need to be addressed:

The loss of farmland and agricultural land/resources.
How does this project conflict with Governor Newsom's 30x30 biodiversity mandate to preserve current agricultural land and open space?
The contract with PG and E is only fifteen years but the project life is 40 years. What happens during the 25 remaining years?
The project should not go forward until the County adopts a Solar Policy indicating the least impact areas for solar projects

Sincerely,

Donna Cabanne
donna.cabanne@gmail.com
bcabanne@comcast.net
please mail me that you have received comments

** This email was sent from an external source. If you do not know the sender, do not click on links or attachments. **

Friends of Livermore
1141 Catalina Drive # 263• Livermore, CA 94550• Phone: 925-963-0136 • E-Mail: d.michael.rounds@gmail.com

Nisha Chauhan Senior Planner
ATTN: Alameda Grant Line Solar Project EIR
Alameda County Community Development Agency
224 W. Winton Ave., Suite 111
Hayward, CA 94544

19 November 2021

Submitted via email to nisha.chauhan@acgov.org

Re.: Soltage Alameda Grant Line Solar 1 EIR

Dear Mr. Chauhan:

Friends of Livermore submit these scoping comments on the proposed Environmental Impact Report for the above referenced project. In addition to topics already checked for environmental analysis in the Notice of Preparation, the following subjects must be addressed.

1. Agriculture and Forestry Resources: The potential cumulative impact on agricultural land of this project must be addressed. This is the first solar power plant proposed for this immediate area. On the Alameda County side of the county line, the surrounding area is mainly in agricultural use (orchards to the north and vacant agricultural land to the south). If this project generates significantly more revenue than current agricultural production, there will be incentive to convert additional agricultural acreage to power plant use. This could result in a significant cumulative loss of productive agricultural land and must be analyzed.

2. Biological Resources: The East Alameda County Conservation Strategy (EACCS) and the East Bay Regional Conservation Investment Strategy (EBRICS) describe the project site as potential habitat for eight (8) special status species: California red-legged frog, Tri-colored blackbird, Western burrowing owl, Swainson's hawk, San Joaquin kit fox, American badger, Golden eagle, and California tiger salamander. These are species threatened with extinction. Protocol level surveys must be carried out for these species at appropriate times of the year and in representative climatological years (e.g. rainfall) to determine presence and potential impacts to these species. The EACCS sets forth acreage mitigation ratios for biological habitat impacts for each of its focal species. These mitigation ratios should be described in the EIR and appropriate mitigation acreages listed for each impacted species. Potential cumulative impacts to special status species and their habitats must also be evaluated. Should solar power generation be more lucrative than current agricultural use leading to additional projects being proposed in this area, cumulative impacts to protected species could be considerable.

3. Land Use and Planning: Section 3.1.3 of the Notice of Preparation describes actions taken by the Planning Commission, Board of Zoning Adjustments, and Board of Supervisors in 2008, 2011, and 2012, respectively, that determined solar facilities to be similar to explicitly listed permitted uses. Were these legislative actions that set countywide policy? If so, were policy level environmental impact reports duly noticed, prepared, and adopted? If the referenced actions dealt only with specific projects on specific parcels, and they were not legislative enactments, what precedent value do they hold for the current project?

Alameda County is currently preparing a countywide solar policy for possible adoption within a year. An Environmental Impact Report for the proposed solar policy is contemplated. The policy may set forth locations where solar photovoltaic projects are permitted and where they are not permitted. Public workshops will be part of the process. This would seem to indicate that a countywide solar policy has not yet been adopted and therefore prior case-by-case decisions are irrelevant to the current project.

Should this project be approved before the solar policy is adopted and it is inconsistent with the adopted policy, it would become a non-conforming use. What are the implications for this project as a non-conforming use? If a significant proportion of the solar arrays were damaged or destroyed, could they be rebuilt or replaced? Could the capacity of the power plant be increased? What other problems would the facility face as a non-conforming use?

We look forward to these subjects being evaluated as part of the EIR as well as others noted in the Notice of Preparation.

Sincerely,

David Rounds,
Friends of Livermore

FRIENDS OF OPEN SPACE AND VINEYARDS

November 19, 2021

VIA EMAIL
Nisha Chauhan Senior Planner
ATTN: Alameda Grant Line Solar 1 Project EIR
Alameda County Community Development Agency
224 W. Winton Avenue, Suite 111
Hayward, CA 94544
nisha.chauhan@acgov.org

Re: Alameda Grant Line Solar 1 Project EIR, PLN2021-00124

Dear Ms. Chauhan:

Friends of Open Space and Vineyards (FOV), a conservation organization based in Livermore, submits the following comments on the scoping of the draft environmental impact report (DEIR) for the Alameda Grant Line Solar 1 Project EIR. FOV was founded in 1981 in an effort to stop uncontrolled residential development from taking over the land in the South Livermore Valley and displacing our local vineyards, wineries, and open space resources. We recognize the need for renewable energy projects, such as solar energy, as a means to address climate change. However, we think that a comprehensive policy must be established by Alameda County before individual projects are considered. In particular, we believe that the need for solar energy must be balanced with the equally important need to protect our open space and environmental values.

Wildfire

In this regard, it is necessary that the DEIR include a discussion of the wildfire risks presented by the proposed project, particularly in light of the proposed project's proximity to the residential areas across the street. Neighboring orchards have the potential to provide significant fuel for wildfires especially in the context of the plan to connect to overhead PG&E power lines, and the DEIR should consider the orchard's proximity when evaluating wildfire risks. Analysis of this risk should be based on maximum wind gusts which can be expected in the area rather than average wind speeds. Average wind speed is not an accurate measure of the risks presented should a fire break out. Wildfire risks should also be quantified in terms of recent weather trends, including the severe drought conditions currently present in California rather then looking purely at historical data which is no longer relevant due to climate change. In addition, annual rainfall levels should be included and year-round fire risks should be evaluated. Mitigation measures, if any, should be thoroughly described.

Biological Resources

A full listing of both plant and animal species which may be found in the proposed project area should be included in the DEIR. This listing should include threatened, endangered, and special status species, as well as species commonly found in the area. Suitability of the

habitat for these species should be thoroughly discussed. Protocol level surveys should be conducted by a qualified biologist. More than one survey should be conducted at different times of day, and at least one survey should be done after a rain event to assess the presence of species that thrive in wet conditions, such as amphibians. Potential risks to plant and animal species due to toxic chemicals from solar panels leeching into the soil should be discussed. Comprehensive mitigation measures should be described, and mitigation should comply with the East Alameda County Conservation Strategy as well as state and federal requirements, including compensatory mitigation, as applicable.

Water

The DEIR should include a discussion of the amount and source of water for the proposed project and the long-term availability of water for the duration of the project. ~~Potential impacts to groundwater supplies due to contamination of the soil from chemicals found in solar cells should be considered.~~

Aesthetic Impacts

When addressing aesthetic impacts, the DEIR should discuss the adequacy of the proposed plastic strip inserts for mitigating visual impacts at differing seasons of the year. Mitigation options using landscaping screening should be included. Visualizations of the proposed project should be provided for illustration of the planned mitigations.

Cumulative Impacts Analysis

The DEIR's cumulative impacts analysis should include a discussion of future development of additional solar and/or battery storage projects in the area, including, but not limited to, any potential projects that County Staff has discussed with developers, even if an application has not yet been filed. Potentially suitable sites should be identified in the vicinity of the proposed project. The amount of additional mega-wattage capacity that could be developed should be discussed. Current land uses on area parcels should be described along with general soil quality, and amount of acreage that could potentially be converted from open space or agriculture to solar. It is important to assess the development potential for solar in the area.

The discussion of cumulative impacts should also include the potential for the addition of battery storage on the site of the proposed project. Although not currently contemplated, the potential to add battery storage capacity at the site was acknowledged at the scoping hearing before the East County Board of Zoning Adjustments on October 28, 2021.

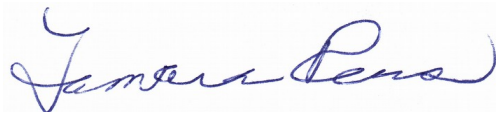
Measure D

The DEIR is required to address the issue of conflict with county policies and land use ordinances. Measure D does not contemplate the use of solar on Large Parcel Agricultural lands, the type of land use involved in the proposed project. Solar Photovoltaics are not utility corridors and are not comparable to windmills which allow for ongoing agricultural uses to operate with minimal disturbance. The County cannot rely on the Planning Commission approval of the Cool Earth Solar Projects in 2012 as precedent for a finding of compatibility. During the Board of Supervisors meetings discussing the final approval of that project it was clearly stated by Supervisor Miley and confirmed by Community Development Director Chris Bazar that the approval was not to serve as precedent for future projects. (See

(https://www.youtube.com/watch?v=nYLmbaLLL0c&t=2s) There is therefore no basis for an argument that solar can be formally considered a compatible use under Measure D notwithstanding the Planning Commission's prior approval of the individual project while acting in its quasi-judicial capacity. The DEIR needs to accurately discuss all pertinent Measure D and East County Area Plan requirements and disclose the incompatibility of the proposed project with the controlling land use provisions.

Thank you for the opportunity to provide input in the EIR scoping process for this project.

Sincerely,



Tamara Reus
President

From: Chauhan, Nisha, CDA
To: Steve Noack; Sean Anayah
Subject: FW: Soltage Solar comment #2
Date: Friday, November 19, 2021 2:34:27 PM

FYI

-----Original Message-----
From: Jean King <whjaking@comcast.net>
Sent: Friday, November 19, 2021 2:30 PM
To: Chauhan, Nisha, CDA <nisha.chauhan@acgov.org>
Cc: Jean King <whjaking@comcast.net>
Subject: Soltage Solar comment

Nisha Chauhan Senior Planner
Alameda County Community Development Agency
224 W. Winton Ave., Suite 111
Hayward, CA 94544

November 19, 2021

Soltage Solar

Mr. Chauhan:,

I ask the County not to consider the Soltage project until they have completed the study, public input and establishment of an Alameda County Solar Policy. Mapping needs to be done of the best location for solar including distributed solar in urban areas on rooftops and parking lots before solar is approved in agricultural/open space areas.

This is agriculture land and removing it from that use should be considered very carefully.

The value of the land as habitat for several threatened species should also be considered..

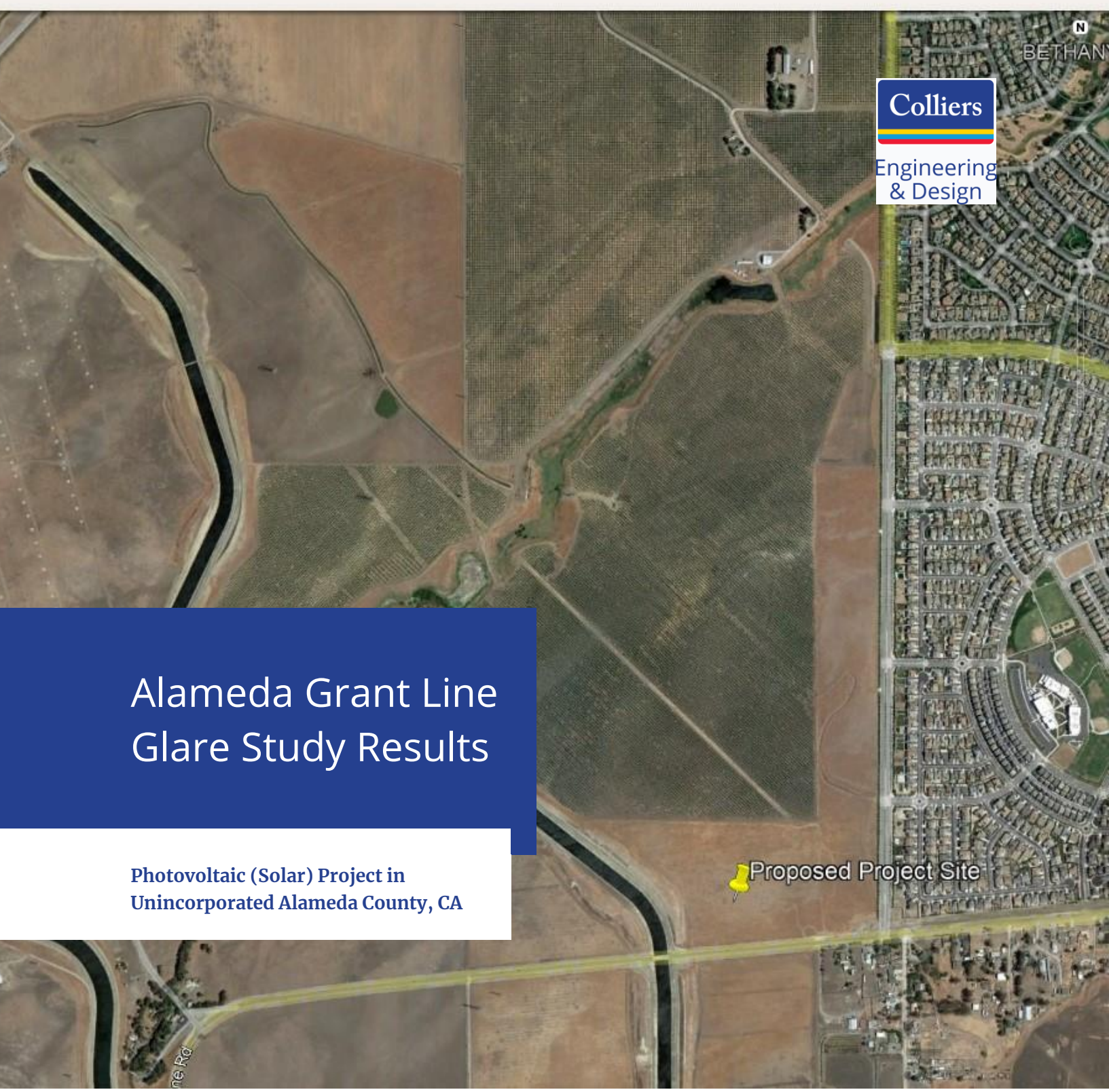
Thank you.

Jean King
4205 Colgate Way
Livermore CA
94550
925-443-0318

** This email was sent from an external source. If you do not know the sender, do not click on links or attachments. **

APPENDIX B

GLARE STUDY



Alameda Grant Line Glare Study Results

Photovoltaic (Solar) Project in Unincorporated Alameda County, CA

October 7, 2021

Prepared for:

SepiSolar
3070 Osgood Court
Fremont, CA 94539

Prepared by:

Elizabeth C. Myers
PMP / Certified Glare Analyst

Colliers Engineering & Design, Inc.
(DBA Maser Consulting)
18 Computer Drive E, Suite 203
Albany New York 12205
Main: 518 807 6164
Colliersengineering.com
Project No. 21005702A

Maser Consulting is now Colliers Engineering & Design

Colliers Engineering & Design

Table of Contents

Results of Glare Study

Methodology

(Source Information: https://forgesolar.com/help/#intro)

Collier's Engineering & Design (CED) offers staff specifically trained on glare analyses utilizing *ForgeSolar*, a web-based interactive software that provides a quantified assessment of (1) when and where glare is predicted to occur throughout the year for a prescribed solar installation, (2) potential effects on the human eye at locations where glare is predicted to occur, and (3) an estimate of the maximum annual energy production. *ForgeSolar* includes *GlareGauge*, a standard solar glare hazard analysis software used in the industry. *ForgeSolar* is based on the Solar Glare Hazard Analysis Tool ("SGHAT") licensed from Sandia National Laboratories. These tools meet the FAA standards for glare analysis.

Determination of glare occurrence requires knowledge of the following: sun position, observer location, and the tilt, orientation, location, extent, and optical properties of the modules in the solar array. Vector algebra is then used to determine if glare is likely to be visible from the prescribed observation points.

If glare is predicted, the software calculates the retinal irradiance and subtended angle (size/distance) of the glare source to predict potential ocular hazards ranging from temporary after-image to more severe possible retinal damage. These results are presented in a simple, easy-to-interpret plot that specifies when glare is predicted to occur throughout the year, with color codes indicating the potential ocular hazard.

It is important to note that within this analysis, the PV array panels are approximated with simplified geometry and that blocking and shading (via buildings, elevation changes, and foliage, etc.) **are not** considered. Additionally, in the modelling scenarios, tracker panels move from their maximum rotation to their resting angle immediately, thus providing a worst case scenario for any predicted glare.

Background Information

Glint is typically defined as a momentary flash of bright light, often caused by a reflection off a moving source. A typical example of glint is a momentary solar reflection from a moving car. Glare is defined as a continuous source of bright light. Glare is generally associated with stationary objects, which, due to the slow relative movement of the sun, reflect sunlight for a longer duration.

The difference between glint and glare is duration. Industry-standard glare analysis tools evaluate the occurrence of glare on a minute-by-minute basis; accordingly, they generally refer to solar hazards as 'glare.'

The ocular impact of solar glare is quantified into three categories (Ho, 2011[1]):

- Green - Low potential to cause after-image (flash blindness).
- Yellow - Potential to cause temporary after-image.
- Red - Potential to cause retinal burn (permanent eye damage).

These categories assume a typical blink response in the observer.

Note that retinal burn is typically not possible for PV glare since PV modules do not focus reflected sunlight.

The ocular impact of glare is visualized with the Glare Hazard Plot. This chart displays the ocular impact as a function of glare subtended source angle and retinal irradiance. Each minute of glare is displayed on the chart as a small circle in its respective hazard zone.

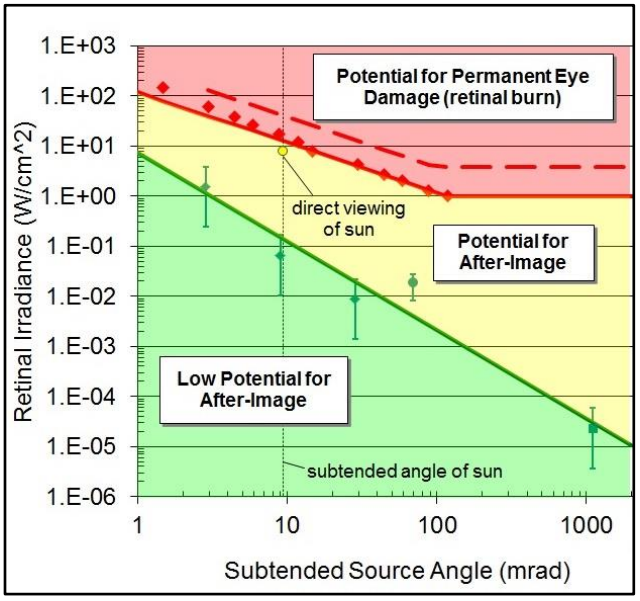


Figure 1 – From ForgeSolar website (Sample glare hazard plot defining ocular impact as function of retinal irradiance and subtended source angle (Ho, 2011)

Executive Summary

The purpose of the requested glare study was to closely examine a proposed solar project in Unincorporated Alameda County, CA at the corner of Great Valley Parkway and Grant Line Road to provide detailed feedback regarding areas that may warrant closer boots-on-the-ground examination in order to mitigate possible problematic glare to the businesses, residences, and roads surrounding the project area.

Twelve (12) Observation Points were placed at different points around the site and programmed to an average height of 5 and a half (5.5) feet to model an average-sized person standing in these spots, and to a height of 15 feet to model a 5.5-foot person standing on the second floor of a home/business with 8-foot ceilings and a 1.5-foot plenum space.

Route Receptors (labeled Routes 1 through 4) were programmed for two-way traffic to heights of 4.25 feet and 8.5 feet, effectively representing the eyeline of an average person sitting on/in any vehicle from a bike to a motorcycle, a standard car or SUV, through to the approximated height of the cab of an 18-wheeler truck. In this study, Routes 1-2 run to the East and West, and Routes 4-5 run to the North and South.

PV modules do not focus reflected sunlight and therefore retinal burn is typically not possible. Rather, the glare we look to identify is much like sunrise and sunset glare for drivers who struggle to find the perfect angle for their car visors so they can continue to operate their vehicle safely while traveling through areas of such glare.

In general, photovoltaic panel systems of any size produce some glare predominately during early sunrise and sunset throughout the Spring through Fall months—although glare is possible throughout each day as well as throughout the entire year. While it is impossible to study every possible point and/or angle surrounding a photovoltaic (solar) project, Collier's Engineering & Design (CED) has modeled the project and surrounding areas as best as possible with the most likely points of concern.

Again, scenarios that were programmed for the area include:

- The eye-line of a 5 and a half-foot person.
- The eye-line of a 5 and a half-foot person standing in a second floor window of a buiding with 8-foot ceilings and a 1.5 foot plenum space between floors (15 feet).
- An average-height person sitting in a car (4.5 feet).
- An average-height person sitting in the cab of an 18-wheeler truck (8.5 feet).

It is noted again here that the *ForgeSolar* program does not factor any obstructions into the results and the tracking panels move from their maximum rotation to their resting angle immediately; thus providing a worst-case scenario.

Colliers Engineering & Design then cross-checked results for the tracker panels set at a 0-resting angle, a number of other resting angles, and the same panels resting at their maximum tracking angle (60 degrees) from sunset to sunrise. These reports are all included in the Appendix of this report.

After examining each point and then factoring in buildings, foliage and elevation changes, points where predicted glare is blocked by these natural obstructions were removed from the listing of points to be examined more closely. Finally, where glare was predicted, this analyst will address the areas that present the most possibility for likely glare.

Information was provided by the client and their representatives in order to complete this study. The project's single-axis tracker panels were programmed facing south at 180° with a maximum tracking angle of 60-degrees, a resting angle of 0-degrees, and an assumed midpoint height of 7 feet from the ground. It was further assumed that these panels are constructed of Smooth Glass with an Anti-Reflective coating. Additionally, the owner/developer is installing a 7-foot-high fence with tan slatting around the perimeter of the project. This additional obstruction was also considered when preparing the results of this study.

ASSUMPTIONS

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.*
- Tracker panel settings move from maximum tracking angle to resting angle immediately, thus providing a worst-case scenario for any predicted glare.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.

Results & Recommendations

The analysis that Collier's Engineering & Design performed on the proposed solar project in Unincorporated Alameda County, CA at the corner of Great Valley Parkway and Grant Line Road, resulted in very little predicted glare even in the "worst case scenario" programmed for the study.

At a zero-degree system resting angle, a number of Observation Point (OP)/Route combinations in the attached reporting and in Appendix A show either low-grade GREEN or low-grade YELLOW glare. A crosscheck of the results with other resting angle scenarios shows that at an angle of 2 degrees or higher, no glare is predicted whatsoever.

The results returned by this study show that any low-grade glare resulting from a system with a resting angle of 0-degrees will still have little to no impact on the surrounding area because observation points/routes are either a) below the height of the panels because of elevation changes and therefore any predicted glare will be thrown over programmed observation points/routes, or b) the observation point/route has clearly observed obstructions (foliage, buildings and/or other) between the array and the study point.

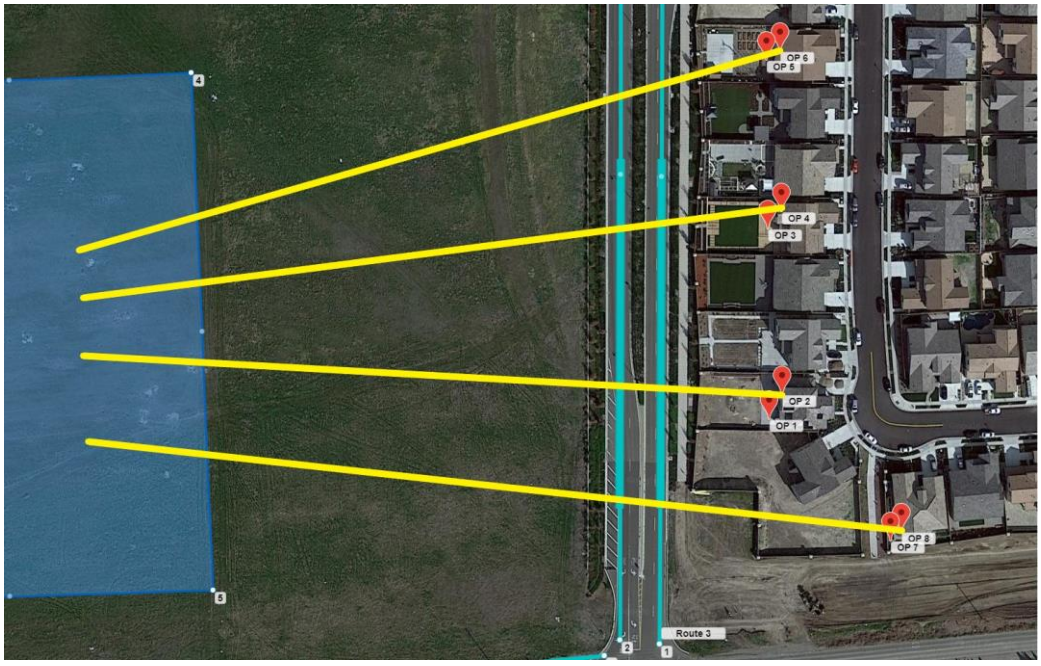
Summary of Areas of Predicted Glare

Below is a graphical summary of areas within the project where glare is a predicted possibility in the modelling, but likely not so in real world circumstances.

Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.

OPs 2/4/6/8 at 15 Feet

Though 10-12 minutes of low-grade YELLOW glare is predicted between approximately 5 PM and 7 PM* at differing times throughout the year, each 15-foot obseravation point is well below the base elevation of where panels will be installed. Any predicted glare will be thrown over these points once elevations are factored into the results.




Proposed Project Site
Google Ear

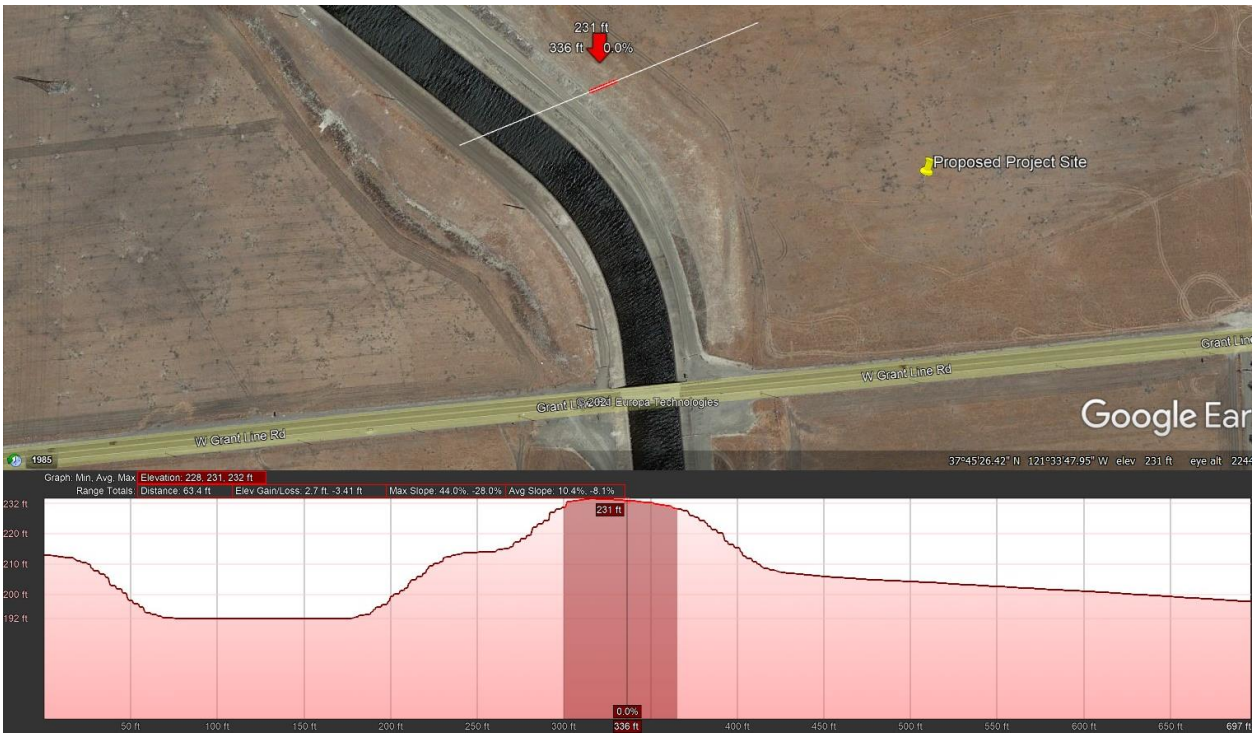

Proposed Project Site
Google Ear

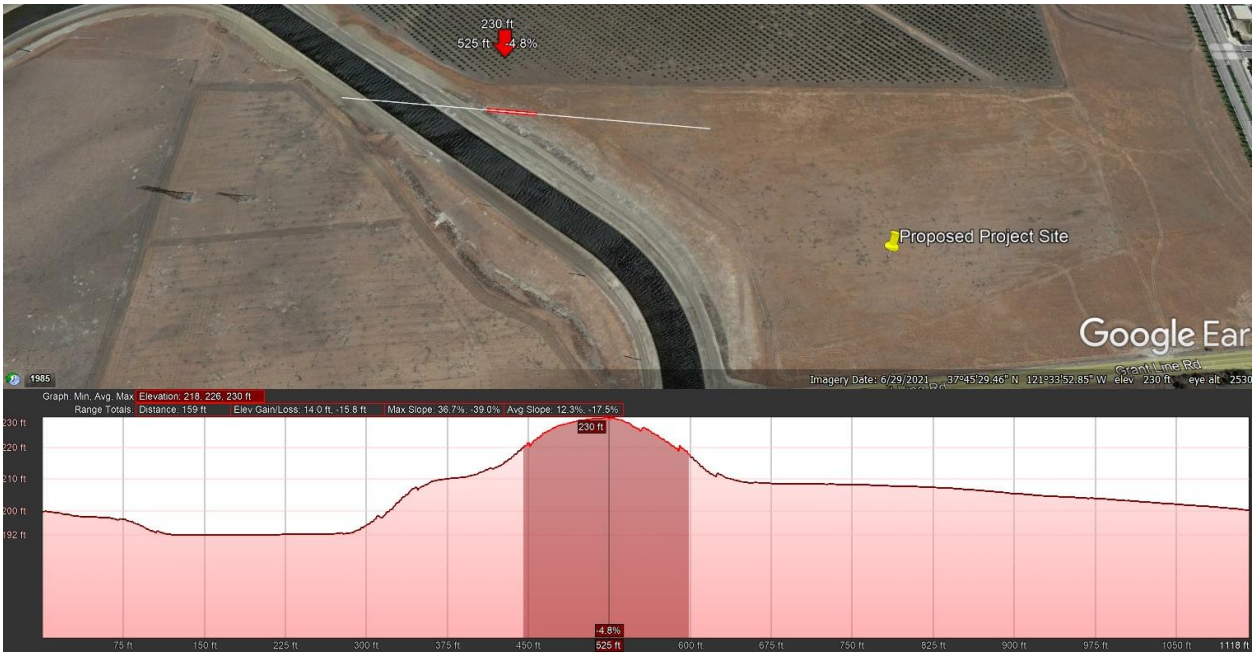

Proposed Project Site
Google Ear

OPs 11/12 at 5.5 Feet

Though 7-10 minutes of low-grade YELLOW glare is predicted between approximately 5 AM and 6 AM* from early-April through early-September each 5.5-foot obseravation point sits beyond a 20-foot rise in elevation at the far bank of what seems to be a local man-made waterway.

Predicted glare at these points will be effectively blocked by this elevation obstruction.


231 ft
336 ft 0.0%
Proposed Project Site
W Grant Line Rd
Grant Line Rd
Google Ear
Graph. Min. Avg. Max Elevation: 228, 231, 232 ft
Range Totals: Distance: 63.4 ft Elev Gain/Loss: 2.7 ft, -3.41 ft Max Slope: 44.0%, -28.0% Avg Slope: 10.4%, -8.1%
232 ft
220 ft
210 ft
200 ft
192 ft
231 ft
0.0%
336 ft
50 ft
100 ft
150 ft
200 ft
250 ft
300 ft
400 ft
450 ft
500 ft
550 ft
600 ft
650 ft
697 ft


230 ft
525 ft -4.8%
Proposed Project Site
Google Ear
Grant Line Rd
Graph. Min. Avg. Max Elevation: 218, 226, 230 ft
Range Totals: Distance: 159 ft Elev Gain/Loss: 14.0 ft, -15.8 ft Max Slope: 36.7%, -39.0% Avg Slope: 12.3%, -17.5%
230 ft
210 ft
192 ft
230 ft
-4.8%
525 ft
75 ft
150 ft
225 ft
300 ft
375 ft
450 ft
600 ft
675 ft
750 ft
825 ft
900 ft
975 ft
1050 ft
1118 ft

Route 1 at 4.5 Feet / Route 2 at 8.5 Feet

The routes that run east and west to the south of the project.

Though 7-10 minutes of low-grade YELLOW glare is predicted daily between approximately 4:45 AM and 6 AM* from early-April through early-September, a closer look at elevation changes throughout the project facing these routes shows that the panel area sits beyond the rise of the far bank of the man-made waterway between points further from the project area and the route.

Panel areas of the project that are closer to the route sit at least 5-feet below installation grade. Between base elevation and the height of the racking the panels will be installed on, as well as the proposed fencing with tan slatting that has been proposed by the owner/developer, the predicted glare along this route should be effectively blocked by these real world circumstances.

Conclusion

The analysis that Collier's Engineering & Design performed on the proposed solar project in Unincorporated Alameda County, CA at the corner of Great Valley Parkway and Grant Line Road, resulted in very little predicted glare even in the "worst case scenario" programmed for the study.

The results returned by this study show that any low-grade glare resulting from a system with a resting angle of 0-degrees will still have little to no impact on the surrounding area because observation points/routes are either a) below the height of the panels because of elevation changes and therefore any predicted glare will be thrown over programmed observation points/routes, or b) the observation point/route has clearly observed obstructions (foliage, buildings and/or other) between the array and the study point.

Please feel free to contact me if you would like to go over these results or if you have any additional questions.

Sincerely,

Colliers Engineering & Design, Inc.
(DBA Maser Consulting)

Elizabeth Claire Myers, PMP
Project Manager, Electrical Engineering
Certified Glare Analyst through Sims Industries

cc: Craig Zeidman, Colliers Engineering & Design (via email)

R:\Projects\2021\21005702A\21005702A_AlamedaGrantLine_GlareStudyResults_FINAL_UPDATED.docx

Additional Resources and Information

[1] Ho, C. K., Ghanbari, C. M., and Diver, R. B., 2011, Methodology to Assess Potential Glint and Glare Hazards From Concentrating Solar Power Plants: Analytical Models and Experimental Validation, *ASME J. Sol. Energy Eng., 133*.

Solar Glare Hazard Analysis Tool (SGHAT) Technical Reference Manual
https://forgesolar.com/static/docs/SGHAT_Technical_Reference-v6.pdf

Colliers
Engineering
& Design

Appendix

Appendix A | Detailed Glare Study Result Reports

The following pages are the full reporting results delivered directly from *ForgeSolar*.

Colliers Engineering & Design

Colliers Engineering & Design is a trusted provider of multi-discipline engineering, design and consulting services providing customized solutions for public and private clients through a network of offices nationwide.

For a full listing of our office locations, please visit colliersengineering.com

1 877 627 3772

Civil/Site • Traffic/Transportation • Governmental • Survey/Geospatial
Infrastructure • Geotechnical/Environmental • Telecommunications • Utilities/Energy

Alameda Grant Line: SC-000099

Alameda_OPs and Routes 1_0Resting

Created Sept. 23, 2021
Updated Oct. 6, 2021
Time-step 1 minute
Timezone offset UTC-8
Site ID 59083.10515

Project type Advanced
Project status: active
Category 1 MW to 5 MW

Misc. Analysis Settings

DNI: **varies (1,000.0 W/m^2 peak)**
Ocular transmission coefficient: **0.5**
Pupil diameter: **0.002 m**
Eye focal length: **0.017 m**
Sun subtended angle: **9.3 mrad**

Analysis Methodologies:
- Observation point: **Version 2**
- 2-Mile Flight Path: **Version 2**
- Route: **Version 2**

Summary of Results Glare with potential for temporary after-image predicted

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	SA tracking	SA tracking	4	12,052	-

Component Data

PV Array(s)

Total PV footprint area: 14.0 acres

Name: PV array 1
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 0.0 deg
Footprint area: 14.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

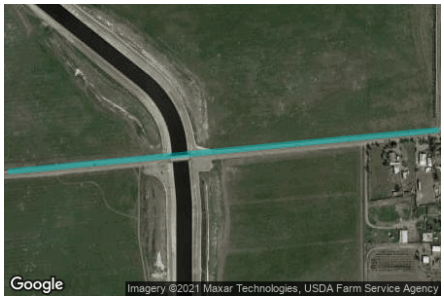
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.758259	-121.562959	201.24	7.00	208.24
2	37.758289	-121.560417	181.36	7.00	188.36
3	37.757907	-121.560390	189.42	7.00	196.42
4	37.757954	-121.558957	181.16	7.00	188.16
5	37.756346	-121.558872	173.87	7.00	180.87
6	37.756308	-121.560470	191.62	7.00	198.62
7	37.756711	-121.560460	193.97	7.00	200.97
8	37.756660	-121.561795	205.68	7.00	212.68
9	37.757462	-121.562519	202.65	7.00	209.65
10	37.757712	-121.562959	204.41	7.00	211.41
11	37.757742	-121.563034	204.98	7.00	211.98
12	37.758268	-121.563034	201.88	7.00	208.88

Route Receptor(s)

Name: Route 1
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.756033	-121.557396	160.43	4.50	164.93
2	37.755286	-121.566688	230.10	4.50	234.60

Name: Route 2
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.755422	-121.566752	230.20	8.50	238.70
2	37.756143	-121.557332	159.48	8.50	167.98

Name: Route 3
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.756179	-121.557115	157.93	4.50	162.43
2	37.759084	-121.557099	139.29	4.50	143.79

Name: Route 4
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.759084	-121.557265	142.39	8.50	150.89
2	37.756191	-121.557271	159.40	8.50	167.90

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 1	37.756877	-121.556682	150.70	5.50	156.20
OP 2	37.756953	-121.556631	150.35	15.00	165.35
OP 3	37.757469	-121.556687	146.82	5.50	152.32
OP 4	37.757522	-121.556634	146.42	15.00	161.42
OP 5	37.757993	-121.556694	142.62	5.50	148.12
OP 6	37.758021	-121.556641	142.24	15.00	157.24
OP 7	37.756500	-121.556206	150.33	5.50	155.83
OP 8	37.756528	-121.556163	149.93	15.00	164.93
OP 9	37.755782	-121.558319	163.58	5.50	169.08
OP 10	37.755744	-121.558319	163.62	15.00	178.62
OP 11	37.756987	-121.564131	204.78	5.50	210.28
OP 12	37.758578	-121.566630	197.81	5.50	203.31

Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	4	12,052	-	-

Distinct glare per month

Excludes overlapping glare from PV array for multiple receptors at matching time(s)

PV	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
pv-array-1 (green)	0	0	0	0	0	0	0	0	0	0	0	0
pv-array-1 (yellow)	223	258	382	479	603	650	641	543	411	325	253	170

PV & Receptor Analysis Results

Results for each PV array and receptor

PV array 1 potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	0	2275
OP: OP 3	0	0
OP: OP 4	0	1626
OP: OP 5	0	0
OP: OP 6	0	1237
OP: OP 7	0	0
OP: OP 8	0	1854
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	1832
OP: OP 12	0	574
Route: Route 1	2	1314
Route: Route 2	2	1340
Route: Route 3	0	0
Route: Route 4	0	0

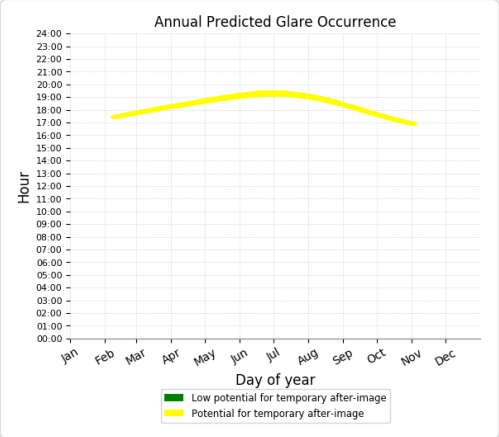
PV array 1 - OP Receptor (OP 1)

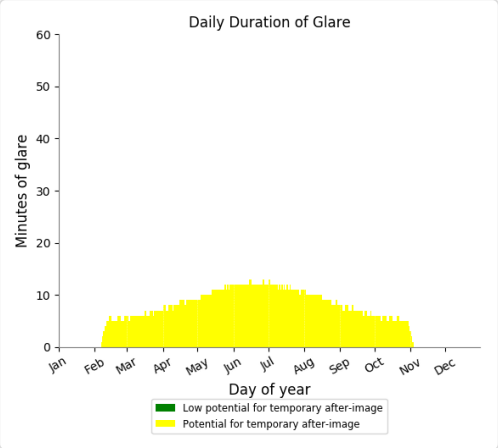
No glare found

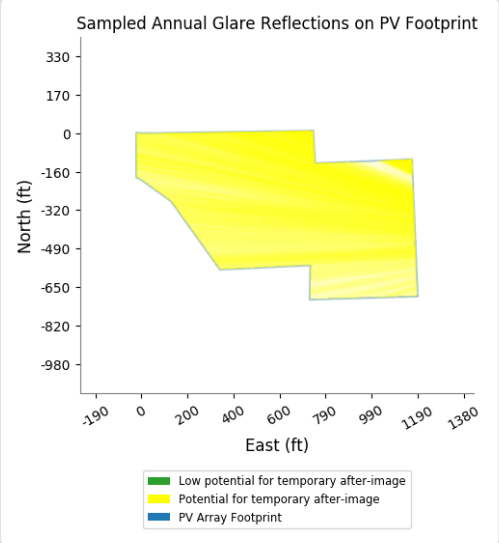
PV array 1 - OP Receptor (OP 2)

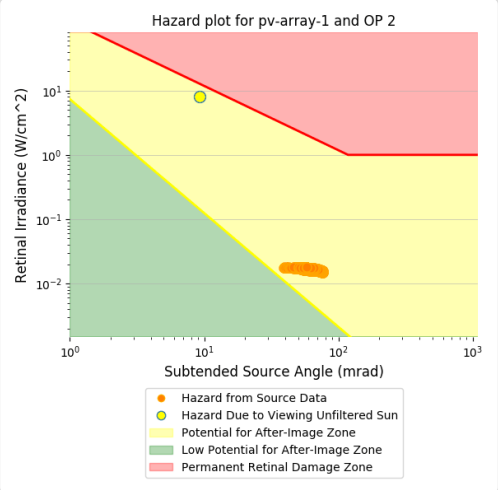
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 2,275 minutes of "yellow" glare with potential to cause temporary after-image.









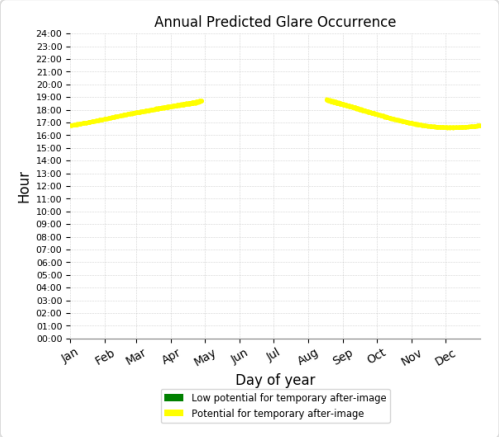
PV array 1 - OP Receptor (OP 3)

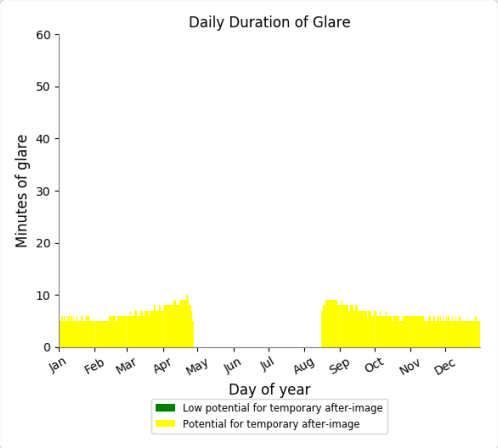
No glare found

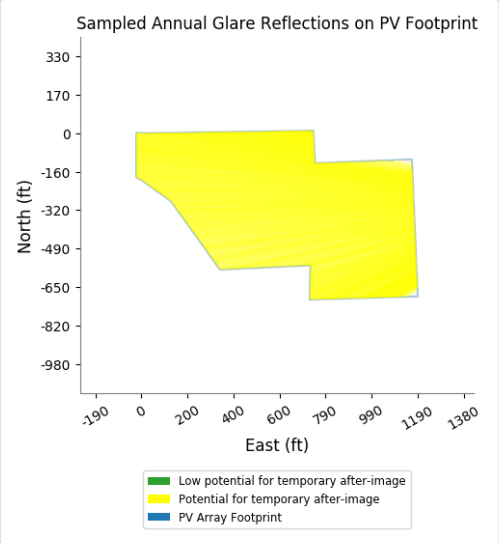
PV array 1 - OP Receptor (OP 4)

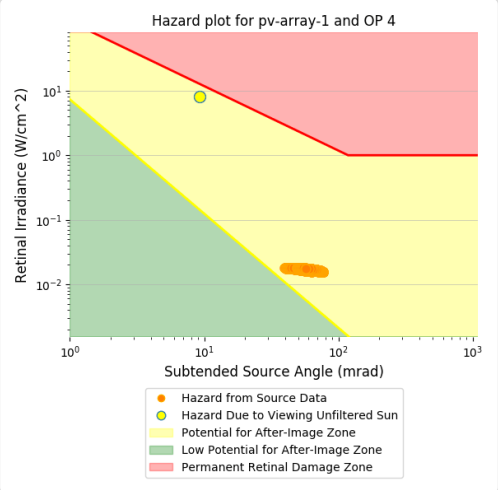
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,626 minutes of "yellow" glare with potential to cause temporary after-image.









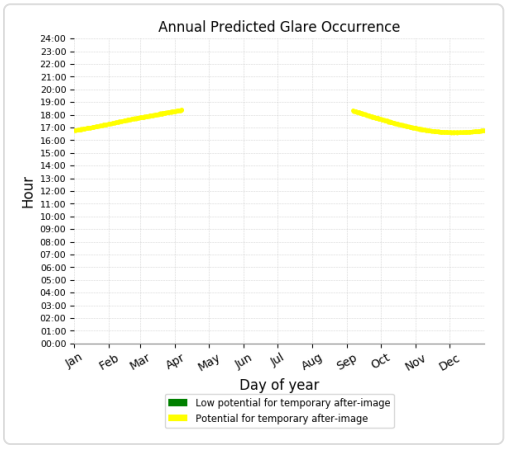
PV array 1 - OP Receptor (OP 5)

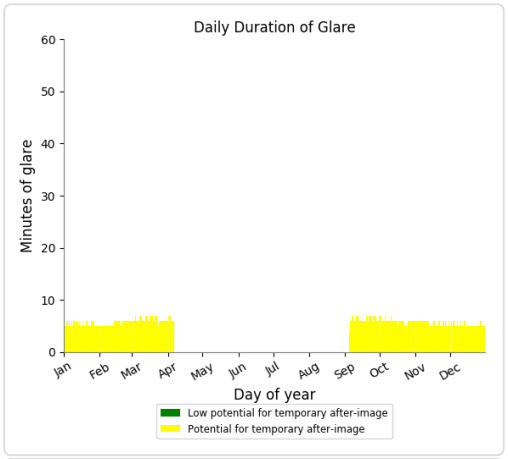
No glare found

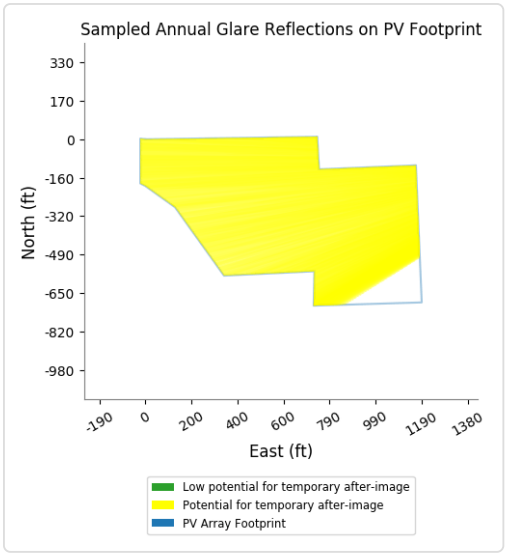
PV array 1 - OP Receptor (OP 6)

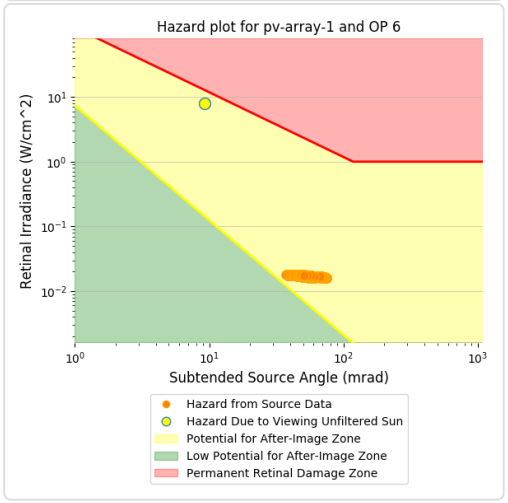
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,237 minutes of "yellow" glare with potential to cause temporary after-image.









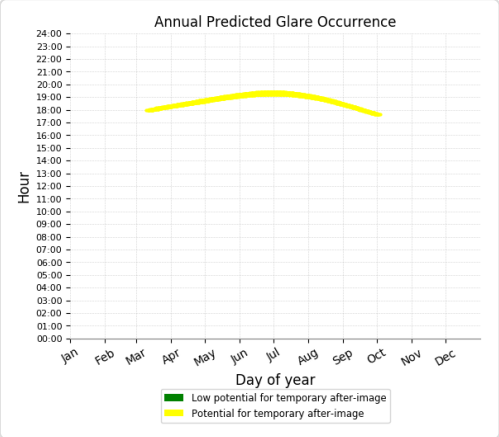
PV array 1 - OP Receptor (OP 7)

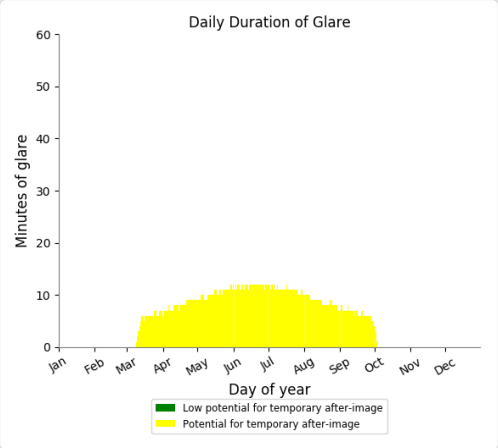
No glare found

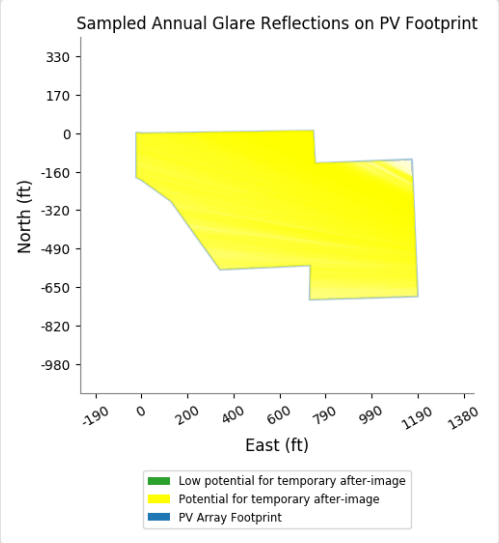
PV array 1 - OP Receptor (OP 8)

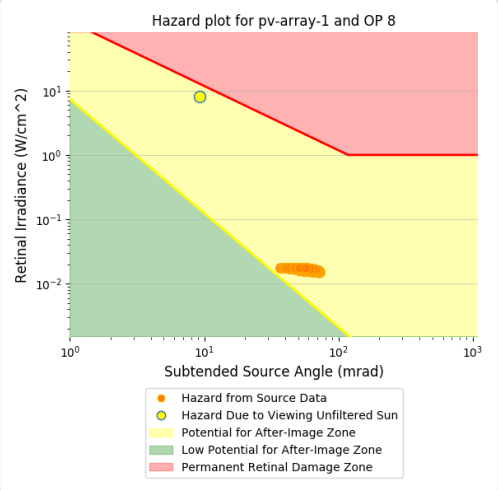
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,854 minutes of "yellow" glare with potential to cause temporary after-image.









PV array 1 - OP Receptor (OP 9)

No glare found

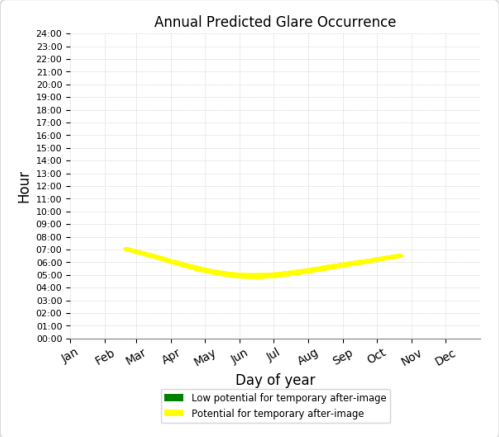
PV array 1 - OP Receptor (OP 10)

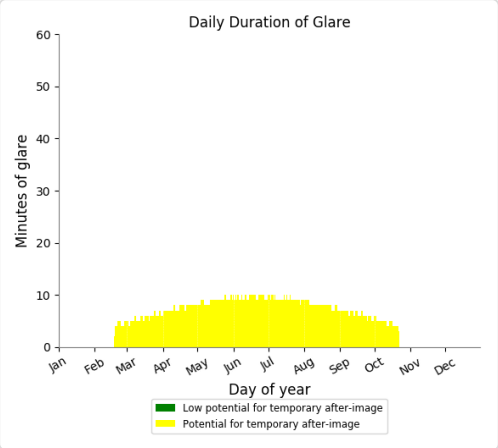
No glare found

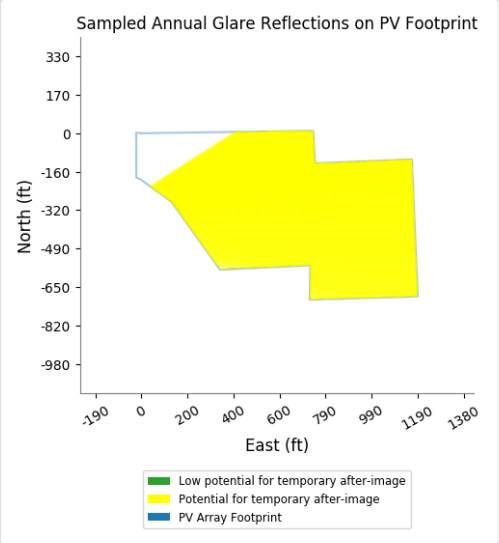
PV array 1 - OP Receptor (OP 11)

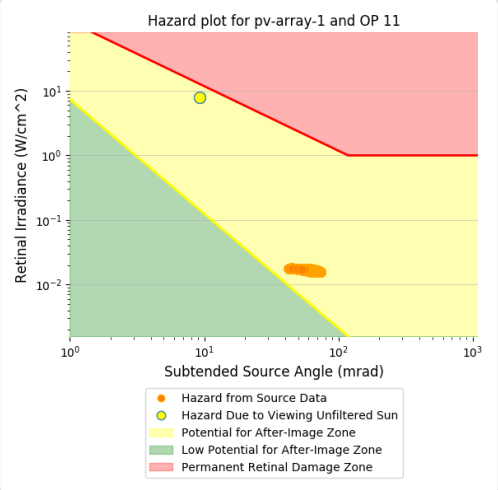
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 1,832 minutes of "yellow" glare with potential to cause temporary after-image.





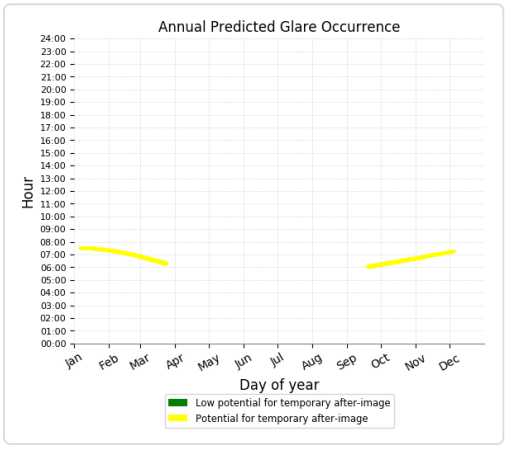


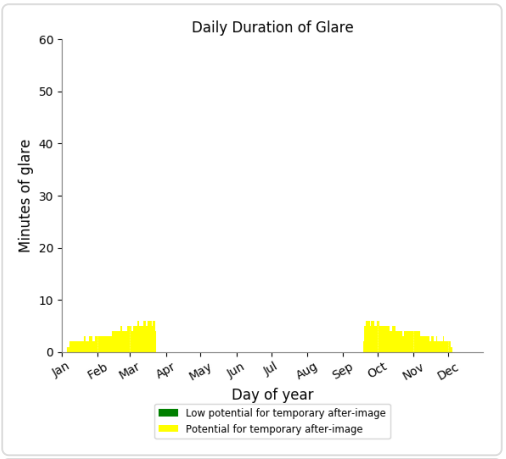


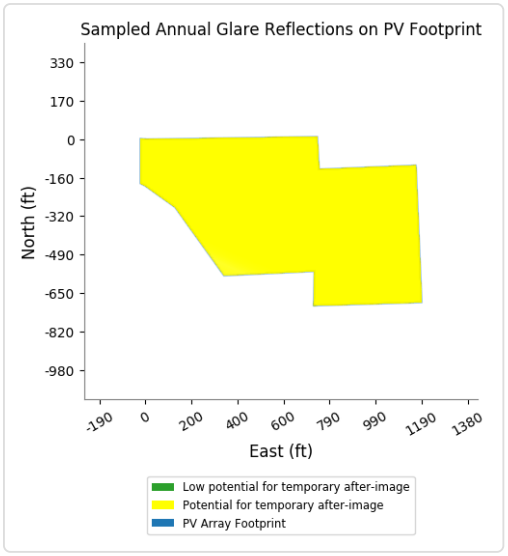
PV array 1 - OP Receptor (OP 12)

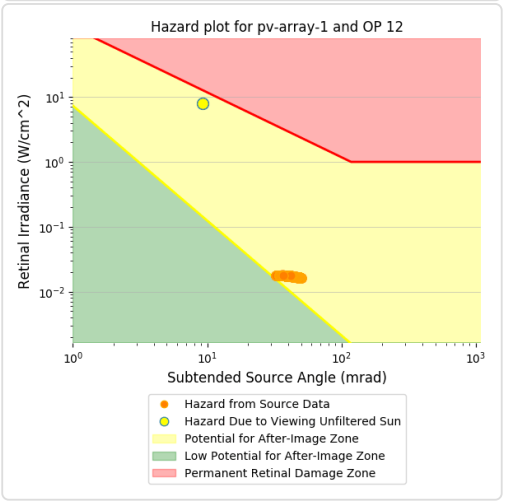
PV array is expected to produce the following glare for receptors at this location:

- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 574 minutes of "yellow" glare with potential to cause temporary after-image.





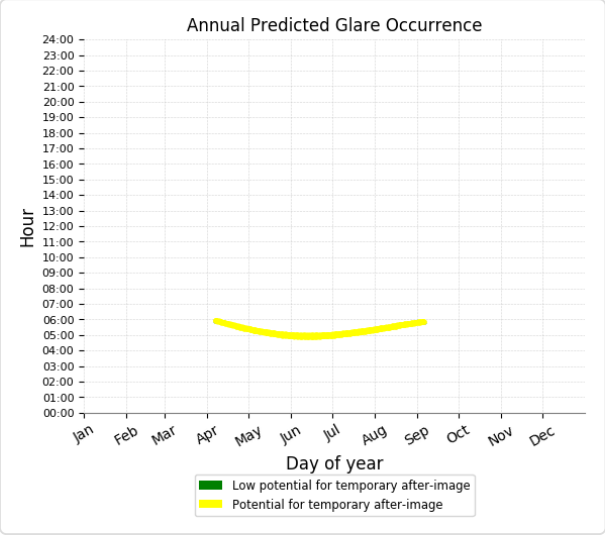


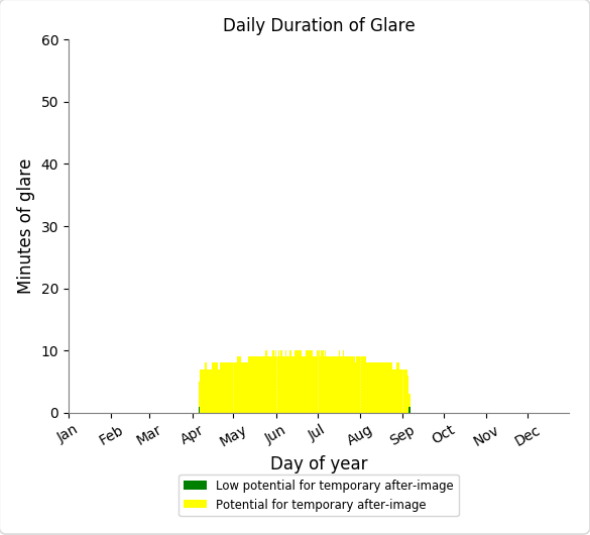


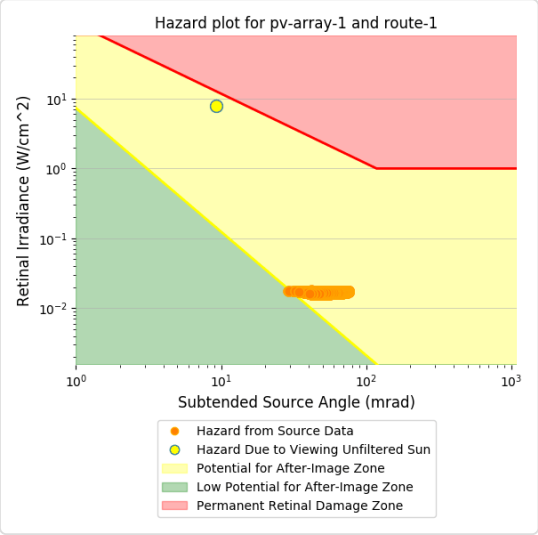
PV array 1 - Route Receptor (Route 1)

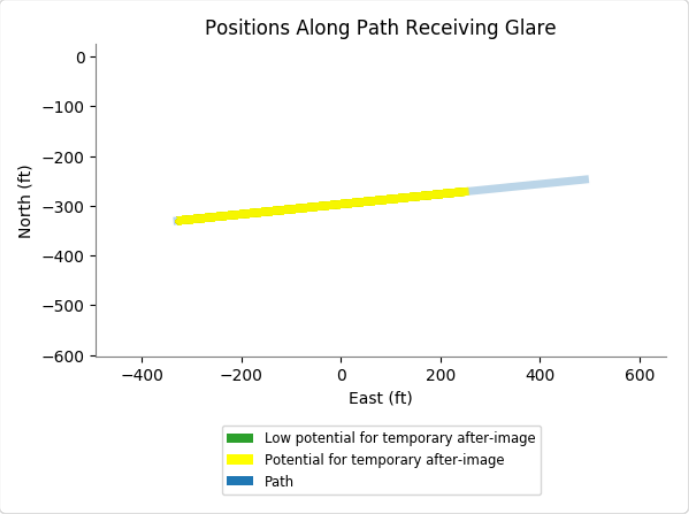
PV array is expected to produce the following glare for receptors at this location:

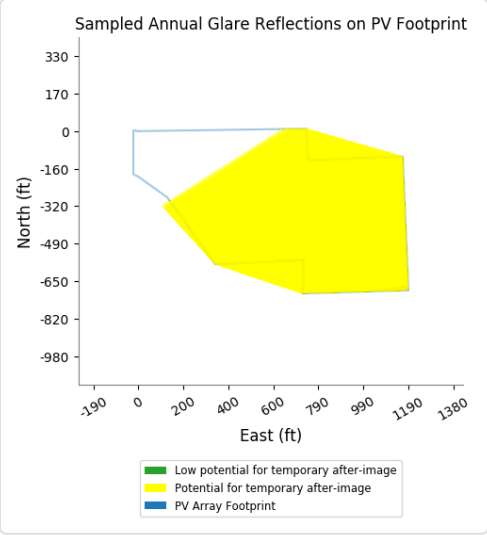
- 2 minutes of "green" glare with low potential to cause temporary after-image.
- 1,314 minutes of "yellow" glare with potential to cause temporary after-image.







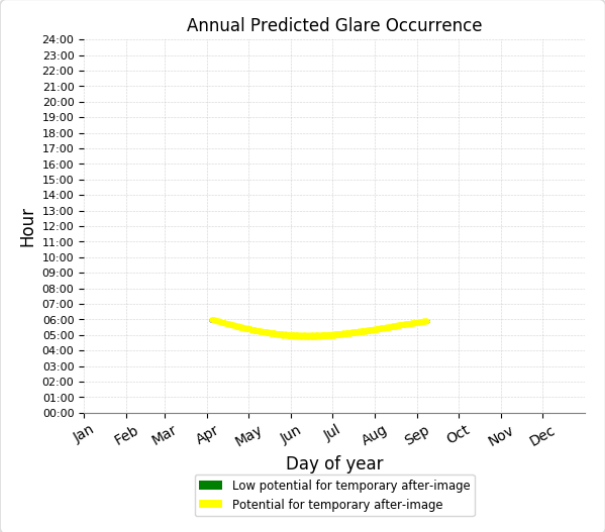


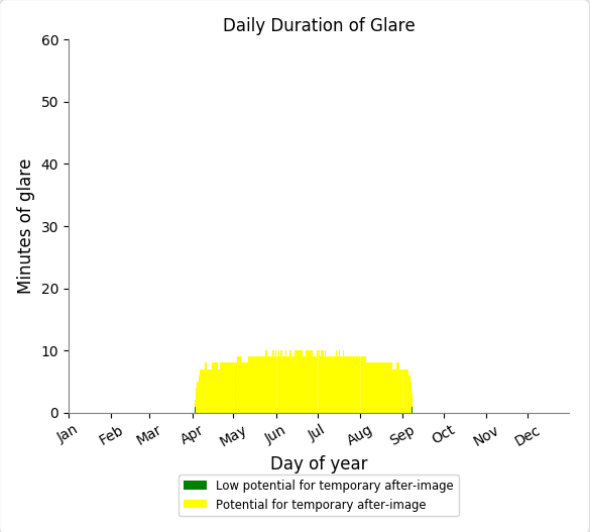


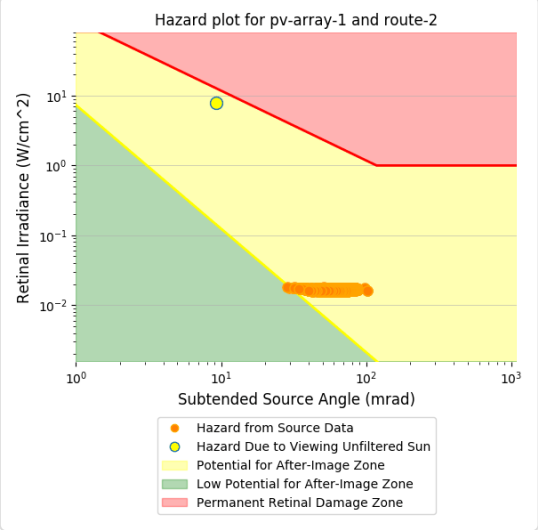
PV array 1 - Route Receptor (Route 2)

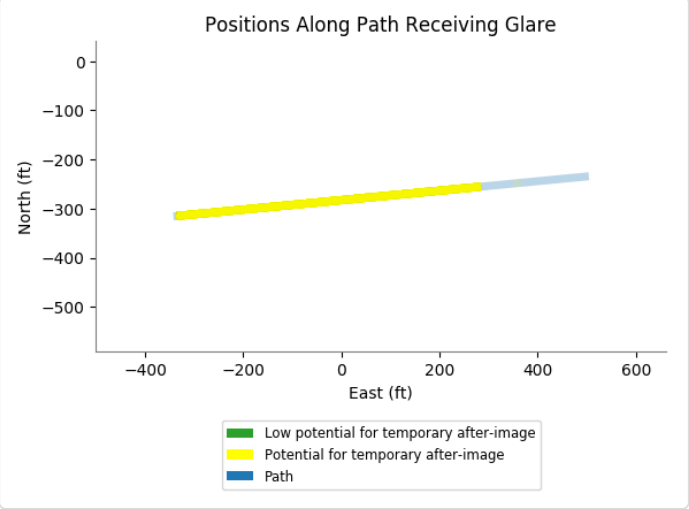
PV array is expected to produce the following glare for receptors at this location:

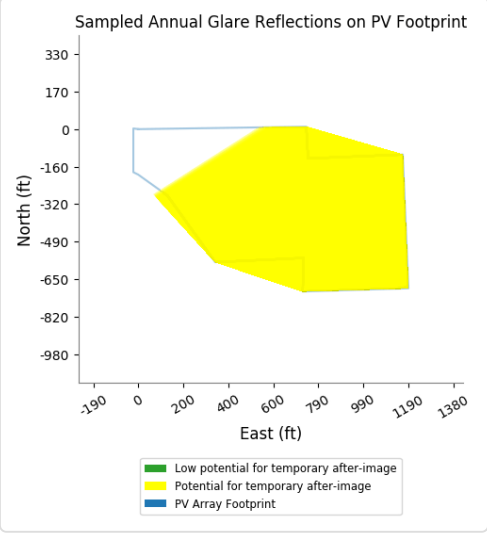
- 2 minutes of "green" glare with low potential to cause temporary after-image.
- 1,340 minutes of "yellow" glare with potential to cause temporary after-image.











PV array 1 - Route Receptor (Route 3)

No glare found

PV array 1 - Route Receptor (Route 4)

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

Alameda Grant Line: SC-000099

Alameda_OPs and Routes 1_2Resting

Created Oct. 5, 2021
Updated Oct. 6, 2021
Time-step 1 minute
Timezone offset UTC-8
Site ID 59534.10515

Project type Advanced
Project status: active
Category 1 MW to 5 MW

Misc. Analysis Settings

DNI: **varies (1,000.0 W/m^2 peak)**
Ocular transmission coefficient: **0.5**
Pupil diameter: **0.002 m**
Eye focal length: **0.017 m**
Sun subtended angle: **9.3 mrad**

Analysis Methodologies:
- Observation point: **Version 2**
- 2-Mile Flight Path: **Version 2**
- Route: **Version 2**

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Total PV footprint area: 14.0 acres

Name: PV array 1
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 2.0 deg
Footprint area: 14.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

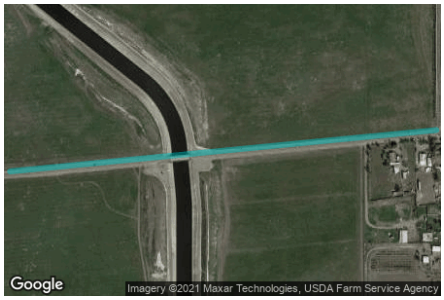
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.758259	-121.562959	201.24	7.00	208.24
2	37.758289	-121.560417	181.36	7.00	188.36
3	37.757907	-121.560390	189.42	7.00	196.42
4	37.757954	-121.558957	181.16	7.00	188.16
5	37.756346	-121.558872	173.87	7.00	180.87
6	37.756308	-121.560470	191.62	7.00	198.62
7	37.756711	-121.560460	193.97	7.00	200.97
8	37.756660	-121.561795	205.68	7.00	212.68
9	37.757462	-121.562519	202.65	7.00	209.65
10	37.757712	-121.562959	204.41	7.00	211.41
11	37.757742	-121.563034	204.98	7.00	211.98
12	37.758268	-121.563034	201.88	7.00	208.88

Route Receptor(s)

Name: Route 1
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.756033	-121.557396	160.43	4.50	164.93
2	37.755286	-121.566688	230.10	4.50	234.60

Name: Route 2
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.755422	-121.566752	230.20	8.50	238.70
2	37.756143	-121.557332	159.48	8.50	167.98

Name: Route 3
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.756179	-121.557115	157.93	4.50	162.43
2	37.759084	-121.557099	139.29	4.50	143.79

Name: Route 4
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.759084	-121.557265	142.39	8.50	150.89
2	37.756191	-121.557271	159.40	8.50	167.90

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 1	37.756877	-121.556682	150.70	5.50	156.20
OP 2	37.756953	-121.556631	150.35	15.00	165.35
OP 3	37.757469	-121.556687	146.82	5.50	152.32
OP 4	37.757522	-121.556634	146.42	15.00	161.42
OP 5	37.757993	-121.556694	142.62	5.50	148.12
OP 6	37.758021	-121.556641	142.24	15.00	157.24
OP 7	37.756500	-121.556206	150.33	5.50	155.83
OP 8	37.756528	-121.556163	149.93	15.00	164.93
OP 9	37.755782	-121.558319	163.58	5.50	169.08
OP 10	37.755744	-121.558319	163.62	15.00	178.62
OP 11	37.756987	-121.564131	204.78	5.50	210.28
OP 12	37.758578	-121.566630	197.81	5.50	203.31

Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	0	0	-	

PV & Receptor Analysis Results

Results for each PV array and receptor

PV array 1 no glare found

Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
Route: Route 1	0	0
Route: Route 2	0	0
Route: Route 3	0	0
Route: Route 4	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

Alameda Grant Line: SC-000099

Alameda_OPs and Routes 1_60Resting

Created Sept. 23, 2021
Updated Oct. 6, 2021
Time-step 1 minute
Timezone offset UTC-8
Site ID 59081.10515

Project type Advanced
Project status: active
Category 1 MW to 5 MW

Misc. Analysis Settings

DNI: **varies (1,000.0 W/m^2 peak)**
Ocular transmission coefficient: **0.5**
Pupil diameter: **0.002 m**
Eye focal length: **0.017 m**
Sun subtended angle: **9.3 mrad**

Analysis Methodologies:
- Observation point: **Version 2**
- 2-Mile Flight Path: **Version 2**
- Route: **Version 2**

Summary of Results No glare predicted!

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
PV array 1	SA tracking	SA tracking	0	0	-

Component Data

PV Array(s)

Total PV footprint area: 14.0 acres

Name: PV array 1
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 60.0 deg
Resting angle: 60.0 deg
Footprint area: 14.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad

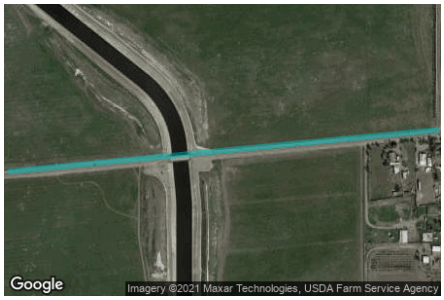
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.758259	-121.562959	201.24	7.00	208.24
2	37.758289	-121.560417	181.36	7.00	188.36
3	37.757907	-121.560390	189.42	7.00	196.42
4	37.757954	-121.558957	181.16	7.00	188.16
5	37.756346	-121.558872	173.87	7.00	180.87
6	37.756308	-121.560470	191.62	7.00	198.62
7	37.756711	-121.560460	193.97	7.00	200.97
8	37.756660	-121.561795	205.68	7.00	212.68
9	37.757462	-121.562519	202.65	7.00	209.65
10	37.757712	-121.562959	204.41	7.00	211.41
11	37.757742	-121.563034	204.98	7.00	211.98
12	37.758268	-121.563034	201.88	7.00	208.88

Route Receptor(s)

Name: Route 1
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.756033	-121.557396	160.43	4.50	164.93
2	37.755286	-121.566688	230.10	4.50	234.60

Name: Route 2
Route type Two-way
View angle: 50.0 deg



Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.755422	-121.566752	230.20	8.50	238.70
2	37.756143	-121.557332	159.48	8.50	167.98

Name: Route 3
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.756179	-121.557115	157.93	4.50	162.43
2	37.759084	-121.557099	139.29	4.50	143.79

Name: Route 4
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	37.759084	-121.557265	142.39	8.50	150.89
2	37.756191	-121.557271	159.40	8.50	167.90

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 1	37.756877	-121.556682	150.70	5.50	156.20
OP 2	37.756953	-121.556631	150.35	15.00	165.35
OP 3	37.757469	-121.556687	146.82	5.50	152.32
OP 4	37.757522	-121.556634	146.42	15.00	161.42
OP 5	37.757993	-121.556694	142.62	5.50	148.12
OP 6	37.758021	-121.556641	142.24	15.00	157.24
OP 7	37.756500	-121.556206	150.33	5.50	155.83
OP 8	37.756528	-121.556163	149.93	15.00	164.93
OP 9	37.755782	-121.558319	163.58	5.50	169.08
OP 10	37.755744	-121.558319	163.62	15.00	178.62
OP 11	37.756987	-121.564131	204.78	5.50	210.28
OP 12	37.758578	-121.566630	197.81	5.50	203.31

Summary of PV Glare Analysis

PV configuration and total predicted glare

PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced	Data File
	deg	deg	min	min	kWh	
PV array 1	SA tracking	SA tracking	0	0	-	

PV & Receptor Analysis Results

Results for each PV array and receptor

PV array 1 no glare found

Component	Green glare (min)	Yellow glare (min)
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
OP: OP 5	0	0
OP: OP 6	0	0
OP: OP 7	0	0
OP: OP 8	0	0
OP: OP 9	0	0
OP: OP 10	0	0
OP: OP 11	0	0
OP: OP 12	0	0
Route: Route 1	0	0
Route: Route 2	0	0
Route: Route 3	0	0
Route: Route 4	0	0

No glare found

Assumptions

- Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
- Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
- Detailed system geometry is not rigorously simulated.
- The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual values and results may vary.
- The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
- Several V1 calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
- The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
- Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
- Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
- Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
- Refer to the **Help page** for detailed assumptions and limitations not listed here.

APPENDIX C

AIR QUALITY AND GREENHOUSE GAS MODELING

Assumptions Worksheet

CalEEMod Inputs -Alameda Grant Line Solar 1 Project, Construction

Name:	Alameda Grant Line Solar 1 Project
Project Number:	SOLT-01.0
Project Location:	The intersection of West Grant Line Road and Great Valley Parkway
County/Air Basin:	Alameda
Climate Zone:	5
Land Use Setting:	Urban
Operational Year:	2022
Utility Company:	PG&E
Air Basin:	San Francisco Bay Area Air Basin (SFBAAB)
Air District:	BAAQMD

Proiect Site Acreage	23.07
Disturbed Site Acreage	14.13

Project Components

New Construction	**SQFT**	**Building Footprint**	**ACRES**
Total Hardscape [1]	2,200	N/A	0.05
Staging area	20,000	N/A	0.46
Gravel road	2,348	N/A	0.05
Temporary pad	5,400	N/A	0.12
Solary arrays area	585,555	N/A	13.44
Total Landscaping	613,303	N/A	14.08
Total Other Non-asphalt Surfaces	**615,503**	**N/A**	**14.13**

Notes:

[1] Includes 500 squarefoot electrical pad.

CalEEMod Land Use Inputs

Land Use Type	Land Use Subtype	Unit Amount	Size Metric	Lot Acreage	Land Use Square Feet
Parking	Other Non-asphalt Surfaces	615.50	1000 sqft	14.13	615,503
				14.13	

BAAQMD Construction BMPs

Replace Ground Cover	PM10:	5	% Reduction
	PM2.5:	5	% Reduction
Water Exposed Area	Frequency:	2	per day
	PM10:	55	% Reduction
	PM25:	55	% Reduction
Unpaved Roads	Vehicle Speed:	15	mph
SCAQMD Rule 1186	Clean Paved Road	9	% PM Reduction

PG&E Carbon Intensity Factors

	lbs/MWH
CO_2:[1]	203.98
CH_4:[1]	0.033
N_2O:[1]	0.004

Notes:

[1] CalEEMod default values.

Global Warming Potentials (GWP)		
	AR4	**AR5**
CO_2	1	1
CH_4	25	28
N_2O	298	265

Based on Intergovernmental Panel on Climate Change Fourth Assessment Report global warming potentials for CH4 and N2O; Intergovernmental Panel on Climate Change (IPCC).

Construction Activities and Schedule Assumptions: Alameda Grant Line Solar 1 Project

*based on durations provided by the Applicant

Construction Schedule

Construction Activities	Phase Type	Start Date	End Date	CalEEMod Duration (Workday)
Site Preparation	Site Preparation	7/4/2022	7/12/2022	7
Installation of Solar PV Equipment	Building Construction	7/13/2022	9/6/2022	40
Utility Trenching	Trenching	8/22/2022	8/26/2022	5

Overlapping Construction Schedule

Construction Activities	Start Date	End Date	CalEEMod Duration (Workday)
Site Preparation	7/4/2022	7/12/2022	7
Installation of Solar PV Equipment	7/13/2022	8/21/2022	28
Installation of Solar PV Equipment and Utility Trenching	8/22/2022	8/26/2022	5
Installation of Solar PV Equipment	8/27/2022	9/6/2022	7

CalEEMod Construction Off-Road Equipment Inputs

**Based on equipment mix and horsepower provided by the Applicant*

General Construction Hour 8 hours btwn 7:00 AM to 4:00 PM (with 1 hr break), Mon-Fri

CalEEMod Equipment	CalEEMod	# of Equipment	hr/day	Days Equipment Onsite	Average Hours per day	hp	load factor	total trips/Day
Site Preparation								
Backhoe	Tractor/loader/Backhoe	1	6	7	6	97	0.37	7
Skid Steer	Skid Steer Loaders	1	4	7	4	65	0.3685	7
Telehandler	Aerial Lift	1	4	7	4	63	0.3082	7
Excavator	Excavators	1	6	7	6	158	0.3819	7
Front Loader	Rubber Tired Loader	1	6	7	6	203	0.3618	7
Worker Trips/Day								6
Water Truck Trips (added to Vendor Trips)								2
304 CY of Gravel (added to Vendor Trips)								3
Other Vendor Trips								1
Total Vendor Trips								6
Hauling Trips (TOTAL TRIPS)								0
Utility Trenching								
Backhoe	Tractor/loader/Backhoe	1	3	5	3	97	0.3685	5
Excavator	Excavators	1	3	5	3	158	0.3819	5
Skid Steer	Skid Steer Loaders	1	3	5	3	65	0.3685	5
Front Loader	Rubber Tired Loader	1	3	5	3	203	0.3618	5
Compactor	Rollers	1	3	2	1.2	80	0.3752	2
Worker Trips/Day								6
Water Truck Trips (added to Vendor Trips)								2
Total Vendor Trips								2
Hauling Trips (TOTAL TRIPS)								0
Installation of Solar PV Equipment								
Telehandler	Aerial Lift	1	4	40	4	63	0.3082	40
Pile Driver	Bore/Drill Rig	1	7	5	0.9	221	0.5025	5
Backhoe	Tractor/loader/Backhoe	1	2	3	0.2	97	0.37	3
Excavator	Excavators	1	2	3	0.2	158	0.3819	3
Skid Steer	Skid Steer Loaders	1	4	40	4	65	0.3685	40
Worker Trips/Day								20
Vendor Trips/Day								2
Hauling Trips (TOTAL TRIPS)								0

Construction Trips Worksheet

Phase Name	Worker Trip Ends Per Day	Vendor Trip Ends Per Day	Haul Truck Trip Ends	Total Haul Truck Trip Ends	Start Date	End Date	Workdays
Site Preparation	6	6	0	0	7/4/2022	7/12/2022	7
Installation of Solar PV Equipment	20	2	0	0	7/13/2022	9/6/2022	40
Utility Trenching	6	2	0	0	8/22/2022	8/26/2022	5

Construction Activity (Overlapping)	Worker Trip Ends Per Day	Vendor Trip Ends Per Day	Haul Truck Trip Ends Per Day	Total Trip Ends Per Day	Start Date	End Date	Workdays
Site Preparation	6	6	0	12	7/4/2022	7/12/2022	7
Installation of Solar PV Equipment	20	2	0	22	7/13/2022	8/21/2022	28
Installation of Solar PV Equipment and Utility Trenching	26	4	0	30	8/22/2022	8/26/2022	5
Installation of Solar PV Equipment	20	2	0	22	8/27/2022	9/6/2022	7
Maximum Daily Trips	**26**	**6**	**0**	**30**			

Emissions Worksheet

Construction Emissions - DPM
Input to Risk Tables

tons/year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total Unmitigated	0.01	0.05	0.08	0.00	0.00	0.00	0.01	0.00	0.00	0.00

UNMITIGATED (Onsite)

tons/year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total Onsite	0.00	0.05	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Offsite	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
check	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FOR CONSTRUCTION RISK ASSESSMENT - Unmitigated Run

tons/year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2022 Onsite	0.00	0.05	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2022 Offsite	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

FOR CONSTRUCTION REGIONAL EMISSIONS - Unmitigated Run

tons/year	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total 2022	0.01	0.05	0.08	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Construction Total	0.01	0.05	0.08	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Check	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Fugitive Dust						0.00	0.00	0.00	0.00	0.00	0.00
Offroad		0.00	0.02	0.02	0.00		0.00	0.00		0.00	0.00
Total		0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00

3.3 Installation of Solar PV Equipment - 2022

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.4 Utility Trenching - 2022

Unmitigated Construction On-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Off-Road		0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Unmitigated Construction Off-Site

Category	tons/yr	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Hauling		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker		0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00

Criteria Air Pollutant Emissions Summary - Construction Unmitigated

Annual emissions divided by total construction duration to obtain average daily emissions. Average construction emissions accounts for the duration of each construction phase and the time each piece of construction equipment is onsite.

Total Construction Days	2022	Calendar Days
47	47	65

Unmigated Run - with Best Control Measures for Fugitive Dust

average lbs/day	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total	0	2	3	0	0.17	0.08	0	0.08	0.07	0
BAAQMD Threshold	54	54	NA	NA	BMP	82	54	BMP	54	NA
Exceeds Threshold	No	No	NA	NA	NA	No	No	NA	No	NA

Average Daily Emissions and Emission Rates

Onsite Construction PM10 Exhaust Emissions[1]

Year	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/hr)	Emission Rate (g/s)
2022	0.08	9.79E-03	1.23E-03

Onsite Construction PM2.5 Exhaust Emissions[2]

Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/hr)	Emission Rate (g/s)
0.07	8.94E-03	1.13E-03

Offsite Construction PM10 Exhaust Emissions[1]

Year	Average Daily Emissions (lbs/day)	Hauling Emissions w/in 1,000ft (lbs/day) [3]	Emission Rate (lbs/hr)	Emission Rate (g/s)
2022	2.13E-03	4.10E-05	5.12E-06	6.45E-07

Offsite Construction PM2.5 Exhaust Emissions[2]

Average Daily Emissions (lbs/day)	Hauling Emissions w/in 1,000ft (lbs/day) [3]	Emission Rate (lbs/hr)	Emission Rate (g/s)
2.13E-03	4.10E-05	5.12E-06	6.45E-07

Note: Emissions evenly distributed over 48 modeled volume sources.

Hauling Length (miles)	20	miles
Haul Length within 1,000 ft of Site (mile) [3]	0.39	miles
Hours per work day (7:00 AM to 4:00 PM, 1-hour of breaks) [4]	8	hours

Year	Workdays	Construction Duration [5]
2022	47	0.18

[1] DPM emissions taken as PM_{10} exhaust emissions from CalEEMod average daily emissions.

[2] $PM_{2.5}$ emissions taken as $PM_{2.5}$ exhaust emissions from CalEEMod average daily emissions.

[3] Emissions from CalEEMod offsite average daily emissions, which is based on proportioned haul truck trip distances, are adjusted to evaluate emissions from the 0.39-mile route within 1,000 of the project site.

[4] Work hours applied in By Hour/Day (HRDOW) variable emissions module in air dispersion model (see App B - Air Dispersion Model Output).

[5] Construction duration for 2022 determined to adjust receptor exposures to the exposure durations for each construction year (see App C - Risk Calculations).

Phase Name	Start Date	End Date	CalEEMod Days	Total Days
Site Preparation	7/4/2022	7/12/2022	7	**8**
Installation of Solar PV Equipment	7/13/2022	9/6/2022	40	**55**
Utility Trenching	8/22/2022	8/26/2022	5	**4**

Number of Construction Days Per Year			
2022	7/4/2022	9/6/2022	47
		CONSTRUCTION DAYS	47

Total Construction Days Per Year		
1/1/2022	12/31/2022	260
	TOTAL DAYS	260

GHG Emissions Inventory

Construction

	$MTCO_2e$ Total Project*	
2022	15	
Total Construction	**15**	
30-Yr Amortized Construction Emissions	**1**	
BAAQMD Bright-Line Screening Threshold	660	$MTCO_2e$/Year
Exceed Threshold?	**No**	

*CalEEMod, Version 2020.4

CalEEMod Construction Model

Alameda Grant Line Solar 1 Project - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Alameda Grant Line Solar 1 Project

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	615.50	1000sqft	14.13	615,503.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2022
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - See assumptions file

Construction Phase - Based on applicant info., see assumptions file

Off-road Equipment - Based on equipment mix provided by applicant, see assumptions file

Off-road Equipment - Based on equipment mix provided by applicant, see assumptions file

Off-road Equipment - Based on equipment mix provided by applicant, see assumptions file

Trips and VMT - Assume 2 vt/day/water truck, added gravel trucks as HHDT vendor trips to site preparation phase, see assumptions file

Grading -

Construction Off-road Equipment Mitigation - BAAQMD Construction BMPs

Table Name	Column Name	Default Value	New Value

Alameda Grant Line Solar 1 Project - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblConstDustMitigation	CleanPavedRoadPercentReduction	0	9
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	300.00	40.00
tblConstructionPhase	NumDays	10.00	7.00
tblLandUse	LandUseSquareFeet	615,500.00	615,503.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.20
tblOffRoadEquipment	UsageHours	8.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	101.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorVehicleClass	HDT_Mix	HHDT
tblTripsAndVMT	WorkerTripNumber	13.00	6.00
tblTripsAndVMT	WorkerTripNumber	259.00	20.00
tblTripsAndVMT	WorkerTripNumber	13.00	6.00

2.0 Emissions Summary

Alameda Grant Line Solar 1 Project - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	5.7700e-003	0.0538	0.0751	1.7000e-004	3.8700e-003	1.8900e-003	5.7700e-003	1.0400e-003	1.7400e-003	2.7800e-003	0.0000	15.0847	15.0847	3.6400e-003	3.0000e-004	15.2642
Maximum	**5.7700e-003**	**0.0538**	**0.0751**	**1.7000e-004**	**3.8700e-003**	**1.8900e-003**	**5.7700e-003**	**1.0400e-003**	**1.7400e-003**	**2.7800e-003**	**0.0000**	**15.0847**	**15.0847**	**3.6400e-003**	**3.0000e-004**	**15.2642**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	5.7700e-003	0.0538	0.0751	1.7000e-004	3.5800e-003	1.8900e-003	5.4700e-003	9.7000e-004	1.7400e-003	2.7100e-003	0.0000	15.0847	15.0847	3.6400e-003	3.0000e-004	15.2642
Maximum	**5.7700e-003**	**0.0538**	**0.0751**	**1.7000e-004**	**3.5800e-003**	**1.8900e-003**	**5.4700e-003**	**9.7000e-004**	**1.7400e-003**	**2.7100e-003**	**0.0000**	**15.0847**	**15.0847**	**3.6400e-003**	**3.0000e-004**	**15.2642**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**7.49**	**0.00**	**5.20**	**6.73**	**0.00**	**2.52**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**7-4-2022**	**9-30-2022**	0.0550	0.0550
		Highest	0.0550	0.0550

Alameda Grant Line Solar 1 Project - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	7/4/2022	7/12/2022	5	7	a
2	Installation of Solar PV Equipment	Building Construction	7/13/2022	9/6/2022	5	40	b
3	Utility Trenching	Trenching	8/22/2022	8/26/2022	5	5	c

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 14.13

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating –

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Aerial Lifts	1	4.00	63	0.31
Site Preparation	Excavators	1	6.00	158	0.38
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Loaders	1	6.00	203	0.36
Site Preparation	Skid Steer Loaders	1	4.00	65	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Installation of Solar PV Equipment	Aerial Lifts	1	4.00	63	0.31
Installation of Solar PV Equipment	Bore/Drill Rigs	1	0.90	221	0.50
Installation of Solar PV Equipment	Concrete/Industrial Saws	0		81	0.73
Installation of Solar PV Equipment	Cranes	0	7.00	231	0.29
Installation of Solar PV Equipment	Excavators	1	0.20	158	0.38
Installation of Solar PV Equipment	Forklifts	0	8.00	89	0.20

Alameda Grant Line Solar 1 Project - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Installation of Solar PV Equipment	Generator Sets	0	8.00	84	0.74
Installation of Solar PV Equipment	Rubber Tired Dozers	0		247	0.40
Installation of Solar PV Equipment	Rubber Tired Dozers	0		247	0.40
Installation of Solar PV Equipment	Rubber Tired Dozers	0		247	0.40
Installation of Solar PV Equipment	Skid Steer Loaders	1	4.00	65	0.37
Installation of Solar PV Equipment	Tractors/Loaders/Backhoes	1	0.20	97	0.37
Installation of Solar PV Equipment	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Installation of Solar PV Equipment	Welders	0	8.00	46	0.45
Utility Trenching	Excavators	1	3.00	158	0.38
Utility Trenching	Graders	0		187	0.41
Utility Trenching	Rollers	1	1.20	80	0.38
Utility Trenching	Rubber Tired Dozers	0		247	0.40
Utility Trenching	Rubber Tired Dozers	0		247	0.40
Utility Trenching	Rubber Tired Loaders	1	3.00	203	0.36
Utility Trenching	Scrapers	0		367	0.48
Utility Trenching	Skid Steer Loaders	1	3.00	65	0.37
Utility Trenching	Tractors/Loaders/Backhoes	1	3.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	5	6.00	6.00	0.00	10.80	7.30	20.00	LD_Mix	HHDT	HHDT
Installation of Solar PV Equipment	5	20.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Utility Trenching	5	6.00	2.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Alameda Grant Line Solar 1 Project - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9100e-003	0.0196	0.0228	4.0000e-005		8.1000e-004	8.1000e-004		7.4000e-004	7.4000e-004	0.0000	3.9267	3.9267	1.2700e-003	0.0000	3.9584
Total	**1.9100e-003**	**0.0196**	**0.0228**	**4.0000e-005**	**0.0000**	**8.1000e-004**	**8.1000e-004**	**0.0000**	**7.4000e-004**	**7.4000e-004**	**0.0000**	**3.9267**	**3.9267**	**1.2700e-003**	**0.0000**	**3.9584**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	1.5300e-003	4.5000e-004	1.0000e-005	1.3000e-004	1.0000e-005	1.4000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5038	0.5038	1.0000e-005	8.0000e-005	0.5278
Worker	6.0000e-005	4.0000e-005	5.0000e-004	0.0000	1.7000e-004	0.0000	1.7000e-004	4.0000e-005	0.0000	5.0000e-005	0.0000	0.1335	0.1335	0.0000	0.0000	0.1347
Total	**1.1000e-004**	**1.5700e-003**	**9.5000e-004**	**1.0000e-005**	**3.0000e-004**	**1.0000e-005**	**3.1000e-004**	**8.0000e-005**	**1.0000e-005**	**1.0000e-004**	**0.0000**	**0.6373**	**0.6373**	**1.0000e-005**	**8.0000e-005**	**0.6625**

Alameda Grant Line Solar 1 Project - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9100e-003	0.0196	0.0228	4.0000e-005		8.1000e-004	8.1000e-004		7.4000e-004	7.4000e-004	0.0000	3.9267	3.9267	1.2700e-003	0.0000	3.9584
Total	**1.9100e-003**	**0.0196**	**0.0228**	**4.0000e-005**	**0.0000**	**8.1000e-004**	**8.1000e-004**	**0.0000**	**7.4000e-004**	**7.4000e-004**	**0.0000**	**3.9267**	**3.9267**	**1.2700e-003**	**0.0000**	**3.9584**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.0000e-005	1.5300e-003	4.5000e-004	1.0000e-005	1.2000e-004	1.0000e-005	1.3000e-004	3.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.5038	0.5038	1.0000e-005	8.0000e-005	0.5278
Worker	6.0000e-005	4.0000e-005	5.0000e-004	0.0000	1.5000e-004	0.0000	1.5000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1335	0.1335	0.0000	0.0000	0.1347
Total	**1.1000e-004**	**1.5700e-003**	**9.5000e-004**	**1.0000e-005**	**2.7000e-004**	**1.0000e-005**	**2.8000e-004**	**7.0000e-005**	**1.0000e-005**	**9.0000e-005**	**0.0000**	**0.6373**	**0.6373**	**1.0000e-005**	**8.0000e-005**	**0.6625**

3.3 Installation of Solar PV Equipment - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.7400e-003	0.0217	0.0322	6.0000e-005		7.0000e-004	7.0000e-004		6.4000e-004	6.4000e-004	0.0000	5.5214	5.5214	1.7900e-003	0.0000	5.5660
Total	**1.7400e-003**	**0.0217**	**0.0322**	**6.0000e-005**		**7.0000e-004**	**7.0000e-004**		**6.4000e-004**	**6.4000e-004**	**0.0000**	**5.5214**	**5.5214**	**1.7900e-003**	**0.0000**	**5.5660**

Alameda Grant Line Solar 1 Project - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	2.1900e-003	6.1000e-004	1.0000e-005	2.6000e-004	2.0000e-005	2.9000e-004	8.0000e-005	2.0000e-005	1.0000e-004	0.0000	0.8076	0.8076	1.0000e-005	1.2000e-004	0.8440
Worker	1.1200e-003	8.1000e-004	9.6100e-003	3.0000e-005	3.1600e-003	2.0000e-005	3.1800e-003	8.4000e-004	2.0000e-005	8.6000e-004	0.0000	2.5421	2.5421	8.0000e-005	7.0000e-005	2.5663
Total	**1.2000e-003**	**3.0000e-003**	**0.0102**	**4.0000e-005**	**3.4200e-003**	**4.0000e-005**	**3.4700e-003**	**9.2000e-004**	**4.0000e-005**	**9.6000e-004**	**0.0000**	**3.3497**	**3.3497**	**9.0000e-005**	**1.9000e-004**	**3.4103**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.7400e-003	0.0217	0.0322	6.0000e-005		7.0000e-004	7.0000e-004		6.4000e-004	6.4000e-004	0.0000	5.5214	5.5214	1.7900e-003	0.0000	5.5660
Total	**1.7400e-003**	**0.0217**	**0.0322**	**6.0000e-005**		**7.0000e-004**	**7.0000e-004**		**6.4000e-004**	**6.4000e-004**	**0.0000**	**5.5214**	**5.5214**	**1.7900e-003**	**0.0000**	**5.5660**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	2.1900e-003	6.1000e-004	1.0000e-005	2.5000e-004	2.0000e-005	2.7000e-004	7.0000e-005	2.0000e-005	9.0000e-005	0.0000	0.8076	0.8076	1.0000e-005	1.2000e-004	0.8440
Worker	1.1200e-003	8.1000e-004	9.6100e-003	3.0000e-005	2.9200e-003	2.0000e-005	2.9300e-003	7.8000e-004	2.0000e-005	8.0000e-004	0.0000	2.5421	2.5421	8.0000e-005	7.0000e-005	2.5663
Total	**1.2000e-003**	**3.0000e-003**	**0.0102**	**4.0000e-005**	**3.1700e-003**	**4.0000e-005**	**3.2000e-003**	**8.5000e-004**	**4.0000e-005**	**8.9000e-004**	**0.0000**	**3.3497**	**3.3497**	**9.0000e-005**	**1.9000e-004**	**3.4103**

Alameda Grant Line Solar 1 Project - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Utility Trenching - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.4000e-004	7.5900e-003	8.5800e-003	2.0000e-005		3.3000e-004	3.3000e-004		3.0000e-004	3.0000e-004	0.0000	1.4534	1.4534	4.7000e-004	0.0000	1.4652
Total	**7.4000e-004**	**7.5900e-003**	**8.5800e-003**	**2.0000e-005**		**3.3000e-004**	**3.3000e-004**		**3.0000e-004**	**3.0000e-004**	**0.0000**	**1.4534**	**1.4534**	**4.7000e-004**	**0.0000**	**1.4652**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.7000e-004	8.0000e-005	0.0000	3.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1010	0.1010	0.0000	2.0000e-005	0.1055
Worker	4.0000e-005	3.0000e-005	3.6000e-004	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0953	0.0953	0.0000	0.0000	0.0962
Total	**5.0000e-005**	**3.0000e-004**	**4.4000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1963**	**0.1963**	**0.0000**	**2.0000e-005**	**0.2017**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	7.4000e-004	7.5900e-003	8.5800e-003	2.0000e-005		3.3000e-004	3.3000e-004		3.0000e-004	3.0000e-004	0.0000	1.4534	1.4534	4.7000e-004	0.0000	1.4652
Total	**7.4000e-004**	**7.5900e-003**	**8.5800e-003**	**2.0000e-005**		**3.3000e-004**	**3.3000e-004**		**3.0000e-004**	**3.0000e-004**	**0.0000**	**1.4534**	**1.4534**	**4.7000e-004**	**0.0000**	**1.4652**

Alameda Grant Line Solar 1 Project - Alameda County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.7000e-004	8.0000e-005	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1010	0.1010	0.0000	2.0000e-005	0.1055
Worker	4.0000e-005	3.0000e-005	3.6000e-004	0.0000	1.1000e-004	0.0000	1.1000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0953	0.0953	0.0000	0.0000	0.0962
Total	**5.0000e-005**	**3.0000e-004**	**4.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1963**	**0.1963**	**0.0000**	**2.0000e-005**	**0.2017**

APPENDIX D

HEALTH RISK ASSESSMENT

1. Health Risk Assessment

1.1 CONSTRUCTION HEALTH RISK ASSESSMENT

Soltage, LLC (the project applicant) proposes to construct, install, operate, and maintain a solar photovoltaic (PV) facility located at West Grant Line Road and Great Valley Parkway in eastern unincorporated Alameda County. The approximately 23.07-acre proposed project site is currently undeveloped and is bounded by Grant Line Road to the south and vacant lots to the north, east, and west. The following provides the background methodology used for the construction health risk assessment for the proposed project.

The latest version of the Bay Area Air Quality Management District (BAAQMD) CEQA Air Quality Guidelines requires projects to evaluate the impacts of construction activities on sensitive receptors (BAAQMD, 2017). Project construction is anticipated to take place starting at the beginning of July 2022 and be completed by August 2022 (approximately 47 workdays). The nearest sensitive receptors to the project site include the single-family residences to the southeast. Additional sensitive receptors within 1,000 feet of the site are single family residences to the east beyond Great Valley Parkway and preschool children at Sunshine Shwetha Preschool and Daycare, approximately 1,000 feet to the northeast. The BAAQMD has developed *Screening Tables for Air Toxics Evaluation During Construction* (2017) that evaluate construction-related health risks associated with residential, commercial, and industrial projects. According to the screening tables, the receptors are closer than the distance of 200 meters (656 feet) that would screen out potential health risks and, therefore, could be potentially impacted from the proposed construction activities. As a result, a site-specific construction health risk assessment (HRA) has been prepared for the proposed project. This HRA considers the health impact to off-site sensitive receptors (i.e., the nearby residences and children at the preschool) from construction emissions at the project site, including diesel equipment exhaust (diesel particulate matter or DPM) and particulate matter less than 2.5 microns ($PM_{2.5}$).

It should be noted that these health impacts are based on conservative (i.e., health protective) assumptions. The United States Environmental Protection Agency (USEPA, 2005) and the Office of Environmental Health Hazard Assessment (OEHHA, 2015) note that conservative assumptions used in a risk assessment are intended to ensure that the estimated risks do not underestimate the actual risks. Therefore, the estimated risks may not necessarily represent actual risks experienced by populations at or near a site. The use of conservative assumptions tends to produce upper-bound estimates of exposure and thus risk.

For residential-based receptors, the following conservative assumptions were used:

- It was assumed that maximum-exposed off-site residential receptors (both children and adults) stood outdoors and are subject to DPM at their residence for 8 hours per day, and approximately 260 construction days per year. In reality, California residents typically will spend on average 2 hours per day outdoors at their residences (USEPA, 2011). This would result in lower exposures to construction related DPM emissions and lower estimated risk values.

- The calculated risk for infants from third trimester to age 2 is multiplied by a factor of 10 to account for early life exposure and uncertainty in child versus adult exposure impacts (OEHHA, 2015).

For preschool children, the following conservative assumptions were used:

- It was assumed that maximum exposed receptor (preschool child) stood outside and are subject to DPM for 8 hours per weekday and approximately 260 construction days per year.

- The calculated risk for children age 0 to age 2 is multiplied by a factor of 10 to account for early life exposure and uncertainty in child versus adult exposure impacts (OEHHA, 2015).

1.2 METHODOLOGY AND SIGNIFICANCE THRESHOLDS

For this HRA, the BAAQMD significance thresholds were deemed to be appropriate and the thresholds that were used for this project are shown below:

- Excess cancer risk of more than 10 in a million
- Non-cancer hazard index (chronic or acute) greater than 1.0
- Incremental increase in average annual $PM_{2.5}$ concentration of greater than 0.3 $\mu g/m^3$

The methodology used in this HRA is consistent with the following BAAQMD and the OEHHA guidance documents:

- BAAQMD, 2017. *California Environmental Quality Act (CEQA) Air Quality Guidelines*. May 2017.
- BAAQMD, 2016. *Planning Healthy Places*. May 2016.
- BAAQMD, 2010. *Screening Tables for Air Toxics Evaluation During Construction.* May 2010.
- BAAQMD, 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. Version 3.0. May 2012.
- OEHHA. 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments.* February 2015.

Potential exposures to DPM and $PM_{2.5}$ from proposed project construction were evaluated for off-site sensitive receptors in close proximity to the site. Pollutant concentrations were estimated using an air dispersion model, and excess lifetime cancer risks and chronic non-cancer hazard indexes were calculated. These risks were then compared to the significance thresholds adopted for this HRA.

1.3 CONSTRUCTION EMISSIONS

Construction emissions were calculated as average daily emissions in pounds per day, using the proposed construction schedule and the latest version of California Emissions Estimation Model, known as CalEEMod Version 2020.4 (CAPCOA, 2021). DPM emissions were based on the CalEEMod construction runs, using annual exhaust PM_{10} construction emissions presented in pounds (lbs) per day. The $PM_{2.5}$ emissions were taken from the CalEEMod output for exhaust $PM_{2.5}$ also presented in lbs per day.

The project was assumed to take place over 2 months (47 workdays) from July 2022 to August 2022. The average daily emission rates from construction equipment used during the proposed project were determined by dividing the annual average emissions for each construction year by the number of construction days per year for each calendar year of construction (i.e., 2022). The off-site hauling emission rates were adjusted to evaluate localized emissions from the 0.39-mile haul route within 1,000 feet of the project site. The CalEEMod construction emissions output and emission rate calculations are provided in Appendix A of the HRA.

1.4 DISPERSION MODELING

Air quality modeling was performed using the AERMOD atmospheric dispersion model to assess the impact of emitted compounds on sensitive receptors near the project. The model is a steady state Gaussian plume model and is an approved model by BAAQMD for estimating ground level impacts from point and fugitive sources in simple and complex terrain. The on-site construction emissions for the project were modeled as poly-area sources. The off-site mobile sources were modeled as adjacent line volume sources. The model requires additional input parameters, including chemical emission data and local meteorology. Inputs for the construction emission rates are those described in Section 1.3. Meteorological data obtained from the BAAQMD for the nearest representative meteorological station (Livermore Municipal Airport) with the five latest available years (2009 to 2013) of record were used to represent local weather conditions and prevailing winds.

The modeling analysis also considered the spatial distribution and elevation of each emitting source in relation to the sensitive receptors. To accommodate the model's Cartesian grid format, direction-dependent calculations were obtained by identifying the Universal Transverse Mercator (UTM) coordinates for each source location. In addition, digital elevation model (DEM) data for the area were obtained and included in the model runs to account for complex terrain. An emission release height of 4.15 meters was used as representative of the stack exhaust height for off-road construction equipment and diesel truck traffic, and an initial vertical dispersion parameter of 1.93 m was used, per California Air Resources Board (CARB) guidance (2000).

To determine contaminant impacts during construction hours, the model's Season-Hour-Day (HRDOW) scalar option was invoked to predict flagpole-level concentrations (1.5 m for ground floor receptors; 6.1 m for 2nd floor receptors) for construction emissions generated between the hours of 7:00 AM and 4:00 PM with a 1-hour lunch break. In addition, a scalar factor was applied to the risk calculations to account for the number of days receptors are exposed to construction emissions per year.

A unit emission rate of 1 gram per second was used for all modeling runs. The unit emission rates were proportioned over the poly-area sources for on-site construction emissions and divided between the volume sources for off-site hauling emissions. The maximum modeled concentrations from the output files were then multiplied by the emission rates calculated in Appendix A to obtain the maximum flagpole-level concentrations at the off-site maximum exposed receptors (MER). The air dispersion modeling predicted the off-site MER is a single-family residence southeast of the site. The MER location is the receptor location associated with the maximum predicted AERMOD concentrations from the on-site emission source. The calculated on-site emission rates are approximately 4 orders of magnitude higher than the calculated off-site emission rates (see Appendix A). Therefore, the maximum concentrations associated with the on-site emission sources produce the highest overall ground-level MER concentrations and, consequently, highest calculated health risks.

The air dispersion model output for the emission sources is presented in Appendix B. The model output DPM and $PM_{2.5}$ concentrations from the construction emission sources are provided in Appendix C.

1.5 RISK CHARACTERIZATION

1.5.1 Carcinogenic Chemical Risk

A threshold of ten in a million ($10x10^{-6}$) has been established as a level posing no significant risk for exposures to carcinogens. Health risks associated with exposure to carcinogenic compounds can be defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. The cancer risk probability is determined by multiplying the chemical's annual concentration by its cancer potency factor (CPF), a measure of the carcinogenic potential of a chemical when a dose is received through the inhalation pathway. It is an upper-limit estimate of the probability of contracting cancer as a result of continuous exposure to an ambient concentration of one microgram per cubic meter ($\mu g/m^3$) over a lifetime of 70 years.

Recent guidance from OEHHA recommends a refinement to the standard point estimate approach with the use of age-specific breathing rates and age sensitivity factors (ASFs) to assess risk for susceptible subpopulations such as children. For the inhalation pathway, the procedure requires the incorporation of several discrete variates to effectively quantify dose for each age group. Once determined, contaminant dose is multiplied by the cancer potency factor in units of inverse dose expressed in milligrams per kilogram per day $(mg/kg/day)^{-1}$ to derive the cancer risk estimate. Therefore, to accommodate the unique exposures associated with the sensitive receptors, the following dose algorithm was used.

$$\text{Dose}_{\text{AIR,per age group}} = \left(C_{air} \times EF \times \left[\frac{BR}{BW}\right] \times A \times CF\right)$$

Where:

$Dose_{AIR}$	=	dose by inhalation (mg/kg-day), per age group
C_{air}	=	concentration of contaminant in air ($\mu g/m^3$)
EF	=	exposure frequency (number of days/365 days)
BR/BW	=	daily breathing rate normalized to body weight (L/kg-day)

A = inhalation absorption factor (default = 1)
CF = conversion factor ($1x10^{-6}$, µg to mg, L to m^3)

The inhalation absorption factor (A) is a unitless factor that is only used if the cancer potency factor included a correction for absorption across the lung. The default value of 1 was used for this assessment. For residential receptors, the exposure frequency (EF) of 0.96 is used to represent 350 days per year to allow for a two-week period away from home each year (OEHHA, 2015). The 95th percentile daily breathing rates (BR/BW), exposure duration (ED), age sensitivity factors (ASFs), and fraction of time at home (FAH) for the various age groups are provided herein:

Age Groups	BR/BW (L/kg-day)	ED	ASF	FAH
Third trimester	361	0.25	10	0.85
0-2 age group	1,090	2	10	0.85

For construction analysis, the exposure duration spans the length of construction (e.g., 47 workdays, approximately 2 months). As the length of construction is less than 2 years, only the third trimester and 0-2 age bins apply to the construction analysis for the off-site residential receptors. Additionally, per OEHHA guidance a minimum exposure duration of 6 months (0.5-year) was used for the cancer risk calculations.

To represent the unique characteristics of high school student and preschool populations, the assessment employed the USEPA's guidance to develop viable dose estimates based on reasonable maximum exposure, defined as the "highest exposure that is reasonably expected to occur" for a given receptor population. Lifetime risk values for the population at Sunshine Shwetha Preschool and Daycare were adjusted to account for an exposure of 260 days per year (age 0 to 2 years). In addition, the calculated risk for children is multiplied by an ASF weighting factor of 10 (for children ages 0 to 2) to account for early life sensitivity to pollutant exposures (OEHHA, 2015). To calculate the overall cancer risk, the risk for each appropriate age group is calculated per the following equation:

$$\text{Cancer Risk}_{\text{AIR}} = \text{Dose}_{\text{AIR}} \times \text{CPF} \times \text{ASF} \times \text{FAH} \times \frac{\text{ED}}{AT}$$

Where:

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

The CPFs used in the assessment were obtained from OEHHA guidance. The excess lifetime cancer risks during the construction period to the maximally exposed resident were calculated based on the factors provided above. The cancer risks for each age group are summed to estimate the total cancer risk for each toxic chemical species. The final step converts the cancer risk in scientific notation to a whole number that

expresses the cancer risk in "chances per million" by multiplying the cancer risk by a factor of $1x10^6$ (i.e., 1 million).

The calculated results are provided in Appendix C.

1.5.2 Non-Carcinogenic Hazards

An evaluation was also conducted of the potential non-cancer effects of chronic chemical exposures. Adverse health effects are evaluated by comparing the annual receptor level (flagpole) concentration of each chemical compound with the appropriate reference exposure limit (REL). Available RELs promulgated by OEHHA were considered in the assessment.

The hazard index approach was used to quantify non-carcinogenic impacts. The hazard index assumes that chronic sub-threshold exposures adversely affect a specific organ or organ system (toxicological endpoint). Target organs presented in regulatory guidance were used for each discrete chemical exposure. To calculate the hazard index, each chemical concentration or dose is divided by the appropriate toxicity value. This ratio is summed for compounds affecting the same toxicological endpoint. A health hazard is presumed to exist where the total equals or exceeds one.

The chronic hazard analysis for DPM is provided in Appendix C. The calculations contain the relevant exposure concentrations and corresponding reference dose values used in the evaluation of non-carcinogenic exposures.

1.5.3 Criteria Pollutants

The BAAQMD has recently incorporated $PM_{2.5}$ into the District's CEQA significance thresholds due to recent studies that show adverse health impacts from exposure to this pollutant. An incremental increase of greater than 0.3 $\mu g/m^3$ for the annual average $PM_{2.5}$ concentration is considered to be a significant impact.

1.6 CONSTRUCTION HRA RESULTS

The calculated results are provided in Appendix C and the results are summarized in Table 1.

TABLE 1. CONSTRUCTION RISK SUMMARY - UNMITIGATED

Receptor	Cancer Risk (per million)	Chronic Hazards	$PM_{2.5}$ ($\mu g/m^3$)
Maximum Exposed Receptor – Off-site Resident	0.1	0.0004	0.002
Sunshine Shwetha Preschool and Daycare	0.023	0.0001	0.0003
BAAQMD Threshold	**10**	**1.0**	**0.30**
Exceeds Threshold?	**No**	**No**	**No**

Note: Cancer risk calculated using 2015 OEHHA HRA guidance.

Cancer risk for the residential MER from project-related construction emissions was calculated to be 0.1 in a million, which would not exceed the 10 in a million significance threshold. In accordance with the latest 2015 OEHHA guidance, the calculated total cancer risk conservatively assumes that the risk for the residential MER consists of a pregnant woman in the third trimester that subsequently gives birth to an infant during the approximately 2-month construction period and calculated over a minimum 6-month exposure duration; therefore, all calculated residential risk values were multiplied by a factor of 10. In addition, it was conservatively assumed that the residents were outdoors 8 hours a day, 260 construction days per year and exposed to all of the daily construction emissions. The cancer risk for the maximum exposed preschool receptor was calculated to be 0.023 in a million which also would not exceed the significance threshold.

For non-carcinogenic effects, the chronic hazard index identified for each toxicological endpoint totaled less than one for all the off-site sensitive receptors. Therefore, chronic non-carcinogenic hazards are less than significant. For the residential MER, the maximum annual $PM_{2.5}$ concentration of 0.002 $\mu g/m^3$ would not exceed the BAAQMD significance threshold of 0.3 micrograms per cubic meter ($\mu g/m^3$). Lastly, the preschool receptors maximum annual $PM_{2.5}$ concentration of 0.0003 $\mu g/m^3$ each would also not exceed the BAAQMD significance threshold. Therefore, the project would not expose off-site sensitive receptors to substantial concentrations of air pollutant emissions during construction and impacts would be *less than significant*.

2. References

Bay Area Air Quality Management District. 2017. *California Environmental Quality Act Air Quality Guidelines.*

———. 2016. *Planning Healthy Places.* Dated May 2016.

———. 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards.* Version 3.0. Dated May 2012.

———. 2010. Screening Tables for Air Toxics Evaluation During Construction. Version 1.0. Dated May 2010.

———. 2009-2013. Meteorological Data Set for Livermore Municipal Airport.

California Air Pollution Control Officers Association (CAPCOA). 2021. California Emissions Estimator Model (CalEEMod). Version 2020.4. Prepared by: ENVIRON International Corporation and the California Air Districts.

California Air Resources Board (CARB). 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.*

———. 2022. *Meteorological Files.* https://ww2.arb.ca.gov/resources/documents/harp-aermod-meteorological-files

Office of Environmental Health Hazard Assessment (OEHHA). 2015. *Air Toxics Hot Spots Program Guidance Manual for the Preparation of Health Risk Assessments.* Dated February 2015.

United States Environmental Protection Agency (USEPA). 2011. *Exposure Factors Handbook 2011 Edition (Final).* EPA/600/R-09/052F, 2011.

_____. 2005. *Guideline on Air Quality Models* (Revised). EPA-450/2-78-027R.

Appendix A. Emission Rate Calculations

Average Daily Emissions and Emission Rates

Onsite Construction PM10 Exhaust Emissions[1]

Year	Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/hr)	Emission Rate (g/s)
2022	0.08	9.79E-03	1.23E-03

Onsite Construction PM2.5 Exhaust Emissions[2]

Average Daily Emissions (lbs/day)	Average Daily Emissions (lbs/hr)	Emission Rate (g/s)
0.07	8.94E-03	1.13E-03

Offsite Construction PM10 Exhaust Emissions[1]

Year	Average Daily Emissions (lbs/day)	Hauling Emissions w/in 1,000ft (lbs/day) [3]	Emission Rate (lbs/hr)	Emission Rate (g/s)
2022	2.13E-03	4.10E-05	5.12E-06	6.45E-07

Offsite Construction PM2.5 Exhaust Emissions[2]

Average Daily Emissions (lbs/day)	Hauling Emissions w/in 1,000ft (lbs/day) [3]	Emission Rate (lbs/hr)	Emission Rate (g/s)
2.13E-03	4.10E-05	5.12E-06	6.45E-07

Note: Emissions evenly distributed over 48 modeled volume sources.

Hauling Length (miles)	20	miles
Haul Length within 1,000 ft of Site (mile) [3]	0.39	miles
Hours per work day (7:00 AM to 4:00 PM, 1-hour of breaks) [4]	8	hours

Year	Workdays	Construction Duration [5]
2022	47	0.18

[1] DPM emissions taken as PM_{10} exhaust emissions from CalEEMod average daily emissions.

[2] $PM_{2.5}$ emissions taken as $PM_{2.5}$ exhaust emissions from CalEEMod average daily emissions.

[3] Emissions from CalEEMod offsite average daily emissions, which is based on proportioned haul truck trip distances, are adjusted to evaluate emissions from the 0.39-mile route within 1,000 of the project site.

[4] Work hours applied in By Hour/Day (HRDOW) variable emissions module in air dispersion model (see App B - Air Dispersion Model Output).

[5] Construction duration for 2022 determined to adjust receptor exposures to the exposure durations for each construction year (see App C - Risk Calculations).

Appendix B. Air Dispersion Model Output

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

                                        ***   MODEL SETUP OPTIONS SUMMARY   ***
- -

**Model Is Setup For Calculation of Average CONCentration Values.

  -- DEPOSITION LOGIC --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION. DRYDPLT = F
**Model Uses NO WET DEPLETION. WETDPLT = F

**Model Uses RURAL Dispersion Only.

**Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.

**Other Options Specified:
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Accepts FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of: OTHER

**Model Calculates ANNUAL Averages Only

**This Run Includes: 49 Source(s);   2 Source Group(s); and   171 Receptor(s)

               with: 0 POINT(s), including
                          0 POINTCAP(s) and   0 POINTHOR(s)
                and: 48 VOLUME source(s)
                and: 1 AREA type source(s)
                and: 0 LINE source(s)
                and: 0 RLINE/RLINEXT source(s)
                and: 0 OPENPIT source(s)
                and: 0 BUOYANT LINE source(s) with   0 line(s)

**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date: 14134

```
**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   119.80 ;  Decay Coef. =    0.000     ;  Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                              ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =      3.6 MB of RAM.

**Input Runstream File:          aermod.inp
**Output Print File:             aermod.out

**Detailed Error/Message File:   SOLT-01.err
**File for Summary of Results:   SOLT-01.sum
```

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000001	0	0.20833E-01	626667.0	4179686.4	60.2	4.15	6.04	3.26	NO	HRDOW
L0000002	0	0.20833E-01	626679.9	4179687.8	59.8	4.15	6.04	3.26	NO	HRDOW
L0000003	0	0.20833E-01	626692.8	4179689.2	59.4	4.15	6.04	3.26	NO	HRDOW
L0000004	0	0.20833E-01	626705.7	4179690.6	59.0	4.15	6.04	3.26	NO	HRDOW
L0000005	0	0.20833E-01	626718.6	4179692.0	58.6	4.15	6.04	3.26	NO	HRDOW
L0000006	0	0.20833E-01	626731.5	4179693.4	58.3	4.15	6.04	3.26	NO	HRDOW
L0000007	0	0.20833E-01	626744.4	4179694.8	58.0	4.15	6.04	3.26	NO	HRDOW
L0000008	0	0.20833E-01	626757.3	4179696.1	57.8	4.15	6.04	3.26	NO	HRDOW
L0000009	0	0.20833E-01	626770.2	4179697.5	57.4	4.15	6.04	3.26	NO	HRDOW
L0000010	0	0.20833E-01	626783.1	4179698.9	57.0	4.15	6.04	3.26	NO	HRDOW
L0000011	0	0.20833E-01	626796.0	4179700.3	56.6	4.15	6.04	3.26	NO	HRDOW
L0000012	0	0.20833E-01	626808.9	4179701.7	56.2	4.15	6.04	3.26	NO	HRDOW
L0000013	0	0.20833E-01	626821.8	4179703.1	55.7	4.15	6.04	3.26	NO	HRDOW
L0000014	0	0.20833E-01	626834.7	4179704.5	55.3	4.15	6.04	3.26	NO	HRDOW
L0000015	0	0.20833E-01	626847.6	4179705.9	54.8	4.15	6.04	3.26	NO	HRDOW
L0000016	0	0.20833E-01	626860.5	4179707.3	54.4	4.15	6.04	3.26	NO	HRDOW
L0000017	0	0.20833E-01	626873.4	4179708.7	54.0	4.15	6.04	3.26	NO	HRDOW
L0000018	0	0.20833E-01	626886.3	4179710.0	53.7	4.15	6.04	3.26	NO	HRDOW
L0000019	0	0.20833E-01	626899.3	4179711.4	53.3	4.15	6.04	3.26	NO	HRDOW
L0000020	0	0.20833E-01	626912.2	4179712.8	52.9	4.15	6.04	3.26	NO	HRDOW
L0000021	0	0.20833E-01	626925.1	4179714.2	52.5	4.15	6.04	3.26	NO	HRDOW
L0000022	0	0.20833E-01	626938.0	4179715.6	52.2	4.15	6.04	3.26	NO	HRDOW
L0000023	0	0.20833E-01	626950.9	4179717.0	51.9	4.15	6.04	3.26	NO	HRDOW
L0000024	0	0.20833E-01	626963.8	4179718.4	51.7	4.15	6.04	3.26	NO	HRDOW
L0000025	0	0.20833E-01	626976.7	4179719.8	51.5	4.15	6.04	3.26	NO	HRDOW
L0000026	0	0.20833E-01	626989.6	4179721.2	51.3	4.15	6.04	3.26	NO	HRDOW
L0000027	0	0.20833E-01	627002.5	4179722.6	51.0	4.15	6.04	3.26	NO	HRDOW
L0000028	0	0.20833E-01	627015.4	4179723.9	50.7	4.15	6.04	3.26	NO	HRDOW
L0000029	0	0.20833E-01	627028.3	4179725.3	50.3	4.15	6.04	3.26	NO	HRDOW
L0000030	0	0.20833E-01	627041.2	4179726.7	50.0	4.15	6.04	3.26	NO	HRDOW
L0000031	0	0.20833E-01	627054.1	4179728.1	49.7	4.15	6.04	3.26	NO	HRDOW
L0000032	0	0.20833E-01	627067.0	4179729.5	49.4	4.15	6.04	3.26	NO	HRDOW
L0000033	0	0.20833E-01	627079.9	4179730.9	49.0	4.15	6.04	3.26	NO	HRDOW
L0000034	0	0.20833E-01	627092.8	4179732.3	48.7	4.15	6.04	3.26	NO	HRDOW
L0000035	0	0.20833E-01	627105.7	4179733.7	48.3	4.15	6.04	3.26	NO	HRDOW
L0000036	0	0.20833E-01	627118.6	4179735.1	48.0	4.15	6.04	3.26	NO	HRDOW
L0000037	0	0.20833E-01	627131.5	4179736.4	47.6	4.15	6.04	3.26	NO	HRDOW
L0000038	0	0.20833E-01	627144.5	4179737.8	47.4	4.15	6.04	3.26	NO	HRDOW
L0000039	0	0.20833E-01	627157.4	4179739.2	47.1	4.15	6.04	3.26	NO	HRDOW
L0000040	0	0.20833E-01	627170.3	4179740.6	46.9	4.15	6.04	3.26	NO	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0000041	0	0.20833E-01	627183.2	4179742.0	46.6	4.15	6.04	3.26	NO	HRDOW
L0000042	0	0.20833E-01	627196.1	4179743.4	46.3	4.15	6.04	3.26	NO	HRDOW
L0000043	0	0.20833E-01	627209.0	4179744.8	46.0	4.15	6.04	3.26	NO	HRDOW
L0000044	0	0.20833E-01	627221.9	4179746.2	45.7	4.15	6.04	3.26	NO	HRDOW
L0000045	0	0.20833E-01	627234.8	4179747.6	45.4	4.15	6.04	3.26	NO	HRDOW
L0000046	0	0.20833E-01	627247.7	4179749.0	45.1	4.15	6.04	3.26	NO	HRDOW
L0000047	0	0.20833E-01	627260.6	4179750.3	44.8	4.15	6.04	3.26	NO	HRDOW
L0000048	0	0.20833E-01	627273.5	4179751.7	44.4	4.15	6.04	3.26	NO	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
1	0	0.10423E-04	626659.1	4179699.5	61.0	4.15	8	1.93	NO	HRDOW

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ONSITE	1 ,
OFFSITE	L0000001 , L0000002 , L0000003 , L0000004 , L0000005 , L0000006 , L0000007 , L0000008 ,
	L0000009 , L0000010 , L0000011 , L0000012 , L0000013 , L0000014 , L0000015 , L0000016 ,
	L0000017 , L0000018 , L0000019 , L0000020 , L0000021 , L0000022 , L0000023 , L0000024 ,
	L0000025 , L0000026 , L0000027 , L0000028 , L0000029 , L0000030 , L0000031 , L0000032 ,
	L0000033 , L0000034 , L0000035 , L0000036 , L0000037 , L0000038 , L0000039 , L0000040 ,
	L0000041 , L0000042 , L0000043 , L0000044 , L0000045 , L0000046 , L0000047 , L0000048 ,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = 1   ; SOURCE TYPE = AREAPOLY :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
						DAY OF WEEK = WEEKDAY									
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.0000E+00	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SATURDAY									
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
						DAY OF WEEK = SUNDAY									
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

* SOURCE EMISSION RATE SCALARS WHICH VARY DIURNALLY AND BY DAY OF WEEK (HRDOW) *

SOURCE ID = L0000001 TO L0000048   ; SOURCE TYPE = VOLUME   :

HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR	HOUR	SCALAR
							DAY OF WEEK = WEEKDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.1000E+01
9	.1000E+01	10	.1000E+01	11	.1000E+01	12	.0000E+00	13	.1000E+01	14	.1000E+01	15	.1000E+01	16	.1000E+01
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
							DAY OF WEEK = SATURDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00
							DAY OF WEEK = SUNDAY								
1	.0000E+00	2	.0000E+00	3	.0000E+00	4	.0000E+00	5	.0000E+00	6	.0000E+00	7	.0000E+00	8	.0000E+00
9	.0000E+00	10	.0000E+00	11	.0000E+00	12	.0000E+00	13	.0000E+00	14	.0000E+00	15	.0000E+00	16	.0000E+00
17	.0000E+00	18	.0000E+00	19	.0000E+00	20	.0000E+00	21	.0000E+00	22	.0000E+00	23	.0000E+00	24	.0000E+00

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(627156.6,	4179800.9,	46.9,	46.9,	1.5);	(627192.3,	4179797.5,	46.4,	46.4,	1.5);
(627212.3,	4179797.5,	46.1,	46.1,	1.5);	(627232.3,	4179797.5,	45.7,	45.7,	1.5);
(627252.3,	4179797.5,	45.3,	45.3,	1.5);	(627272.3,	4179797.5,	44.9,	44.9,	1.5);
(627149.7,	4179827.4,	46.9,	46.9,	1.5);	(627149.7,	4179847.4,	46.7,	46.7,	1.5);
(627196.6,	4179840.9,	46.2,	46.2,	1.5);	(627216.6,	4179840.9,	45.9,	45.9,	1.5);
(627236.6,	4179840.9,	45.4,	45.4,	1.5);	(627149.7,	4179867.4,	46.5,	46.5,	1.5);
(627271.9,	4179851.8,	44.7,	44.7,	1.5);	(627149.7,	4179887.4,	46.2,	46.2,	1.5);
(627197.0,	4179870.7,	45.8,	45.8,	1.5);	(627229.7,	4179871.8,	45.0,	45.0,	1.5);
(627271.9,	4179882.0,	44.4,	44.4,	1.5);	(627149.7,	4179907.4,	45.9,	45.9,	1.5);
(627197.0,	4179890.7,	45.5,	45.5,	1.5);	(627229.7,	4179891.8,	44.6,	44.6,	1.5);
(627271.9,	4179902.0,	44.1,	44.1,	1.5);	(627149.7,	4179927.4,	45.4,	45.4,	1.5);
(627197.0,	4179910.7,	45.1,	45.1,	1.5);	(627229.7,	4179911.8,	44.2,	44.2,	1.5);
(627271.9,	4179922.0,	43.8,	43.8,	1.5);	(627149.7,	4179947.4,	45.0,	45.0,	1.5);
(627197.0,	4179930.7,	44.7,	44.7,	1.5);	(627229.7,	4179931.8,	43.8,	43.8,	1.5);
(627271.9,	4179942.0,	43.4,	43.4,	1.5);	(627149.7,	4179967.4,	44.5,	44.5,	1.5);
(627197.0,	4179950.7,	44.3,	44.3,	1.5);	(627229.7,	4179951.8,	43.4,	43.4,	1.5);
(627271.9,	4179962.0,	43.1,	43.1,	1.5);	(627149.7,	4179987.4,	44.0,	44.0,	1.5);
(627197.0,	4179970.7,	43.8,	43.8,	1.5);	(627229.7,	4179971.8,	43.0,	43.0,	1.5);
(627271.9,	4179982.0,	42.7,	42.7,	1.5);	(627149.7,	4180007.4,	43.5,	43.5,	1.5);
(627197.0,	4179990.7,	43.3,	43.3,	1.5);	(627229.7,	4179991.8,	42.6,	42.6,	1.5);
(627271.9,	4180002.0,	42.3,	42.3,	1.5);	(627196.6,	4180020.9,	42.6,	42.6,	1.5);
(627216.6,	4180020.9,	42.3,	42.3,	1.5);	(627236.6,	4180020.9,	42.1,	42.1,	1.5);
(627271.9,	4180022.0,	41.9,	41.9,	1.5);	(627149.5,	4180071.1,	42.5,	42.5,	1.5);
(627199.2,	4180064.6,	42.3,	42.3,	1.5);	(627219.2,	4180064.6,	42.2,	42.2,	1.5);
(627239.2,	4180064.6,	42.0,	42.0,	1.5);	(627253.7,	4180064.0,	41.8,	41.8,	1.5);
(627273.7,	4180064.0,	41.6,	41.6,	1.5);	(627149.5,	4180091.1,	42.3,	42.3,	1.5);
(627149.5,	4180111.1,	42.1,	42.1,	1.5);	(627187.8,	4180096.8,	41.9,	41.9,	1.5);
(627207.8,	4180096.8,	41.9,	41.9,	1.5);	(627227.8,	4180096.8,	41.6,	41.6,	1.5);
(627247.8,	4180096.8,	41.4,	41.4,	1.5);	(627267.8,	4180096.8,	41.2,	41.2,	1.5);
(627149.2,	4180124.0,	42.0,	42.0,	1.5);	(627149.2,	4180144.0,	41.8,	41.8,	1.5);
(627188.0,	4180142.7,	41.6,	41.6,	1.5);	(627208.0,	4180142.7,	41.5,	41.5,	1.5);
(627228.0,	4180142.7,	41.3,	41.3,	1.5);	(627248.0,	4180142.7,	41.1,	41.1,	1.5);
(627268.0,	4180142.7,	40.8,	40.8,	1.5);	(627149.2,	4180164.0,	41.6,	41.6,	1.5);
(627149.2,	4180184.0,	41.4,	41.4,	1.5);	(627187.8,	4180176.8,	41.1,	41.1,	1.5);
(627207.8,	4180176.8,	40.9,	40.9,	1.5);	(627227.8,	4180176.8,	40.7,	40.7,	1.5);
(627247.8,	4180176.8,	40.4,	40.4,	1.5);	(627267.8,	4180176.8,	40.2,	40.2,	1.5);
(627149.2,	4180204.0,	41.1,	41.1,	1.5);	(627188.2,	4180222.5,	40.7,	40.7,	1.5);
(627208.2,	4180222.5,	40.6,	40.6,	1.5);	(627228.2,	4180222.5,	40.4,	40.4,	1.5);
(627248.2,	4180222.5,	40.1,	40.1,	1.5);	(627268.2,	4180222.5,	39.7,	39.7,	1.5);
(627003.2,	4179681.4,	49.9,	49.9,	1.5);	(627059.2,	4179681.4,	48.8,	48.8,	1.5);
(627119.1,	4179672.0,	47.5,	47.5,	1.5);	(627113.4,	4179642.4,	47.9,	47.9,	1.5);
(627112.1,	4179564.9,	50.3,	50.3,	1.5);	(627111.5,	4179590.8,	49.4,	49.4,	1.5);
(627115.9,	4179501.4,	48.7,	48.7,	1.5);	(627120.9,	4179533.5,	49.4,	49.4,	1.5);
(627160.0,	4179673.2,	46.7,	46.7,	1.5);	(627185.2,	4179694.0,	46.1,	46.1,	1.5);
(627173.2,	4179619.1,	47.4,	47.4,	1.5);	(627165.6,	4179571.9,	48.5,	48.5,	1.5);

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(	627171.3,	4179532.8,	47.8,	47.8,	1.5);	(627173.2,	4179486.3,	47.6,	47.6,	1.5);
(	627249.9,	4180223.0,	40.0,	40.0,	1.5);	(627156.6,	4179800.9,	46.9,	46.9,	6.1);
(	627192.3,	4179797.5,	46.4,	46.4,	6.1);	(627212.3,	4179797.5,	46.1,	46.1,	6.1);
(	627232.3,	4179797.5,	45.7,	45.7,	6.1);	(627252.3,	4179797.5,	45.3,	45.3,	6.1);
(	627272.3,	4179797.5,	44.9,	44.9,	6.1);	(627149.7,	4179827.4,	46.9,	46.9,	6.1);
(	627149.7,	4179847.4,	46.7,	46.7,	6.1);	(627196.6,	4179840.9,	46.2,	46.2,	6.1);
(	627216.6,	4179840.9,	45.9,	45.9,	6.1);	(627236.6,	4179840.9,	45.4,	45.4,	6.1);
(	627149.7,	4179867.4,	46.5,	46.5,	6.1);	(627271.9,	4179851.8,	44.7,	44.7,	6.1);
(	627149.7,	4179887.4,	46.2,	46.2,	6.1);	(627197.0,	4179870.7,	45.8,	45.8,	6.1);
(	627229.7,	4179871.8,	45.0,	45.0,	6.1);	(627271.9,	4179882.0,	44.4,	44.4,	6.1);
(	627149.7,	4179907.4,	45.9,	45.9,	6.1);	(627197.0,	4179890.7,	45.5,	45.5,	6.1);
(	627229.7,	4179891.8,	44.6,	44.6,	6.1);	(627271.9,	4179902.0,	44.1,	44.1,	6.1);
(	627149.7,	4179927.4,	45.4,	45.4,	6.1);	(627197.0,	4179910.7,	45.1,	45.1,	6.1);
(	627229.7,	4179911.8,	44.2,	44.2,	6.1);	(627271.9,	4179922.0,	43.8,	43.8,	6.1);
(	627149.7,	4179947.4,	45.0,	45.0,	6.1);	(627197.0,	4179930.7,	44.7,	44.7,	6.1);
(	627229.7,	4179931.8,	43.8,	43.8,	6.1);	(627271.9,	4179942.0,	43.4,	43.4,	6.1);
(	627149.7,	4179967.4,	44.5,	44.5,	6.1);	(627197.0,	4179950.7,	44.3,	44.3,	6.1);
(	627229.7,	4179951.8,	43.4,	43.4,	6.1);	(627271.9,	4179962.0,	43.1,	43.1,	6.1);
(	627149.7,	4179987.4,	44.0,	44.0,	6.1);	(627197.0,	4179970.7,	43.8,	43.8,	6.1);
(	627229.7,	4179971.8,	43.0,	43.0,	6.1);	(627271.9,	4179982.0,	42.7,	42.7,	6.1);
(	627149.7,	4180007.4,	43.5,	43.5,	6.1);	(627197.0,	4179990.7,	43.3,	43.3,	6.1);
(	627229.7,	4179991.8,	42.6,	42.6,	6.1);	(627271.9,	4180002.0,	42.3,	42.3,	6.1);
(	627196.6,	4180020.9,	42.6,	42.6,	6.1);	(627216.6,	4180020.9,	42.3,	42.3,	6.1);
(	627236.6,	4180020.9,	42.1,	42.1,	6.1);	(627271.9,	4180022.0,	41.9,	41.9,	6.1);
(	627149.5,	4180071.1,	42.5,	42.5,	6.1);	(627199.2,	4180064.6,	42.3,	42.3,	6.1);
(	627219.2,	4180064.6,	42.2,	42.2,	6.1);	(627239.2,	4180064.6,	42.0,	42.0,	6.1);
(	627253.7,	4180064.0,	41.8,	41.8,	6.1);	(627273.7,	4180064.0,	41.6,	41.6,	6.1);
(	627149.5,	4180091.1,	42.3,	42.3,	6.1);	(627149.5,	4180111.1,	42.1,	42.1,	6.1);
(	627187.8,	4180096.8,	41.9,	41.9,	6.1);	(627207.8,	4180096.8,	41.9,	41.9,	6.1);
(	627227.8,	4180096.8,	41.6,	41.6,	6.1);	(627247.8,	4180096.8,	41.4,	41.4,	6.1);
(	627267.8,	4180096.8,	41.2,	41.2,	6.1);	(627149.2,	4180124.0,	42.0,	42.0,	6.1);
(	627149.2,	4180144.0,	41.8,	41.8,	6.1);	(627188.0,	4180142.7,	41.6,	41.6,	6.1);
(	627208.0,	4180142.7,	41.5,	41.5,	6.1);	(627228.0,	4180142.7,	41.3,	41.3,	6.1);
(	627248.0,	4180142.7,	41.1,	41.1,	6.1);	(627268.0,	4180142.7,	40.8,	40.8,	6.1);
(	627149.2,	4180164.0,	41.6,	41.6,	6.1);	(627149.2,	4180184.0,	41.4,	41.4,	6.1);
(	627187.8,	4180176.8,	41.1,	41.1,	6.1);	(627207.8,	4180176.8,	40.9,	40.9,	6.1);
(	627227.8,	4180176.8,	40.7,	40.7,	6.1);	(627247.8,	4180176.8,	40.4,	40.4,	6.1);
(	627267.8,	4180176.8,	40.2,	40.2,	6.1);	(627149.2,	4180204.0,	41.1,	41.1,	6.1);
(	627188.2,	4180222.5,	40.7,	40.7,	6.1);	(627208.2,	4180222.5,	40.6,	40.6,	6.1);
(	627228.2,	4180222.5,	40.4,	40.4,	6.1);	(627248.2,	4180222.5,	40.1,	40.1,	6.1);
(	627268.2,	4180222.5,	39.7,	39.7,	6.1);					

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1	1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1	1 1 1 1 1			

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23, 10.80,

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

  Surface file: \\Pw102\mend_l\SOLT-01.0\03_ProductFiles\Tech Team\AQGHG\HRA\B - AirDispersionMo   Met Version: 14134
  Profile file: \\Pw102\mend_l\SOLT-01.0\03_ProductFiles\Tech Team\AQGHG\HRA\B - AirDispersionMo
  Surface format: FREE
  Profile format: FREE
  Surface station no.:   23285   Upper air station no.:   23230
                Name: UNKNOWN   Name: OAKLAND/WSO_AP
                Year: 2009   Year: 2009

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
09	01	01	1	01	-12.6	0.221	-9.000	-9.000	-999.	250.	77.5	0.11	0.90	1.00	2.86	51.	10.0	279.2	2.0
09	01	01	1	02	-23.5	0.413	-9.000	-9.000	-999.	637.	269.8	0.11	0.90	1.00	4.86	48.	10.0	279.2	2.0
09	01	01	1	03	-11.1	0.195	-9.000	-9.000	-999.	254.	59.8	0.07	0.90	1.00	2.86	94.	10.0	278.8	2.0
09	01	01	1	04	-9.5	0.166	-9.000	-9.000	-999.	164.	43.7	0.11	0.90	1.00	2.36	53.	10.0	278.1	2.0
09	01	01	1	05	-11.1	0.195	-9.000	-9.000	-999.	206.	59.6	0.07	0.90	1.00	2.86	63.	10.0	278.1	2.0
09	01	01	1	06	-8.2	0.143	-9.000	-9.000	-999.	131.	32.3	0.07	0.90	1.00	2.36	72.	10.0	278.1	2.0
09	01	01	1	07	-8.2	0.143	-9.000	-9.000	-999.	130.	32.3	0.07	0.90	1.00	2.36	75.	10.0	278.1	2.0
09	01	01	1	08	-4.1	0.078	-9.000	-9.000	-999.	53.	10.3	0.11	0.90	0.75	1.76	13.	10.0	277.5	2.0
09	01	01	1	09	-6.3	0.246	-9.000	-9.000	-999.	292.	211.6	0.12	0.90	0.40	2.86	347.	10.0	278.1	2.0
09	01	01	1	10	6.6	0.303	0.261	0.016	96.	401.	-378.3	0.11	0.90	0.27	3.36	51.	10.0	278.8	2.0
09	01	01	1	11	15.4	0.317	0.422	0.017	176.	429.	-186.8	0.07	0.90	0.23	3.86	94.	10.0	279.9	2.0
09	01	01	1	12	47.5	0.448	0.742	0.017	309.	720.	-170.5	0.11	0.90	0.22	4.86	56.	10.0	280.9	2.0
09	01	01	1	13	49.0	0.405	0.820	0.014	403.	621.	-122.0	0.07	0.90	0.21	4.86	63.	10.0	281.4	2.0
09	01	01	1	14	42.7	0.405	0.809	0.014	444.	619.	-139.5	0.11	0.90	0.22	4.36	59.	10.0	282.0	2.0
09	01	01	1	15	60.8	0.372	0.922	0.014	463.	545.	-75.6	0.07	0.90	0.25	4.36	72.	10.0	281.4	2.0
09	01	01	1	16	14.1	0.309	0.569	0.016	467.	414.	-187.5	0.11	0.90	0.34	3.36	54.	10.0	282.0	2.0
09	01	01	1	17	-30.4	0.311	-9.000	-9.000	-999.	417.	89.1	0.07	0.90	0.58	4.36	61.	10.0	280.4	2.0
09	01	01	1	18	-27.0	0.239	-9.000	-9.000	-999.	282.	45.2	0.11	0.90	1.00	3.36	47.	10.0	279.9	2.0
09	01	01	1	19	-14.9	0.131	-9.000	-9.000	-999.	120.	13.7	0.07	0.90	1.00	2.86	64.	10.0	279.2	2.0
09	01	01	1	20	-5.8	0.078	-9.000	-9.000	-999.	53.	7.3	0.11	0.90	1.00	1.76	47.	10.0	278.8	2.0
09	01	01	1	21	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.10	0.90	1.00	0.00	0.	10.0	277.5	2.0
09	01	01	1	22	-4.9	0.070	-9.000	-9.000	-999.	44.	6.2	0.07	0.90	1.00	1.76	82.	10.0	276.4	2.0
09	01	01	1	23	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.10	0.90	1.00	0.00	0.	10.0	277.0	2.0
09	01	01	1	24	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.10	0.90	1.00	0.00	0.	10.0	277.0	2.0

First hour of profile data

YR	MO	DY	HR	HEIGHT	F	WDIR	WSPD	AMB_TMP	sigmaA	sigmaW	sigmaV
09	01	01	01	10.0	1	51.	2.86	279.3	99.0	-99.00	-99.00

F indicates top of profile (=1) or below (=0)

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL
*** THE ANNUAL AVERAGE CONCENTRATION   VALUES AVERAGED OVER   5 YEARS FOR SOURCE GROUP: ONSITE   ***
INCLUDING SOURCE(S):   1   ,
*** DISCRETE CARTESIAN RECEPTOR POINTS ***
** CONC OF OTHER   IN MICROGRAMS/M**3   **

X-COORD (M)	Y-COORD (M)	CONC		X-COORD (M)	Y-COORD (M)	CONC
627156.64	4179800.87	1.21252		627192.30	4179797.46	1.00285
627212.30	4179797.46	0.90790		627232.30	4179797.46	0.82509
627252.30	4179797.46	0.75266		627272.30	4179797.46	0.68898
627149.72	4179827.43	1.25896		627149.72	4179847.43	1.23997
627196.64	4179840.87	0.96150		627216.64	4179840.87	0.86771
627236.64	4179840.87	0.78637		627149.72	4179867.43	1.20731
627271.90	4179851.76	0.65933		627149.72	4179887.43	1.16212
627197.00	4179870.67	0.92078		627229.72	4179871.76	0.77759
627271.90	4179881.96	0.62882		627149.72	4179907.43	1.10700
627197.00	4179890.67	0.88616		627229.72	4179891.76	0.74878
627271.90	4179901.96	0.60533		627149.72	4179927.43	1.04450
627197.00	4179910.67	0.84674		627229.72	4179911.76	0.71707
627271.90	4179921.96	0.58030		627149.72	4179947.43	0.97741
627197.00	4179930.67	0.80389		627229.72	4179931.76	0.68340
627271.90	4179941.96	0.55430		627149.72	4179967.43	0.90811
627197.00	4179950.67	0.75880		627229.72	4179951.76	0.64831
627271.90	4179961.96	0.52767		627149.72	4179987.43	0.83854
627197.00	4179970.67	0.71241		627229.72	4179971.76	0.61236
627271.90	4179981.96	0.50069		627149.72	4180007.43	0.77104
627197.00	4179990.67	0.66539		627229.72	4179991.76	0.57611
627271.90	4180001.96	0.47369		627196.64	4180020.87	0.59754
627216.64	4180020.87	0.55181		627236.64	4180020.87	0.51075
627271.90	4180021.96	0.44700		627149.51	4180071.09	0.58662
627199.25	4180064.59	0.50438		627219.25	4180064.59	0.47039
627239.25	4180064.59	0.43931		627253.68	4180063.97	0.41935
627273.68	4180063.97	0.39254		627149.51	4180091.09	0.53885
627149.51	4180111.09	0.49511		627187.79	4180096.84	0.46483
627207.79	4180096.84	0.43629		627227.79	4180096.84	0.40968
627247.79	4180096.84	0.38505		627267.79	4180096.84	0.36226
627149.20	4180123.97	0.46929		627149.20	4180143.97	0.43138
627187.95	4180142.66	0.39135		627207.95	4180142.66	0.37095
627227.95	4180142.66	0.35145		627247.95	4180142.66	0.33303
627267.95	4180142.66	0.31567		627149.20	4180163.97	0.39681
627149.20	4180183.97	0.36540		627187.79	4180176.84	0.34412
627207.79	4180176.84	0.32833		627227.79	4180176.84	0.31308
627247.79	4180176.84	0.29850		627267.79	4180176.84	0.28461
627149.20	4180203.97	0.33692		627188.23	4180222.46	0.29040
627208.23	4180222.46	0.27913		627228.23	4180222.46	0.26809
627248.23	4180222.46	0.25741		627268.23	4180222.46	0.24710
627003.22	4179681.41	1.56105	Residential MER	627059.25	4179681.41	1.29951

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL
*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: ONSITE ***
INCLUDING SOURCE(S): 1 ,
*** DISCRETE CARTESIAN RECEPTOR POINTS ***
** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
627119.05	4179671.97	0.98823	627113.39	4179642.38	0.82987
627112.13	4179564.95	0.45815	627111.50	4179590.76	0.56449
627115.90	4179501.37	0.26912	627120.94	4179533.47	0.35355
627159.97	4179673.23	0.86688	627185.15	4179694.00	0.86010
627173.19	4179619.09	0.63192	627165.64	4179571.88	0.47307
627171.30	4179532.85	0.35755	627173.19	4179486.26	0.25400
627249.86	4180223.03	0.25608	627156.64	4179800.87	1.22727
627192.30	4179797.46	1.01273	627212.30	4179797.46	0.91602
627232.30	4179797.46	0.83192	627252.30	4179797.46	0.75846
627272.30	4179797.46	0.69397	627149.72	4179827.43	1.27577
627149.72	4179847.43	1.25715	627196.64	4179840.87	0.97150
627216.64	4179840.87	0.87596	627236.64	4179840.87	0.79337
627149.72	4179867.43	1.22463	627271.90	4179851.76	0.66463
627149.72	4179887.43	1.17949	627197.00	4179870.67	0.93101
627229.72	4179871.76	0.78535	627271.90	4179881.96	0.63414
627149.72	4179907.43	1.12416	627197.00	4179890.67	0.89645
627229.72	4179891.76	0.75664	627271.90	4179901.96	0.61061
627149.72	4179927.43	1.06115	627197.00	4179910.67	0.85691
627229.72	4179911.76	0.72484	627271.90	4179921.96	0.58545
627149.72	4179947.43	0.99317	627197.00	4179930.67	0.81373
627229.72	4179931.76	0.69088	627271.90	4179941.96	0.55921
627149.72	4179967.43	0.92266	627197.00	4179950.67	0.76812
627229.72	4179951.76	0.65538	627271.90	4179961.96	0.53229
627149.72	4179987.43	0.85173	627197.00	4179970.67	0.72109
627229.72	4179971.76	0.61894	627271.90	4179981.96	0.50498
627149.72	4180007.43	0.78279	627197.00	4179990.67	0.67345
627229.72	4179991.76	0.58218	627271.90	4180001.96	0.47765
627196.64	4180020.87	0.60455	627216.64	4180020.87	0.55770
627236.64	4180020.87	0.51573	627271.90	4180021.96	0.45066
627149.51	4180071.09	0.59395	627199.25	4180064.59	0.50942
627219.25	4180064.59	0.47467	627239.25	4180064.59	0.44297
627253.68	4180063.97	0.42265	627273.68	4180063.97	0.39539
627149.51	4180091.09	0.54498	627149.51	4180111.09	0.50022
627187.79	4180096.84	0.46919	627207.79	4180096.84	0.44003
627227.79	4180096.84	0.41293	627247.79	4180096.84	0.38788
627267.79	4180096.84	0.36473	627149.20	4180123.97	0.47386
627149.20	4180143.97	0.43519	627187.95	4180142.66	0.39430
627207.95	4180142.66	0.37352	627227.95	4180142.66	0.35372
627247.95	4180142.66	0.33505	627267.95	4180142.66	0.31746
627149.20	4180163.97	0.39998	627149.20	4180183.97	0.36802

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** THE ANNUAL AVERAGE CONCENTRATION   VALUES AVERAGED OVER   5 YEARS FOR SOURCE GROUP: ONSITE   ***
                INCLUDING SOURCE(S):   1   ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER   IN MICROGRAMS/M**3   **

X-COORD (M)	Y-COORD (M)	CONC		X-COORD (M)	Y-COORD (M)	CONC
627187.79	4180176.84	0.34639		627207.79	4180176.84	0.33035
627227.79	4180176.84	0.31490		627247.79	4180176.84	0.30013
627267.79	4180176.84	0.28607	Preschool MER	627149.20	4180203.97	0.33908
627188.23	4180222.46	0.29190		627208.23	4180222.46	0.28051
627228.23	4180222.46	0.26936		627248.23	4180222.46	0.25858
627268.23	4180222.46	0.24817				

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
627156.64	4179800.87	3.74977	627192.30	4179797.46	4.19320
627212.30	4179797.46	4.28390	627232.30	4179797.46	4.34358
627252.30	4179797.46	4.32630	627272.30	4179797.46	4.15613
627149.72	4179827.43	2.44257	627149.72	4179847.43	1.89158
627196.64	4179840.87	2.11401	627216.64	4179840.87	2.12301
627236.64	4179840.87	2.11553	627149.72	4179867.43	1.51529
627271.90	4179851.76	1.76198	627149.72	4179887.43	1.24466
627197.00	4179870.67	1.49479	627229.72	4179871.76	1.47313
627271.90	4179881.96	1.26915	627149.72	4179907.43	1.04109
627197.00	4179890.67	1.22505	627229.72	4179891.76	1.20623
627271.90	4179901.96	1.05433	627149.72	4179927.43	0.88279
627197.00	4179910.67	1.02386	627229.72	4179911.76	1.00774
627271.90	4179921.96	0.89187	627149.72	4179947.43	0.75681
627197.00	4179930.67	0.86893	627229.72	4179931.76	0.85528
627271.90	4179941.96	0.76523	627149.72	4179967.43	0.65480
627197.00	4179950.67	0.74636	627229.72	4179951.76	0.73503
627271.90	4179961.96	0.66407	627149.72	4179987.43	0.57103
627197.00	4179970.67	0.64735	627229.72	4179971.76	0.63813
627271.90	4179981.96	0.58174	627149.72	4180007.43	0.50159
627197.00	4179990.67	0.56566	627229.72	4179991.76	0.55882
627271.90	4180001.96	0.51359	627196.64	4180020.87	0.46757
627216.64	4180020.87	0.46763	627236.64	4180020.87	0.46609
627271.90	4180021.96	0.45630	627149.51	4180071.09	0.34686
627199.25	4180064.59	0.36504	627219.25	4180064.59	0.36559
627239.25	4180064.59	0.36517	627253.68	4180063.97	0.36529
627273.68	4180063.97	0.36256	627149.51	4180091.09	0.31275
627149.51	4180111.09	0.28333	627187.79	4180096.84	0.30787
627207.79	4180096.84	0.30906	627227.79	4180096.84	0.30950
627247.79	4180096.84	0.30914	627267.79	4180096.84	0.30775
627149.20	4180123.97	0.26644	627149.20	4180143.97	0.24305
627187.95	4180142.66	0.24778	627207.95	4180142.66	0.24890
627227.95	4180142.66	0.24948	627247.95	4180142.66	0.24946
627267.95	4180142.66	0.24872	627149.20	4180163.97	0.22253
627149.20	4180183.97	0.20443	627187.79	4180176.84	0.21337

627207.79	4180176.84	0.21439		627227.79	4180176.84	0.21502
627247.79	4180176.84	0.21516		627267.79	4180176.84	0.21472
627149.20	4180203.97	0.18839		627188.23	4180222.46	0.17769
627208.23	4180222.46	0.17869		627228.23	4180222.46	0.17933
627248.23	4180222.46	0.17954		627268.23	4180222.46	0.17928
627003.22	4179681.41	7.90693	Residential MER	627059.25	4179681.41	6.80206

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
627119.05	4179671.97	4.73403	627113.39	4179642.38	2.90345
627112.13	4179564.95	1.09638	627111.50	4179590.76	1.46529
627115.90	4179501.37	0.60905	627120.94	4179533.47	0.80643
627159.97	4179673.23	4.24160	627185.15	4179694.00	5.95319
627173.19	4179619.09	1.80374	627165.64	4179571.88	1.10285
627171.30	4179532.85	0.77206	627173.19	4179486.26	0.52434
627249.86	4180223.03	0.17914	627156.64	4179800.87	3.15052
627192.30	4179797.46	3.45100	627212.30	4179797.46	3.50830
627232.30	4179797.46	3.55370	627252.30	4179797.46	3.55306
627272.30	4179797.46	3.46997	627149.72	4179827.43	2.15984
627149.72	4179847.43	1.71080	627196.64	4179840.87	1.89244
627216.64	4179840.87	1.90359	627236.64	4179840.87	1.90733
627149.72	4179867.43	1.39240	627271.90	4179851.76	1.63193
627149.72	4179887.43	1.15817	627197.00	4179870.67	1.37740
627229.72	4179871.76	1.37112	627271.90	4179881.96	1.20283
627149.72	4179907.43	0.97904	627197.00	4179890.67	1.14635
627229.72	4179891.76	1.14131	627271.90	4179901.96	1.01098
627149.72	4179927.43	0.83909	627197.00	4179910.67	0.96938
627229.72	4179911.76	0.96516	627271.90	4179921.96	0.86353
627149.72	4179947.43	0.72573	627197.00	4179930.67	0.83100
627229.72	4179931.76	0.82724	627271.90	4179941.96	0.74686
627149.72	4179967.43	0.63332	627197.00	4179950.67	0.72073
627229.72	4179951.76	0.71694	627271.90	4179961.96	0.65245
627149.72	4179987.43	0.55677	627197.00	4179970.67	0.62996
627229.72	4179971.76	0.62689	627271.90	4179981.96	0.57441
627149.72	4180007.43	0.49207	627197.00	4179990.67	0.55526
627229.72	4179991.76	0.55175	627271.90	4180001.96	0.50913
627196.64	4180020.87	0.46251	627216.64	4180020.87	0.46343
627236.64	4180020.87	0.46278	627271.90	4180021.96	0.45387
627149.51	4180071.09	0.34424	627199.25	4180064.59	0.36236
627219.25	4180064.59	0.36333	627239.25	4180064.59	0.36338
627253.68	4180063.97	0.36383	627273.68	4180063.97	0.36157
627149.51	4180091.09	0.31092	627149.51	4180111.09	0.28211
627187.79	4180096.84	0.30661	627207.79	4180096.84	0.30790

627227.79	4180096.84	0.30865	627247.79	4180096.84	0.30860
627267.79	4180096.84	0.30751	627149.20	4180123.97	0.26555
627149.20	4180143.97	0.24257	627187.95	4180142.66	0.24738
627207.95	4180142.66	0.24853	627227.95	4180142.66	0.24931
627247.95	4180142.66	0.24949	627267.95	4180142.66	0.24894
627149.20	4180163.97	0.22237	627149.20	4180183.97	0.20452

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** THE ANNUAL AVERAGE CONCENTRATION VALUES AVERAGED OVER 5 YEARS FOR SOURCE GROUP: OFFSITE ***
INCLUDING SOURCE(S): L0000001 , L0000002 , L0000003 , L0000004 , L0000005 ,
L0000006 , L0000007 , L0000008 , L0000009 , L0000010 , L0000011 , L0000012 , L0000013 ,
L0000014 , L0000015 , L0000016 , L0000017 , L0000018 , L0000019 , L0000020 , L0000021 ,
L0000022 , L0000023 , L0000024 , L0000025 , L0000026 , L0000027 , L0000028 , . . . ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
627187.79	4180176.84	0.21356	627207.79	4180176.84	0.21463
627227.79	4180176.84	0.21537	627247.79	4180176.84	0.21561
627267.79	4180176.84	0.21525 Preschool Student MER	627149.20	4180203.97	0.18866
627188.23	4180222.46	0.17808	627208.23	4180222.46	0.17908
627228.23	4180222.46	0.17978	627248.23	4180222.46	0.18006
627268.23	4180222.46	0.17986			

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)					OF TYPE	NETWORK GRID-ID
ONSITE	1ST HIGHEST VALUE IS	1.56105 AT	627003.22,	4179681.41,	49.86,	49.86,	1.50)	DC	
	2ND HIGHEST VALUE IS	1.29951 AT	627059.25,	4179681.41,	48.78,	48.78,	1.50)	DC	
	3RD HIGHEST VALUE IS	1.27577 AT	627149.72,	4179827.43,	46.88,	46.88,	6.10)	DC	
	4TH HIGHEST VALUE IS	1.25896 AT	627149.72,	4179827.43,	46.88,	46.88,	1.50)	DC	
	5TH HIGHEST VALUE IS	1.25715 AT	627149.72,	4179847.43,	46.71,	46.71,	6.10)	DC	
	6TH HIGHEST VALUE IS	1.23997 AT	627149.72,	4179847.43,	46.71,	46.71,	1.50)	DC	
	7TH HIGHEST VALUE IS	1.22727 AT	627156.64,	4179800.87,	46.92,	46.92,	6.10)	DC	
	8TH HIGHEST VALUE IS	1.22463 AT	627149.72,	4179867.43,	46.52,	46.52,	6.10)	DC	
	9TH HIGHEST VALUE IS	1.21252 AT	627156.64,	4179800.87,	46.92,	46.92,	1.50)	DC	
	10TH HIGHEST VALUE IS	1.20731 AT	627149.72,	4179867.43,	46.52,	46.52,	1.50)	DC	
OFFSITE	1ST HIGHEST VALUE IS	7.90693 AT	627003.22,	4179681.41,	49.86,	49.86,	1.50)	DC	
	2ND HIGHEST VALUE IS	6.80206 AT	627059.25,	4179681.41,	48.78,	48.78,	1.50)	DC	
	3RD HIGHEST VALUE IS	5.95319 AT	627185.15,	4179694.00,	46.09,	46.09,	1.50)	DC	
	4TH HIGHEST VALUE IS	4.73403 AT	627119.05,	4179671.97,	47.53,	47.53,	1.50)	DC	
	5TH HIGHEST VALUE IS	4.34358 AT	627232.30,	4179797.46,	45.70,	45.70,	1.50)	DC	
	6TH HIGHEST VALUE IS	4.32630 AT	627252.30,	4179797.46,	45.30,	45.30,	1.50)	DC	
	7TH HIGHEST VALUE IS	4.28390 AT	627212.30,	4179797.46,	46.09,	46.09,	1.50)	DC	
	8TH HIGHEST VALUE IS	4.24160 AT	627159.97,	4179673.23,	46.70,	46.70,	1.50)	DC	
	9TH HIGHEST VALUE IS	4.19320 AT	627192.30,	4179797.46,	46.41,	46.41,	1.50)	DC	
	10TH HIGHEST VALUE IS	4.15613 AT	627272.30,	4179797.46,	44.90,	44.90,	1.50)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

*** MODELOPTs: RegDFAULT CONC ELEV FLGPOL RURAL

*** Message Summary : AERMOD Model Execution ***

 --------- Summary of Total Messages --------

A Total of   0 Fatal Error Message(s)
A Total of   1 Warning Message(s)
A Total of   15235 Informational Message(s)

A Total of   43872 Hours Were Processed

A Total of   13448 Calm Hours Identified

A Total of   1787 Missing Hours Identified (4.07 Percent)

   ******** FATAL ERROR MESSAGES ********
              *** NONE ***

   ********   WARNING MESSAGES   ********
MX W481   43873   MAIN: Data Remaining After End of Year. Number of Hours=   48

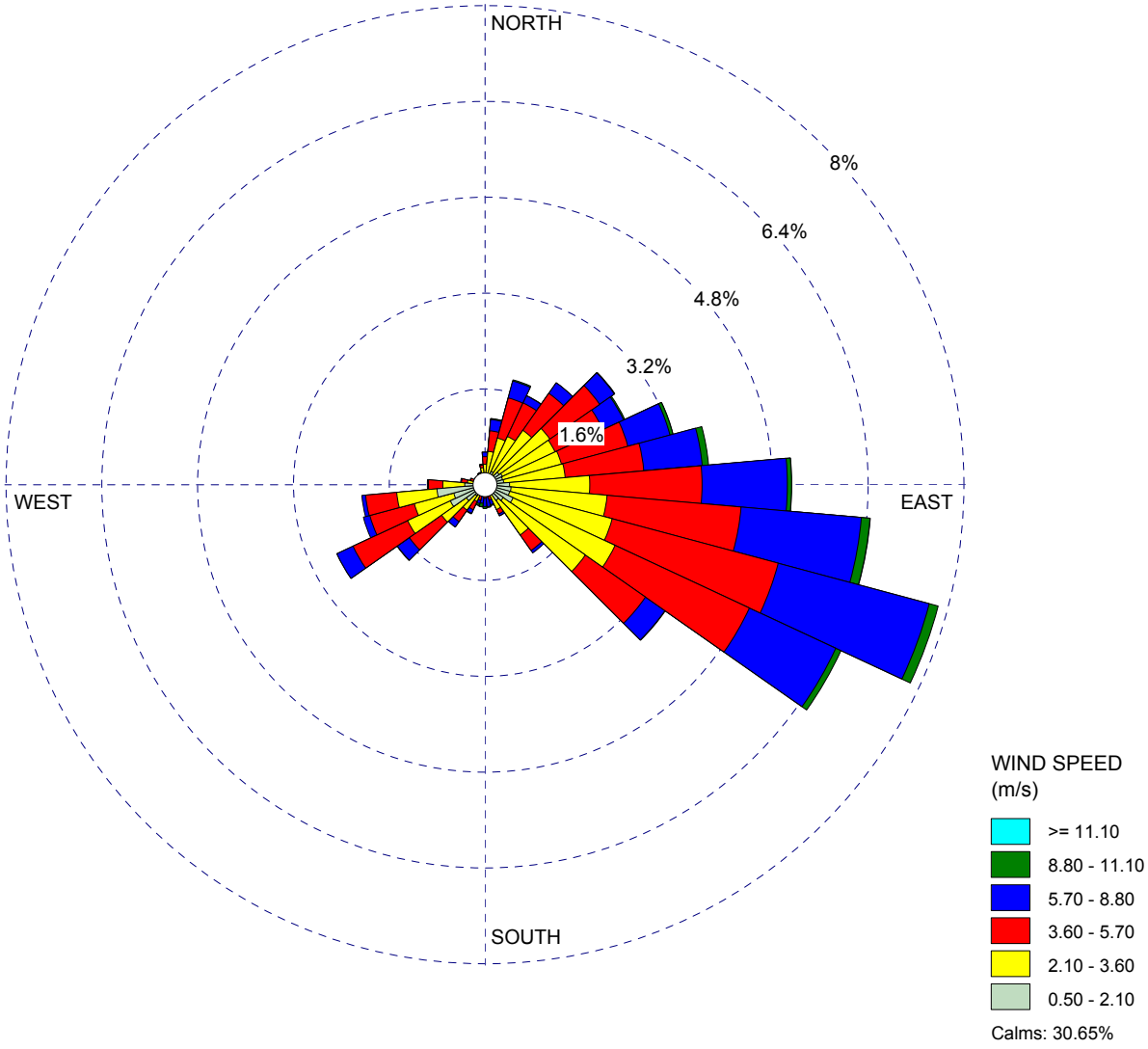
   ****
   *** AERMOD Finishes Successfully ***
   ****

WIND ROSE PLOT:

Station #23285

DISPLAY:

Wind Speed
Flow Vector (blowing to)



COMMENTS:	DATA PERIOD: **Start Date: 1/1/2009 - 00:00** **End Date: 1/2/2014 - 23:59**	COMPANY NAME:	
		MODELER:	
	CALM WINDS: **30.65%**	TOTAL COUNT: **42342 hrs.**	
	AVG. WIND SPEED: **2.83 m/s**	DATE: **1/27/2022**	PROJECT NO.:

Appendix C. Construction Risk Calculations

Table C1
Residential MER Concentations for Health Risk Calculations

Contaminant	Source		Model Output [1] ($\mu g/m^3$)	Emission Rates [2] (g/s)	MEIR Conc. ($\mu g/m^3$)	Total MEIR Conc. Annual Average ($\mu g/m^3$)
(a)	(b)		(c)	(d)	(e)	(f)
Residential Receptors - Unmitigated						
DPM	2022	On-Site Emissions	1.56	1.23E-03	1.93E-03	1.93E-03
		Truck Route	7.91	6.45E-07	5.10E-06	
Total DPM concentrations used for Cancer Risk and Chronic Hazard calculations						
$PM_{2.5}$	2022	On-Site Emissions	1.56	1.13E-03	1.76E-03	1.76E-03
		Truck Route	7.91	6.45E-07	5.10E-06	
			Maximum Annual $PM_{2.5}$ Concentration			**0.002**

Maximum Exposed Individual Resident (MEIR) UTM coordinates: 627003.22E, 4179681.41N

[1] Model Output at the MEIR based on unit emission rates for sources (1 g/s).

[2] Emission Rates from Emission Rate Calculations (Appendix A - Construction Emissions).

Table C2
Residential MER Health Risk Calculations

Source		MEIR	Weight	Contaminant			Dose (by age bin)		Carcinogenic Risks (by age bin)		**Total Cancer Risk**	**Chronic Hazards [3]**	
		Conc. ($\mu g/m^3$)	Fraction		URF $(\mu g/m^3)^{-1}$	CPF $(mg/kg/day)^{-1}$	3rd Trimester (mg/kg-day)	0 < 2 years (mg/kg-day)	3rd Trimester per million	0 < 2 years per million	per million	REL ($\mu g/m^3$)	RESP
(a)		(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)
Residential Receptors - Unmitigated													
2022	On & Off-Site Emission	1.93E-03	1.00E+00	DPM	3.0E-04	1.1E+00	6.68E-07	2.02E-06	2.13E-02	6.43E-02	0.1	5.0E+00	3.86E-04
										Total	**0.1**		**0.0004**

Maximum Exposed Individual Resident (MEIR) UTM coordinates: 627003.22E, 4179681.41N

	OEHHA age bin	3rd Trimester	0 < 2
	exposure year(s)	2022	2022
Dose Exposure Factors:	exposure frequency (days/year)	350	350
	inhalation rate (L/kg-day) [1]	361	1090
	inhalation absorption factor	1	1
	conversion factor (mg/µg; m^3/L)	1.0E-06	1.0E-06
Risk Calculation Factors:	age sensitivity factor	10	10
	averaging time (years)	70	70
	per million	1.0E+06	1.0E+06
	fraction of time at home	0.85	0.85

exposure durations per age bin			exposure durations (year)	
	Construction Year	Duration [2]	3rd Trimester	0 < 2 years
	2022	0.18	0.25	0.25
	Total	0.50	0.25	0.25

[1] Inhalation rate taken as the 95th percentile breathing rates (OEHHA, 2015)

[2] Constructinon duration determined for each year of construction to adjust receptor exposures to the exposure durations for each construction year (see App A - Construction Emissions). Since construction duration is less than 6 months, per OEHHA 2015 guidance health risks determined for 6 months (0.5 year).

[3] Chronic Hazards for DPM using the chronic reference exposure level (REL) for the Respiratory Toxicological Endpoint

Table C3
Day Care/High School MER Concentrations for Risk Calculations

Contaminant	Source		Model Output [1] ($\mu g/m^3$)	Emission Rates [2] (g/s)	MER Conc. ($\mu g/m^3$)	Total MER Conc. Annual Average ($\mu g/m^3$)
(a)	(b)		(c)	(d)	(e)	(f)
Preschool Receptors - Unmitigated						
DPM	2022	On-Site Emissions	0.29	1.23E-03	3.53E-04	3.53E-04
		Truck Route	0.22	6.45E-07	1.39E-07	
Total DPM concentrations used for Cancer Risk and Chronic Hazard calculations						
$PM_{2.5}$	2022	On-Site Emissions	0.29	1.13E-03	3.22E-04	3.22E-04
		Truck Route	0.22	6.45E-07	1.39E-07	
				Maximum Annual $PM_{2.5}$ Concentration		**0.0003**
Sunshine Shwetha Preschool/Daycare UTM coordinates: 627267.79 E, 4180176.84 N						

[1] Model Output at the MER based on unit emission rates for sources (1 g/s).

[2] Emission Rates from Emission Rate Calculations (Appendix A - Construction Emissions).

Table C4
Day Care/High School MER Health Risk Calculations

Source		MER	Weight	Contaminant			Dose (by age bin)		Carcinogenic Risks (by age bin)		**Total Cancer Risk**	**Chronic Hazards [3]**	
		Conc.	Fraction		URF	CPF		0 < 2 years		0 < 2 years		REL	RESP
(a)		($\mu g/m^3$) (b)	(c)	(d)	($\mu g/m^3$)$^{-1}$ (e)	(mg/kg/day)$^{-1}$ (f)	(mg/kg-day) (g)	(mg/kg-day) (h)	per million (j)	per million (k)	per million (m)	($\mu g/m^3$) (n)	(o)
Preschool Receptors - Unmitigated													
2022	On & Off Site	3.53E-04	1.00E+00	DPM	3.0E-04	1.1E+00		3.02E-07		2.26E-02	0.023	5.0E+00	7.06E-05
										Total	**0.023**		**0.0001**

	OEHHA age bin	0 < 2 years
	exposure year(s)	2022
Dose Exposure Factors:	exposure frequency (days/year)	260
	8-hour inhalation rate (L/kg-day) [1]	1200
	inhalation absorption factor	1
	conversion factor (mg/µg; m^3/L)	1.0E-06
Risk Calculation Factors:	age sensitivity factor	10
	averaging time (years)	70
	per million	1.0E+06

exposure durations per age bin			exposure durations (year)
	Construction Year	Duration [2]	0 < 2 years
	2022	0.18	0.50
	Total	0.18	0.50

[1] Inhalation rate taken as the 8-hour 95th percentile breathing rates, Moderate Activity (OEHHA, 2015).

[2] Constructinon duration determined for each year of construction to adjust receptor exposures to the exposure durations for each construction year (see App A - Construction Emissions). Since construction duration is less than 6 months, per OEHHA 2015 guidance health risks determined for 6 months (0.5 year).

[3] Chronic Hazards for DPM using the chronic reference exposure level (REL) for the Respiratory Toxicological Endpoint.

APPENDIX E

BIOLOGICAL RESOURCES ASSESSMENT

DRAFT

BIOLOGICAL RESOURCES ASSESSMENT

ALAMEDA GRANT LINE SOLAR

ALAMEDA COUNTY, CALIFORNIA

LSA

January 2022

DRAFT

BIOLOGICAL RESOURCES ASSESSMENT

ALAMEDA GRANT LINE SOLAR

ALAMEDA COUNTY, CALIFORNIA

Submitted to:

PlaceWorks
1625 Shattuck Avenue, # 300
Berkeley, California 94709
510.848.381

Prepared by:

LSA
157 Park Place
Pt. Richmond, California 94801
510.236.6810

Project No. PLN2101

LSA

January 2022

TABLE OF CONTENTS

TABLES

FIGURES **(at end of report, before appendices)**

APPENDICES

LIST OF ABBREVIATIONS AND ACRONYMS

AOU	American Ornithologists' Union
BMPs	Best Management Practices
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
CRLF	California Red-Legged Frog
CTS	California Tiger Salamander
ECAP	East County Area Plan
IPaC	Information for Planning and Conservation
MBTA	Migratory Bird Treaty Act
NWP	Nationwide Permit
OHWM	Ordinary High Water Mark
PCN	Pre-Construction Notification
RWQCB	Regional Water Quality Control Board
USFWS	U.S. Fish and Wildlife Service

INTRODUCTION

This report presents the results of LSA's survey of biological resources and analysis of potential biological impacts from the proposed project. This report is a baseline study providing information on plant and wildlife species found on or potentially occurring on the project site, as defined below. The report includes an analysis of sensitive habitats, special-status plant and wildlife species, and other biological resources subject to California Environmental Quality Act (CEQA) review. Potential impacts resulting from the proposed project were evaluated. If the project has the potential to result in significant impacts to these biological resources, measures to avoid, minimize, or mitigate for those significant impacts are described. This assessment is based on information available at the time of the study and on-site conditions that were observed on the days the site was visited. Conclusions are based on currently available information used in combination with the professional judgement of the biologists completing this assessment.

SITE LOCATION AND SETTING

The project site is located in a rural area in an unincorporated portion of eastern Alameda County (Figures 1 and 2). The site is bounded by an orchard to the north, the Mountain House residential development to the east, the Mendota canal and associated levee to the west, and Grant Line Road to the south. The project is depicted on the United States Geological Survey (USGS) *Clifton Court Forebay, California* topographic quadrangle map in Township 2 South, Range 4 East, Section 17 (USGS 1978; Appendix A, Figure 1). The 23.65-acre project area is within Assessor's Parcel Number 0099B-7650-007-01.

PROJECT DESCRIPTION

The proposed project involves the installation of solar panels on monopoles. Buried cables will carry the electricity to a new service pole to deliver the electricity to the grid.

At this stage the exact number and location of solar panels has not been determined, but the solar panels will occupy a maximum of 11 acres of the 23.65-acre site. Additionally, approximately 5 acres will be temporarily disturbed during construction. Any temporarily disturbed areas will be recontoured to match the pre-existing grade to the maximum extent possible and revegetated with a native erosion-control seed mix following construction.

The site will be surrounded by a security fence. The fence will have a wildlife-friendly design, with large enough openings at the bottom to allow the passage of medium-sized animals such as badgers, while excluding trespassers. No rodenticides will be used on the site during project construction or operation.

REGULATORY BACKGROUND

Federal Endangered Species Act

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over federally listed threatened and endangered plant and animal species. The federal Endangered Species Act protects listed species from harm or "take," broadly defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap,

capture, or collect, or attempt to engage in any such conduct." Any such activity can be defined as a "take" even if it is unintentional or accidental. Listed plant species are typically provided less protection than listed animals.

An endangered species is one that is considered in danger of becoming extinct throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered in the foreseeable future. Federal agencies involved in permitting projects that may result in take of federally listed species (e.g., U.S. Army Corps of Engineers) are required under Section 7 of the ESA to consult with the USFWS prior to issuing such permits. Any activity that could result in the take of a federally listed species and is not authorized as part of a Section 7 consultation requires an ESA Section 10 take permit from the USFWS.

Clean Water Act

The U.S. Army Corps of Engineers (Corps) is responsible under Section 404 of the Clean Water Act to regulate the discharge of fill material into waters of the United States. Waters of the U.S. and their lateral limits are defined in 33 CFR Part 328.3(a) and include streams that are tributaries to navigable waters and their adjacent wetlands. The lateral limits of jurisdiction for a non-tidal stream are measured at the line of the Ordinary High Water Mark (OHWM) (33 CFR Part 328.3[e]) or the limit of adjacent wetlands (33 CFR Part 328.3[b]). Any permanent extension of the limits of an existing water of the U.S., whether natural or man-made, results in a similar extension of Corps jurisdiction (33 CFR Part 328.5).

Waters of the U.S. fall into two broad categories: wetlands and other waters. Other waters include waterbodies and watercourses such as rivers, streams, lakes, springs, ponds, coastal waters, and estuaries. Wetlands include marshes, wet meadows, seeps, floodplains, basins, and other areas experiencing extended seasonal soil saturation. Seasonally or intermittently inundated features, such as seasonal ponds, ephemeral streams, and tidal marshes, are categorized as wetlands if they have hydric soils and support wetland plant communities. Seasonally inundated waterbodies or watercourses that do not exhibit wetland characteristics are classified as other waters of the U.S.

Other waters that cannot trace a continuous hydrologic connection to a navigable water of the U.S. are not tributary to waters of the U.S. and are termed "isolated waters." Wetlands that are not adjacent to other waters are termed "isolated wetlands." ("Adjacent" means bordering, contiguous or neighboring, and includes wetlands separated from other waters by man-made dikes or barriers, natural river berms, beach dunes and the like.) Isolated wetlands and waters are jurisdictional if their use, degradation, or destruction could affect interstate or foreign commerce (33 CFR Section 328.3[a]). The Corps may or may not take jurisdiction over isolated wetlands, depending on the specific circumstances.

In general, a Section 404 permit must be obtained from the Corps before filling or grading wetlands or other waters of the U.S. Certain projects may qualify for authorization under a Nationwide Permit (NWP). The purpose of the NWP program is to streamline the evaluation and approval process throughout the nation for certain types of activities that have only minimal impacts to the aquatic environment. Many NWPs require the applicant to submit a pre-construction notification (PCN) to the appropriate Corps office and to obtain a project-specific authorization. The Corps is required to

consult with the USFWS under Section 7 of the ESA if the permitted activity may result in the take of federally listed species.

All Corps permits require state water quality certification under Section 401 of the Clean Water Act. This regulatory program is administered by the San Francisco Bay Regional Water Quality Control Board (RWQCB). Projects that propose to fill wetlands or other waters of the U.S. must apply for water quality certification from the RWQCB. The RWQCB has adopted a policy requiring mitigation for any loss of wetlands, streams, or other waters of the U.S.

Porter-Cologne Water Quality Control Act

Under this Act (California Water Code Sections 13000–14920), the RWQCB is authorized to regulate the discharge of waste that could affect the quality of the waters of the State. Therefore, even if a project does not require a federal permit, it may still require review and approval by the RWQCB (e.g., for impacts to isolated wetlands and other waters). When reviewing applications, the RWQCB focuses on ensuring that projects do not adversely affect the "beneficial uses" associated with waters of the State. In most cases, the RWQCB seeks to protect these beneficial uses by requiring the integration of water quality control measures into projects that will require discharge into waters of the State. For most construction projects, the RWQCB requires the use of construction and post-construction Best Management Practices (BMPs).

Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA) prohibits the taking, hunting, killing, selling, purchasing, etc. of migratory birds, parts of migratory birds, and their eggs and nests. As used in the MBTA, the term "take" is defined as "to pursue, hunt, shoot, capture, collect, kill, or attempt to pursue, hunt, shoot, capture, collect, or kill, unless the context otherwise requires." Most bird species native to the United States are covered by this act.

California Endangered Species Act

The California Department of Fish and Wildlife (CDFW) has jurisdiction over state-listed endangered, threatened, and rare plant and animal species under the California Endangered Species Act (CESA). In addition, species designated as "candidates" for listing under CESA are protected by its provisions. The CDFW also maintains a list of Species of Special Concern, defined as species that appear to be vulnerable to extinction because of declining populations, limited ranges, and/or continuing threats. Species of Special Concern are not afforded legal protection under CESA.

California Fish and Game Code

The CDFW is also responsible for enforcing the California Fish and Game Code, which contains several provisions potentially relevant to construction projects. For example, Section 1602 of the Fish and Game Code governs the issuance of Lake and Streambed Alteration Agreements by the CDFW. Lake and Streambed Alteration Agreements are required whenever proposed project activities would substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated as such by the CDFW.

The Fish and Game Code also lists animal species designated as Fully Protected or Protected, which may not be taken or possessed without a permit from the Fish and Game Commission and/or the CDFW. These take permits do not allow "incidental take" (except in limited circumstances) and are more restrictive than the take allowed under Section 2081 of the CESA. Fully Protected species are listed in Sections 3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), and 5515 (fish) of the Fish and Game Code, while Protected amphibians and reptiles are listed in Chapter 5, Sections 41 and 42.

Section 3503 of the Fish and Game Code prohibits the take, possession, or needless destruction of the nest or eggs of any bird. Subsection 3503.5 specifically prohibits the take, possession, or destruction of any birds in the orders Falconiformes (hawks and eagles) or Strigiformes (owls) and their nests. These provisions, along with the federal MBTA, essentially serve to protect nesting native birds. Non-native species, including European starling, house sparrow, collared dove, and rock pigeon, are not afforded any protection under the MBTA or California Fish and Game Code (except that hunting regulations apply to some non-native species listed as gamebirds).

California Environmental Quality Act

The California Environmental Quality Act (CEQA) applies to "projects" proposed to be undertaken or requiring approval by State or local government agencies. Projects are defined as having the potential to have physical impact on the environment. Under Section 15380 of CEQA, a species not included on any formal list "shall nevertheless be considered rare or endangered if the species can be shown by a local agency to meet the criteria" for listing. With sufficient documentation, a species could be shown to meet the definition of rare or endangered under CEQA and be considered a "de facto" rare or endangered species.

Alameda County General Plan

The East County Area Plan (ECAP) section of the Alameda County General Plan has a goal "to preserve a variety of plant communities and wildlife habitat." Relevant policies to support this goal include:

- **Policy 121:** The County shall secure open space lands, through acquisition of easements or fee title, specifically for the preservation and protection of indigenous vegetation and wildlife.

- **Policy 123:** Where site-specific impacts on biological resources resulting from a proposed land use outside the Urban Growth Boundary are identified, the County shall encourage that mitigation is complementary to the goals and objectives of the ECAP. To that end, the County shall recommend that mitigation efforts occur in areas designated as "Resource Management" or on lands adjacent to or otherwise contiguous with these lands in order to establish a continuous open space system in East County and to provide for long term protection of biological resources.

- **Policy 124:** The County shall encourage the maintenance of biological diversity in East County by including a variety of plant communities and animal habitats in areas designated for open space.

- **Policy 125:** The County shall encourage preservation of areas known to support special-status species.

Relevant programs to implement these policies include:

- **Program 55:** The County shall develop management guidelines for lands designated "Resource Management" for the purpose of maintaining and/or enhancing existing plant communities and wildlife habitats. The County shall identify organizations that may be suitable to manage the open space.

- **Program 56:** The County shall develop specific biological survey protocols for special status plants and animals to be used in evaluating proposed activities within the Urban Growth Boundary, in consultation with federal and state resource agencies.

METHODS

LITERATURE REVIEW

LSA reviewed available background information and literature and searched the records of the California Natural Diversity Database (CNDDB; CDFW 2021), the California Native Plant Society's (CNPS) online Inventory of Rare and Endangered Vascular Plants of California (CNPS 2021), and the USFWS's Information for Planning and Conservation (IPaC) on-line system (USFWS 2021) regarding the potential presence of special-status plant and wildlife species within or adjacent to the project site. The database search results were combined with LSA staff knowledge on the presence of special-status plants and wildlife in eastern Alameda County to prepare a list of potentially occurring special-status species and habitats on the site.

Nomenclature for vegetation and plant communities used in this report is based on multiple sources, primarily A Manual of California Vegetation, Second Edition (Sawyer et al. 2008). Plant taxonomy and nomenclature follows Baldwin et al. (2012). Common and scientific names for animals are based on Crother (2017) for amphibians and reptiles, the American Ornithologists' Union (AOU) Check-list of North American Birds (AOU 1998) and supplements for birds, and Bradley et al. (2014) for mammals.

The U.S. Department of Agriculture (2021) Web Soil Survey was reviewed to determine soil types on the site and identify any soil types (e.g., sandy, acidic, highly alkaline soils, serpentinite, etc.) that may support special-status plants and/or sensitive communities, including wetlands.

FIELD SURVEYS

LSA Senior Biologist John Kunna first visited the site on May 13, 2021. He also walked transects of the site to inspect burrows for any sign of use by burrowing owl or San Joaquin kit fox. He installed a motion-activated trail camera at one of the slightly larger burrow entrances, which was potentially suitable for San Joaquin kit fox. He returned to the site on May 18 and moved the camera to a different burrow. He recovered the camera on May 20. The surveys were also conducted in order to provide a current assessment of the biological resources present and identify potential constraints to development. All wildlife and plant species observed during the survey were recorded in field notes.

RESULTS

LAND USE

The site appears to have not been used for intensive agriculture, at least within the past several years. The site has been used for illegal dumping, primarily of household trash. Windblown garbage is also on the site. Rodenticide bait stations were observed in the orchard adjacent to the site to the north.

SOILS

Soils mapped on the project site consist of mainly of Linne clay loam, 3 to 15 percent slopes. Approximately 2 acres in the southeast corner of the site is mapped as Capay clay, 1 to 6 percent slopes, MLRA 17. Both of these soil types are considered well-drained, with no frequency of ponding. Both soil types are nonsaline to very slightly saline. Linne clay loam is considered "Farmland of statewide importance" and Capay clay is "prime farmland if irrigated." Linne clay loam is slightly alkaline at the surface, with a pH of 7.9 to 8.4. Capay clay is basically neutral, with a pH ranging from 6.6 to 7.8 at the surface. (USDA 2021).

AQUATIC RESOURCES

No aquatic resources such as wetlands, vernal pools, or waterways were observed on the site.

VEGETATION

The CNDDB query returned 11 special-status plant species with occurrences within 5 miles of the site. The CNPS Online Inventory returned a list of 14 List 1 or List 2 species, 4 of which had not shown up in the CNDDB query. Table A summarizes the potentials for each of these 15 species to occur on the site. No special-status plant species were detected during the site visits.

The site is dominated by non-native annual grasses, including wild oats (*Avena* sp.) and brome (*Bromus* sp.). The overall plant diversity appears to be low. A few Russian thistle (*Salsola tragus*) plants were observed growing on the site. Russian thistle is also known as tumbleweed, and dried tumbleweeds were observed stuck to nearby fences. Russian thistle is an invasive, non-native plant.

Several narrow leaf milkweed (*Asclepias fascicularis*) plants were also observed growing on the site.

SENSITIVE NATURAL COMMUNITIES

The CNDDB query returned three sensitive natural communities — Alkali Meadow, Northern Claypan Vernal Pool, and Valley Sink Scrub — that have occurrences within 5 miles of the site. As detailed in Table B, none of these communities occur on the site.

Table A: Special-Status Plant Species Evaluated

Species	Status* (Federal/State/RPR)	Habitat/Blooming Period	Potential to Occur
Astragalus tener var. *tener* Alkali milk-vetch	--/--/1B.2	• Alkali flats • Vernal swales and vernal pool edges Elevation: 1-60 meters. Blooms: March-June.	None. No suitable alkaline/vernal pool habitat occurs on the site. There are no CNDDB records within 5 miles of the site.
Atriplex cordulata var. *cordulata* Heartscale	--/--/1B.2	• Chenopod scrub • Meadows and seeps • Valley and foothill grassland • Saline or alkaline soils Elevation: 0-560 meters. Blooms: April-October.	None. No suitable alkaline/vernal pool habitat occurs on the site. There is only one CNDDB occurrence within 5 miles of the site, based on an observation of a population in an alkaline seasonal wetland.
Blepharizonia plumosa Big tarplant	--/--/1B.1	• Valley and foothill grassland, usually in clay soils Elevation: 30-505 meters. Blooms: July-October.	None. There are two CNDDB occurrences within 5 miles of the site. The site is dominated by non-native plants. Historical occurrences probably extirpated by urbanization, agriculture, and non-native plants.
Centromadia parryi ssp. *congdonii* Congdon's tarplant	--/--/1B.1	• Grazed and ungrazed annual grassland • Alkaline or saline soils sometimes described as saline clay soil Elevation: 1-230 meters. Blooms: May-October.	None. There are no CNDDB occurrences within 5 miles of the site. There are no saline or highly alkaline soils on the site.
Delphinium recurvatum Recurved larkspur	--/--/1B.2	• Alkaline soils • Chenopod scrub • Cismontane woodland • Valley and foothill grassland Elevation: 3-790 meters. Blooms: March-June.	None. There are no alkaline soils on the site. There is only one CNDDB occurrence within 5 miles of the site, based on observations made in 1991 and 2010.
Eryngium spinosepalum Spiny-sepaled button-celery	--/--/1B.2	• Valley and foothill grassland • Vernal pools Elevation: 80-975 meters. Blooms: April-June.	None. There are no vernal pools on the site. There are no CNDDB occurrences within 5 miles of the site.

Table A: Special-Status Plant Species Evaluated

Species	Status* (Federal/State/RPR)	Habitat/Blooming Period	Potential to Occur
Eschscholzia rhombipetala Diamond-petaled California poppy	--/--/1B.1	• Valley and foothill grassland Elevation: 0-975 meters. Blooms: March-April.	None. There is only one CNDDB occurrence within 5 miles of the site, based on an observation of 22 plants in 2015. No California poppies were observed during the field surveys.
Extriplex joaquinana San Joaquin spearscale	--/--/1B.2	• Chenopod scrub • Meadows and seeps • Playas • Valley and foothill grassland • Alkaline microhabitats Elevation: 1-835 meters. Blooms: April-October.	None. No suitable wet alkaline habitat occurs on the site. Non-native grasses on the site are very dense. Closest CNDDB occurrence is approximately 1.3 miles from the site.
Hibiscus lasiocarpos var. *occidentalis* Woolly rose-mallow	--/--/1B.2	• Marshes and swamps Elevation: 0-120 meters. Blooms: June-September.	None. Marshes or swamps are not present on the site.
Lilaeopsis masonii Mason's lilaeopsis	--/Rare/1B.1	• Marshes and swamps • Riparian scrub Elevation: 0-10 meters. Blooms: April-November.	None. There are no marshes, swamps, or riparian vegetation on the site.
Limosella australis Delta mudwort	--/--/2B.1	• Marshes and swamps • Riparian scrub Elevation: 0-3 meters. Blooms: May-August.	None. There are no marshes, swamps, or riparian vegetation on the project site.
Navarretia nigelliformis ssp. *radians* Shining navarettia	--/--/1B.2	• Cismontane woodland • Valley and foothill grassland • Vernal pools Elevation: 0-3 meters. Blooms: March-July.	None. There are no vernal pools on the project site.

Table A: Special-Status Plant Species Evaluated

Species	Status* (Federal/State/RPR)	Habitat/Blooming Period	Potential to Occur
Puccinellia simplex California alkali grass	--/--/1B.2	• Chenopod scrub • Meadows and seeps • Valley and foothill grassland • Vernal pools Elevation: 2-930 meters. Blooms: March-May.	None. There are no vernal pools or seeps on the site.
Spergularia macrotheca var. *longistyla* Long-styled sand-spurrey	--/--/1B.2	• Marshes and swamps • Meadows and seeps Elevation: 0-255 meters. Blooms: February-May.	None. There are no marshes, swamps, or seeps on the project site.
Tropidocarpum capparideum Caper-fruited tropidocarpum	--/--/1B.1	• Alkaline-clay soils in valley and foothill grassland Elevation: 1-455 meters. Blooms: March-April.	None. No typical alkaline habitat occurs on the site. The closest CNDDB occurrences are based on collections made in the general area in 1888 and from 1920 to 1933.

Source: Compiled by LSA (2021).
* Status:
Rare Plant Rank (RPR)
1B.1 = California Rare Plant Rank 1B, Threat Rank 0.1: Plant species rare, threatened, or endangered in California and elsewhere. Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat).
1B.2 = California Rare Plant Rank 1B, Threat Rank 0.2: Plant species rare, threatened, or endangered in California and elsewhere. Moderately threatened in California (20-80% of occurrences threatened/moderate degree and immediacy of threat).
2B.1 = California Rare Plant Rank 2B, Threat Rank 0.1: Plant species rare, threatened, or endangered in California, but more common elsewhere. Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat).
CNDDB = California Natural Diversity Database

Table B: Sensitive Natural Communities Evaluated

Sensitive Natural Communities/Habitats	Status*	Presence Within Project Site
Northern Claypan Vernal Pool	G1, S1.1	None within project site.
Alkali Meadow	G2, S2.1	None within project site.
Valley Sink Scrub	G1, S1.1	None within project site.

Source: Compiled by LSA (2021).
* Sensitive Natural Communities:
G1 = Throughout its range, this natural community is critically imperiled and at a very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
G2 = Throughout its range, this natural community is at high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
G3 = Throughout its range, this natural community is imperiled with a high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
S1.1 = Within California, this vegetation alliance is very threatened and is critically imperiled because of extreme rarity (often 5 or fewer populations) or because factor(s) such as very steep declines make it especially vulnerable to extirpation from the State.
S2.1 = Within California, this vegetation alliance is imperiled because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the State.

WILDLIFE

There are numerous active and inactive California ground squirrel (*Otospermophilus beecheyi*) burrows throughout the site, and several ground squirrels were seen during the site visits. Numerous rock pigeons (*Columba livia*) were observed flying over the site during each visit. The trail camera also recorded one red-tailed hawk, a Swainson's hawk, a burrowing owl, and an unidentifiable mammal that was possibly an American badger.

The CNDDB query returned 19 special-status wildlife species with occurrences within 5 miles of the site. The USFWS official species list (Appendix A) contains 11 federally listed species, six of which had not shown up in the CNDDB query. Although not included in the USFWS official species list or CNDDB query results, two additional special-status species — golden eagle and monarch butterfly — are also included in Table C. The golden eagle is included due to known occurrences in the area (Kolar and Wiens 2017), and the monarch is included due to the presence of the host plant on the site. Table C summarizes the potentials for each of these 27 species to occur on the site. For birds, the potential to occur refers only to nesting, as many species may fly over or forage on the site. Special-status species that have potential to occur on the site are discussed in further detail below.

Two special-status species — western burrowing owl (*Athene cunicularia*) and Swainson's hawk (*Buteo swainsoni*) — were seen on the site. At least two burrowing owls were seen outside burrows in May 2021 on multiple occasions. One Swainson's hawk was detected with the trail camera.

Each of the special-status species that were determined to have some potential to occur on the site are discussed in more detail below.

Table C: Special-Status Animal Species Evaluated

Species	Status* (Federal/State/ CDFW)	Habitat Requirements	Potential to Occur
Amphibians			
Ambystoma californiense California tiger salamander	FT/CT/--	Spends most of its life in underground burrows. Breeds in vernal pools and ponds, including cattle stock ponds. Breeds after the first rains in late fall and early winter, when the wet season allows the salamander to migrate to the nearest pond, a journey that may be over 1 mile and take several days. Lays eggs in small clusters or singly, which hatch after 14 to 21 days. The pools must hold water for a minimum of 12 weeks for the larvae to successfully metamorphose into their terrestrial form.	Low. There are 22 CNDDB occurrences within 5 miles of the site. The nearest occurrence is 1 mile from the site, which is close to the maximum distance the species is known to disperse. A pond approximately 0.38 mile northeast of the site may provide suitable breeding habitat. However, this feature is separated from the project site by an orchard, which individual salamanders would be unlikely to disperse through. There is a remote possibility that individual salamanders may move through the project site during rainy nights.
Rana draytonii California red-legged frog	FT/--/CSC	Inhabits permanent and temporary pools, streams, freshwater seeps, and marshes in lowlands and foothills. Uses adjacent upland habitat for foraging and refuge. Breeds during the wet season from December through March in slow parts of streams, lakes, reservoirs, ponds, and other waters with emergent vegetation. Lays 300 to 4,000 eggs in a large cluster, which is attached to plants near the water surface. Requires water for 4 to 7 months for tadpoles to complete metamorphosis.	Low. There are 50 CNDDB occurrences within 5 miles of the site, and 4 of these occurrences are less than 1 mile from the site. A pond approximately 0.38 mile northeast of the site may provide suitable breeding habitat. However, this feature is separated from the project site by an orchard, which individual frogs would be unlikely to disperse through. There is a low potential for frogs to migrate through the project site, especially on rainy nights.
Reptiles			
Actinemys (=Emys) marmorata Western pond turtle	--/--/CSC	Permanent or nearly permanent water (fresh to brackish) in a wide variety of habitat types. Requires basking sites such as steep banks, logs, or rocks. Upland areas with friable soils are required for egg laying.	None. There are five CNDDB occurrences within 5 miles of the site. There is no suitable aquatic habitat on the site, and the nearby canal is not suitable habitat.
Masticophis flagellum ruddocki *=(Coluber flagellum ruddocki)* San Joaquin coachwhip	--/--/CSC	Lives primarily in grasslands and open scrub plant communities. Takes cover under rocks and boards and in rodent burrows.	Moderate. There is one CNDDB occurrence within 5 miles of the project site, based on a collection of one snake made in 1996.

Table C: Special-Status Animal Species Evaluated

Species	Status* (Federal/State/ CDFW)	Habitat Requirements	Potential to Occur
Arizona elegans occidentalis California glossy snake	--/--/CSC	A nocturnal species that stays in burrows or under rocks during the day. Inhabits dry grasslands and chaparral. In California, ranges from San Diego County north to Alameda County.	Moderate. There are two CNDDB occurrences within 5 miles of the site. There are loose soils and numerous burrows on the site. The site's small size and isolation due to infrastructure, agriculture, and residential housing limit the suitability of the site.
Thamnophis gigas Giant garter snake	FT/CT/--	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals, slow-flowing irrigation ditches, and rice fields. Requires upland burrows above flood zone for winter refuges.	None. There are no CNDDB occurrences within 5 miles of the project site. The site is outside the known range of the species, and there is no suitable habitat on or near the site.
Phrynosoma blainvillii Coast horned lizard	--/--/CSC	Found in open grasslands, chaparral, and woodlands with loose or sandy soils. Feeds primarily on ants.	Low. There are two CNDDB occurrences within 5 miles of the site. The species will inhabit grasslands, but is typically associated with sandy soils that are not abundant on the site.
Birds			
Athene cunicularia Burrowing owl	--/--/CSC	Nearly or quite level grassland, prairie, and desert floor with short or sparse vegetation. Subterranean nester that generally uses existing mammal burrows (especially of ground squirrels), but will also excavate its own burrows.	Present. There are 39 CNDDB occurrences within 5 miles of the project site, including observations made in 1989 and 2007 adjacent to the project site. LSA biologists observed at least two burrowing owls on the site in 2021, and a trail camera captured images of one burrowing owl.
Lanius ludovicianus Loggerhead shrike	--/--/CSC	Nests in shrubs and small trees in grasslands.	None. There are two CNDDB occurrences within 5 miles of the project site. The site lacks shrubs and small trees that would be suitable for nesting.
Circus cyaneus Northern harrier	--/--/CSC	Nests primarily in large expanses of grasslands including fallow agricultural fields, marshes, and meadows.	None. There are two CNDDB occurrences within 5 miles of the project site. While the project site provides a large open field suitable for foraging northern harriers, it does not support densely vegetated or wet areas, such as meadows and marshes, ideal for nesting harriers. As a result, northern harriers may forage on the site, but are not expected to nest on the site.

Table C: Special-Status Animal Species Evaluated

Species	Status* (Federal/State/ CDFW)	Habitat Requirements	Potential to Occur
Melospiza melodia Modesto song sparrow	--/--/CSC	Found in riparian forests and freshwater wetlands.	None. There are three CNDDB occurrences within 5 miles of the project site, all of which are associated with rivers, canals, or wetlands. The site lacks suitable wetland vegetation for foraging and nesting.
Buteo swainsoni Swainson's hawk	--/CT/--	Nests primarily in dense trees in riparian areas. Forages in open areas, including agricultural fields.	None. There are 21 CNDDB occurrences within 5 miles of the project site. There are no trees or shrubs suitable for nesting on or adjacent to the site. The species probably forages occasionally on the site.
Agelaius tricolor Tricolored blackbird	--/CT/CSC	Breeds in large colonies near freshwater, preferably emergent wetland such as cattails and tules but also in thickets of willow and other shrubs. Requires nearby foraging areas with large numbers of insects.	None. There are four CNDDB occurrences within 5 miles of the site. The project site does not support any marshes with emergent vegetation.
Elanus leucurus White-tailed kite	--/--/CFP	Hunts in open grassland habitats with sparse shrubs and trees. Nests near the top of trees.	None. There is no potential for the species to nest on the site, due to the absence of trees. May occasionally fly over or forage on the site.
Aquila chrysaetos Golden eagle	--/--/CFP	Hunts over rolling foothills and mountain areas. Nests in cliff-walled canyons or large trees in open areas.	None. There is no potential for the species to nest on the site, due to the absence of trees, transmission towers, cliffs, or other suitable nesting sites. May occasionally fly over or forage on the site.
Mammals			
Vulpes macrotis mutica San Joaquin kit fox	FE/CT/--	Found primarily in flat areas with short, sparse vegetation in the southern San Joaquin Valley. Feeds on kangaroo rats and other small rodent species, but will also consume insects, hares, mice, and lizards. Lives in dens that it either excavates itself or moves into atypical dens, including manmade structures.	None. There are no CNDDB occurrences within 5 miles of the site. No nearby occurrences were recorded within the last 20 years. No likely dens were seen during the biological surveys, and trail cameras deployed at dens for several evenings did not detect the species.

Table C: Special-Status Animal Species Evaluated

Species	Status* (Federal/State/ CDFW)	Habitat Requirements	Potential to Occur
Taxidea taxus American badger	--/--/CSC	Open grassland areas with friable soils and plentiful prey such as pocket gophers and ground squirrels.	Moderate. There are seven CNDDB occurrences within 5 miles of the site. There are ground squirrels on the site which provide an adequate prey base. No potential dens were detected during the site visits, but badgers may hunt on the site occasionally.
Invertebrates			
Callophrys mossii bayensis San Bruno elfin butterfly	FE/--/--	Known to occur only on slopes of the coastal mountains in San Mateo County. Lays eggs on the larval host plant stonecrop (*Sedum spathulifolium*).	None. The project site is outside the known range of the species and does not contain the host plant. There are no CNDDB occurrences within 5 miles of the site.
Danaus plexippus Monarch butterfly	FC/--/--	Migrates through the San Joaquin Valley primarily in the spring and fall. Lays eggs on the larval host plant milkweed.	Moderate. Milkweed is present on the site. The CNDDB does not track monarch butterfly observations, except at coastal overwintering sites.
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	FT/--/--	Occurs only in the Central Valley and associated foothills with blue elderberry (*Sambucus mexicana*). Lives in elderberry bushes with a stem diameter at ground level of at least 1 inch. Lays eggs in the stems of elderberries. Eggs hatch into larvae, which transform to the adult stage after up to 2 years.	None. No elderberry plants occur on or near the site. There are no CNDDB occurrences within 5 miles of the site.
Branchinecta conservation Conservancy fairy shrimp	FE/--/--	Found only in vernal pools in California's Central Valley and one population in Ventura County.	None. No vernal pools are present on the project site. There are no CNDDB occurrences within 5 miles of the site.
Branchinecta lynchi Vernal pool fairy shrimp	FT/--/--	Inhabits vernal pools and swales during all stages of its life cycle.	None. No vernal pools are present on the site. There are three CNDDB occurrences within 5 miles of the site.
Branchinecta longiantenna Longhorn fairy shrimp	FE/--/--	Found in seasonal pools that range from clear to turbid, including depressions in sandstone outcroppings near Tracy, grass-bottomed pools in Merced County, and claypan pools in San Luis Obispo County.	None. No vernal pools are present on the site. There are six CNDDB occurrences within 5 miles of the site, but all are associated with pools in sandstone rock outcroppings.

Table C: Special-Status Animal Species Evaluated

Species	Status* (Federal/State/ CDFW)	Habitat Requirements	Potential to Occur
Lepidurus packardi Vernal pool tadpole shrimp	FT/--/--	Inhabits a wide variety of seasonal aquatic habitats, including vernal pools, seasonal wetlands, ephemeral stock tanks, and manmade ditches. Reproduces via cysts that persist in the dried soil of the water feature until it refills during the rainy season.	None. No vernal pools or other seasonal wetlands are present on the project site. There are no CNDDB occurrences within 5 miles of the site.
Fish			
Hypomesus transpacificus Delta smelt	FT/CE/--	Only found in estuarine waters from the Sacramento-San Joaquin confluence to San Pablo Bay. Can tolerate a wide range of salinities and moves into river channels and tidally influenced backwater sloughs.	None. There is no suitable habitat on or near the site. There are no CNDDB occurrences within 5 miles of the site.
Thaleichthys pacificus Eulachon	FT/--/--	Spends most of its adult life in the Pacific Ocean but returns to the freshwater streams where it hatched to spawn. Adults die after spawning.	None. There is one CNDDB occurrence within 5 miles, but no suitable perennial streams are located on or near the site.
Oncorhynchus mykiss irideus Steelhead - Northern California Distinct Population Segment	FT/--/--	Requires cool, swift moving perennial streams with clean, unsilted gravel beds for spawning and egg deposition.	None. There is one CNDDB occurrence within 5 miles, but no suitable perennial streams are located on or near the site.

Source: Compiled by LSA (2021).
* Status:
FT = Federally listed as threatened; FE = Federally listed as endangered; FC: Federal candidate species
CT = California State listed as threatened; CE = California State listed as endangered; CSC = California species of special concern; CFP = California Fully Protected
CDFW = California Department of Fish and Wildlife
CNDDB = California Natural Diversity Database

California Tiger Salamander

Status and Natural History. The California tiger salamander (CTS) has been divided into three distinct population segments by the USFWS. The project site is located within the Central California Population Segment, which was listed as Threatened under the ESA. It is also listed as Threatened under the CESA. CTS occurs in grassland, oak woodland, and coastal sage scrub communities in the San Joaquin Valley and central Coast Ranges of California, from southern Solano County to eastern Kern County and in the Sierra Nevada foothills, from southern Sacramento County to northern Tulare County (Stebbins 2003). Adult CTS spend the majority of the year below ground in rodent burrows or other natural crevices (Shaffer et al. 1993). Individuals are most frequently observed near burrows of ground squirrels or Botta's pocket gophers (Shaffer et al. 1993). They move to seasonal ponds in response to winter rains to breed. Eggs hatch into larvae after several days. The larval stage has been reported to last 3 to 6 months, with metamorphosis beginning in the late spring or early summer (Petranka 1998; U.S. Fish and Wildlife Service 2017; Trenham et al. 2000). The metamorphosed juveniles leave the pond as it dries and disperse to underground retreats.

Occurrence in the Project Vicinity. Within eastern Alameda County, CTS are known from multiple records throughout grassland areas. At least 22 occurrences have been recorded in the CNDDB within a 5-mile radius of the project site (CDFW 2021). Two of these occurrences are based on observations made within 2 miles of the site. The grassland with burrows within the project site provides suitable upland habitat for CTS, and a pond approximately 0.4 mile northeast of the site may provide suitable breeding habitat. However, most of the immediate area around the pond is intensively cultivated. There is a therefore a very low potential for CTS to migrate through the project site on rainy nights.

California Red-Legged Frog

Status and Natural History. The California red-legged frog (CRLF) is a California Species of Special Concern. It was federally listed as a threatened species on May 23, 1996. Critical habitat was designated on March 17, 2010.

CRLF breed from November through April (Storer 1925). Egg masses hatch in 6 to 14 days (USFWS 2002). Larvae metamorphose in 3.5 to 7 months, typically between July and September (Storer 1925; USFWS 2002). During dry periods, CRLF are seldom found far from water. However, during wet weather, individuals may make overland excursions through upland habitats over distances of up to 2 miles. During the summer, CRLF may disperse from their breeding habitat to forage and seek shelter if water is not available (USFWS 2002). Breeding sites include a variety of aquatic habitats: streams, deep pools, backwaters within streams and creeks, ponds, marshes, and lagoons. Breeding adults are commonly found in deep, still or very slow-moving water with dense, shrubby riparian or emergent vegetation (Hayes and Jennings 1988).

Occurrence in the Project Vicinity. There are 50 CNDDB occurrences within 5 miles of the site, and 4 of these occurrences are less than 1 mile from the site. A pond approximately 0.4 mile northeast of the site may provide suitable breeding habitat. However, this feature is separated from the project site by an orchard. There is a low potential for CRLF to migrate through the project site, especially on rainy nights. CRLF could also use burrows on the site as shelter during the summer.

San Joaquin Coachwhip

Status and Natural History. The San Joaquin coachwhip is a California Species of Special Concern. It is found in grasslands and open scrub areas without trees throughout the San Joaquin Valley and associated foothills. It hunts during the day and eats small animals such as rodents, lizards, and birds. It takes refuge in rodent burrows or under objects on the surface of the ground.

Occurrence in the Project Vicinity. The CNDDB search returned one occurrence of the San Joaquin coachwhip within 5 miles of the project site, based on an individual collected in 1996 approximately 2.2 miles south of the site (CDFW 2021). The site and lands to the south provide suitable habitat for the species.

California Glossy Snake

Status and Natural History. The glossy snake is a California Species of Special Concern. It is found in arid grasslands, scrub, and chaparral from Alameda County south to Baja Mexico. It is nocturnal and hunts during the day and hides in burrows or under rocks during the day. It feeds on diurnal lizards while they sleep, as well as other small animals.

Occurrence in the Project Vicinity. The CNDDB search returned two occurrences of the glossy snake within 5 miles of the project site (CDFW 2021). The site and lands to the south provide suitable habitat for the species.

Coast Horned Lizard

Status and Natural History. The coast horned lizard is a California Species of Special Concern. The coast horned lizard inhabits sparsely vegetated openings with loose, often sandy soils in a variety of habitats, including scrubland, grassland, chaparral, and coniferous forests. The species has a patchy range from south of the Golden Gate and Carquinez Straits, south to San Diego County and eastward into the Sierra Nevada. Horned lizards feed almost exclusively on ants and are frequently found in association with ant colonies.

Occurrence in the Project Vicinity. There are two CNDDB occurrences of coast horned lizard within 5 miles of the site (CDFW 2021), both based on observations made in grazed grasslands. The project site does not have much of the sandy soil the horned lizard prefers, and no ant colonies were seen during the site surveys. Therefore, there is a low potential for the species to occur on the site.

Burrowing Owl

Status and Natural History. Burrowing owl is a California Species of Special Concern. Historically it was found throughout most of lowland California except in forested areas. Its breeding range has remained largely the same but within this overall range there have been local extirpations and declines, largely due to urbanization. It is still relatively common in the interior parts of Alameda County. Burrowing owls inhabit grasslands and other areas of short vegetation including in agricultural areas and near developed areas. They require underground burrows for roosting and nesting, most commonly originally dug by ground squirrels, but will also use artificial structures such as culverts, pipes, and rock riprap. They are capable of digging their own burrows in loose soil.

Occurrence in the Project Vicinity. Burrowing owls were observed on the site during the field survey. Burrowing owl use seemed to be more concentrated on the western half of the site, but suitable burrows are scattered fairly evenly throughout the site. There are 39 CNDDB occurrences within 5 miles of the project site, including observations made in 1989 and 2007 adjacent to the project site.

Swainson's Hawk

Status and Natural History. The Swainson's hawk was listed as Threatened by the CDFW on April 17, 1983. It is not federally listed. Swainson's hawk is an uncommon breeding summer resident and migrant of the Central Valley of California. This species typically nests in scattered trees within grassland, shrubland, or agricultural landscapes (e.g., along stream courses or in open woodlands). The stick nests are often at the edge of narrow bands of riparian vegetation, in isolated oak woodland, and in lone trees, roadside trees, or farmyard trees, as well as in adjacent urban residential areas. Individual hawks will fly up to 18 miles from their nest to search for prey.

Occurrence in the Project Vicinity. The CNDDB search returned 21 occurrences of Swainson's hawks within 5 miles of the project site (CDFW 2021). The closest CNDDB occurrence is based on an observation made in 1994 approximately 0.75 mile project site. The second-closest observation was made in 2003, approximately 1.85 miles from the project site. Since then the areas where the nest trees were have been developed. There are no trees suitable for nesting on or adjacent to the site, and a review of recent aerial imagery indicates in is unlikely the species will nest within 1 mile of the site. The grassland on the site provides a small area that is suitable for the species to forage on, as indicated by the one Swainson's hawk that was recorded on the site by the trail camera.

American Badger

Status and Natural History. The American badger is a California Species of Special Concern. The historic range of badgers in California included most lowland areas with the exception of the humid coastal forests in the northwest portion of the state and other areas of dense forest. They were also present in the high mountains in large meadow systems and alpine fell fields. They have disappeared from large portions of their historic range in the Central Valley due to cultivated agriculture and in coastal areas (both north and south) due to urbanization. Badgers continue to be present in eastern Contra Costa and Alameda counties.

Badger habitat is usually open, uncultivated ground. This includes grassland, savannas, and mountain meadows. In eastern Alameda and Contra Costa counties badgers are often found in the rolling grasslands where cattle grazing is the primary land use. Badgers prey mainly upon fossorial mammals by using their powerful claws to dig out their burrows. Individual badgers have a large home range and may use several dens. There is a moderate potential for the species to hunt on the project site.

Occurrence in the Project Vicinity. The CNDDB search returned seven occurrences of American badgers within 5 miles of the project site (CDFW 2021). Suitable grassland habitat is present at the project site and American badgers could both forage and den at the site. However, the site is too small to sustain a population of badgers, and the residential development to the east, orchard to the north, and canal to the west reduce the ability of badgers to move through the site. No potential

badger dens were observed during the field survey. However, one image from a remote camera taken at night recorded what may have been a badger.

San Joaquin Kit Fox

Status and Natural History. The SJKF is a subspecies of kit fox. The USFWS listed this subspecies as endangered March 11, 1967; it is listed as a threatened species by the CDFW. Critical habitat for SJKF has not been designated. The SJKF is found primarily in the San Joaquin Valley area of California. SJKF currently inhabit portions of the San Joaquin Valley and the surrounding foothills of the Coast Ranges, Sierra Nevada, and Tehachapi Mountains, from southern Kern County north to Stanislaus County on the western side of the San Joaquin Valley. There are no known areas currently occupied by SJKF in the portions of Alameda, Contra Costa, and San Joaquin counties (Constable et al. 2009, USFWS 2010) where they previously occurred.

SJKF occur in a variety of habitats, including grasslands, scrublands, vernal pool areas, alkali meadows and playas, and an agricultural matrix of row crops, irrigated pastures, orchards, vineyards, and grazed annual grasslands (USFWS 1998). In the northern part of its range (including Alameda County) most habitat on the valley floor has been eliminated. They previously occurred primarily in foothill grasslands, valley oak savanna, and alkali grasslands (USFWS 1998). In addition to habitat loss, San Joaquin kit fox were likely extirpated by the use of rodenticides to reduce small mammal populations. San Joaquin kit fox were exposed to rodenticides in the prey animals that had it in their systems, and also had their prey base reduced.

Occurrence in the Project Vicinity. The CNDDB lists 18 occurrences of SJKF within 5 miles of the project site (CDFW 2021). The closest CNDDB occurrence is based on a road-killed individual found in the early 1970s approximately 0.9 mile from the site. The most recent of the 18 occurrences was made in 2000, approximately 3 miles from the site. A more recent survey of Contra Costa County and Alameda County within the known range of the SJKF found no evidence of recent occupancy (Clark et al. 2003). Despite extensive surveys conducted in 2002 in Alameda County, no sign of SJKF was found.

Monarch Butterfly

Status and Natural History. The monarch butterfly became a Candidate species for listing under the Endangered Species Act. Candidate species have no legal protection under the ESA, but the monarch does meet the CEQA definition of a special-status species.

Occurrence in the Project Vicinity. The CNDDB only tracks large overwintering colonies of monarch butterfly, which occur in coastal areas. No monarchs were observed during the surveys, but monarchs have been documented in 2021 in Tracy approximately 10 miles east of the site (iNaturalist 2022). Monarchs have also been observed breeding in Alameda County (Western Monarch Milkweed Mapper 2022). Due to the presence of milkweed plants, there is a moderate potential for monarchs to use the site.

CRITICAL HABITAT

Designated critical habitat for four federally listed species — Contra Costa goldfields, vernal pool fairy shrimp, California red-legged frog, and Delta smelt — is located within 5 miles of the site. The site is not located within designated critical habitat for any species. As previously stated, the site does not have any aquatic features that could serve as habitat for these four species.

IMPACTS ANALYSIS AND MITIGATION

The CEQA guidelines for assessing whether an impact from a project will have a "significant" effect on biological resources are listed in State CEQA Guidelines Section 15065. It states that a lead agency shall find that a project may have a significant effect on the environment if any of the following conditions may occur:

- the potential to substantially degrade the quality of the environment
- substantially reduce the habitat of a fish or wildlife species
- cause a fish or wildlife population to drop below self-sustaining levels
- threaten to eliminate a plant or animal community
- substantially reduce the number or restrict the range of an endangered, rare, or threatened species

In addition to the criteria in Section 15065, State CEQA Guidelines Appendix G provides a checklist of six additional potential impacts to consider when analyzing a project. The impacts listed in Appendix G may or may not be significant, depending on the level of the impact. For biological resources, this includes whether the project would:

a. 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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

b. have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service

c. have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act

d. 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

e. conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

f. conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan

The following impact assessment addresses each of the six significance criteria (A-F) above.

*a. **Impacts on Special-Status Species:** 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)*

No impacts to special-status plant species would occur, given that none are expected to occur within or in the immediate vicinity of the project site. Potential construction- and operation-period impacts to nine special-status wildlife species — California tiger salamander, California red-legged frog, San Joaquin coachwhip, glossy snake, Coast horned lizard, burrowing owl, Swainson's hawk, American badger, and monarch butterfly — are discussed below.

Potential Impacts on all Special-Status Species: Construction of the project could potentially kill, injure, or alter the behavior of special-status species on the site, a potentially significant impact. Implementation of Measures BIO-1.1 and BIO-1.2 would help reduce impacts to a less than significant level:

Measure BIO-1.1: A qualified biologist will conduct an environmental education program for all persons employed or otherwise working on the project site before they perform any work. The program shall consist of a presentation from the biologist that includes a discussion of the biology and general behavior of special-status species on or near the site; information about the distribution and habitat needs of the species; sensitivity of the species to human activities; the status of the species pursuant to the Federal Endangered Species Act, the California Endangered Species Act, and the California Fish and Game Code including legal protection; recovery efforts; penalties for violations; and any project-specific protective measures described in this document or any subsequent documents or permits. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers before their performing work on the site. The biologist shall prepare and distribute wallet-sized cards or a fact sheet handout containing this information for workers to carry on the site. Upon completion of the program, employees shall sign a form stating they attended the program and understand all the protection measures.

Measure BIO-1.2: A qualified biologist will be on the site daily to monitor initial grubbing/ vegetation clearing, grading, and ground disturbing activities. The biologist will have the authority to stop work that may impact special-status species.

Potential Impacts to CTS, CRLF, San Joaquin Coachwhip, and California Glossy Snake: Construction of the project has the potential to injure or kill CTS, CRLF, San Joaquin coachwhip, and California glossy snake that may be in rodent burrows during grading or installation of the monopoles. These species could become entangled in the plastic netting wrapped around erosion-control devices. These species could become entrapped in steep-sided trenches or walls. The proposed project would not impact any potential breeding habitat for CTS or CRLF. Because CTS and CRLF generally migrate at night during rain events and construction activities would occur during daylight hours, no impact on migrating individuals is expected. Operation of the proposed solar facility is not anticipated to impact CTS or glossy snake because the adults are only active on the surface at night.

Potential impacts to these species would be reduced to less than significant with implementation of Measures BIO-1.1, 1.2, 2.1, 2.2, and 2.3.

Measure BIO-2.1: The Applicant shall include in the contract specifications a requirement to use tightly woven fiber of natural materials (e.g., coir rolls or mats) or similar material for erosion control. Plastic mono-filament netting (erosion control matting) or similar material shall be prohibited, to prevent the entrapment of wildlife.

Measure BIO-2.2: Surveys for CTS, CRLF, San Joaquin coachwhip, California glossy snake, and Coast horned lizard shall be conducted by a qualified biologist within 24 hours prior to the initiation of any vegetation clearing or ground disturbing activities. All suitable habitat including refuge such as burrows, under rocks, duff, debris, etc., shall be thoroughly inspected. Any listed wildlife that are encountered will be allowed to leave the work area of their own volition.

Measure BIO-2.3: To avoid entrapment, injury, or mortality of listed species resulting from falling into steep-sided holes or trenches, all excavated holes or trenches deeper than 12 inches shall be covered at the end of each workday with plywood or similar materials. Larger excavation that cannot easily be covered shall be ramped at the end of the workday to allow trapped animals an escape method.

Potential Impacts to Burrowing Owl: Construction of the project has the potential to crush or entomb burrowing owls in burrows. Construction work near an occupied burrow could impact breeding or wintering western burrowing owls through general disturbance. Installation of the solar panels will permanently impact 11 acres of burrowing owl habitat by lowering the habitat quality. Potential impacts to burrowing owl would be reduced to less than significant with implementation of Measures BIO-1.1, 1.2, 3.2, 3.3, and 3.4.

Measure BIO-3.1: Prior to initiating construction activities, a CDFW-approved biologist shall conduct surveys for burrowing owl within 500 feet of the project site, where safely accessible. This measure incorporates avoidance and minimization guidelines from the CDFW 2012 Staff Report on Burrowing Owl Mitigation. The surveys will establish the presence or absence of western burrowing owl and/or habitat features and evaluate use by owls. Surveys shall take place near sunrise or sunset in accordance with CDFW survey guidelines. All burrows or burrowing owls shall be identified and mapped. Surveys shall take place no more than 30 days prior to construction. During the breeding season (February 1–August 31), surveys shall document whether burrowing owls are nesting in or directly adjacent to disturbance areas. During the nonbreeding season (September 1–January 31), surveys shall document whether burrowing owls are using habitat in or directly adjacent to any disturbance area. Survey results shall be valid only for the season (breeding or nonbreeding) during which the survey is conducted.

Measure BIO-3.2: If burrowing owls are found during the breeding season (February 1–August 31), the project proponent shall avoid all nest sites that could be disturbed by project construction during the remainder of the breeding season or while the nest is

occupied by adults or young. Avoidance shall include establishment of a non-disturbance buffer zone (described below). Construction may occur during the breeding season if a qualified biologist monitors the nest and determines that the nest is inactive. During the nonbreeding season (September 1–January 31), the project proponent shall avoid the owls and the burrows they are using. Avoidance shall include the establishment of a buffer zone.

Measure BIO-3.3: If occupied burrows for nonbreeding burrowing owls are not avoided, passive relocation shall be implemented. Owls shall be excluded from burrows in the immediate impact zone and within an appropriate buffer zone as recommended by the biologist in coordination with CDFW by installing one-way doors in burrow entrances. These doors shall be in place for 48 hours prior to excavation. The project area shall be monitored daily for 1 week to confirm that the owl has abandoned the burrow. Whenever possible, burrows shall be excavated using hand tools and refilled to prevent reoccupation. Plastic tubing or a similar structure shall be inserted in the tunnels during excavation to maintain an escape route for any owls inside the burrow.

Measure BIO-3.4: To mitigate for the alteration of burrowing owl habitat, 10 acres on the western and northern edges of the site will be protected in perpetuity under a conservation easement or deed restriction. This land is contiguous with the levee and open space associated with the Mendota Canal. A mitigation and management plan (MMP) with success criteria will be developed for this area and approved by CDFW.

Potential Impacts to Swainson's Hawk: Impacts on Swainson's hawk foraging habitat will include the permanent loss of approximately 11 acres of open grassland foraging habitat. The project will temporarily affect approximately 5 acres of mostly non-native annual grassland within the project site. Much of this area is characterized by ruderal, often sparse vegetation, trash accumulation, roadside gravel, and fill. The area next to the roadway is also subject to noise from passing vehicles and presents a strike risk to the birds and is thus a sub-optimal foraging area. There are no suitable nest trees on or adjacent to the project site. The project site is a relatively small, disjunct parcel of habitat adjacent to dense residential development; by itself it cannot support a breeding pair of Swainson's hawk. However, the incremental loss of foraging habitat could be a significant impact. Potential impacts to Swainson's hawk would be reduced to less than significant with implementation of Measures BIO-1.1, 1.2, 3.4, and 4.1.

Measure BIO 4.1: The MMP described in Measure BIO-3.4 for the 10-acre conservation area shall include a prescription for managing the area as habitat for Swainson's hawk. The MMP will include success criteria for Swainson's hawk habitat.

Potential Impacts to San Joaquin Kit Fox: Kit fox are extirpated from the area and are not expected to use the site. In the event kit fox recolonize the northern part of their range and move into the project site area at some future time, they will be able to move through the wildlife-friendly fence and use the protected 10 acres described in Measure Bio 3.4. Therefore, impacts to San Joaquin kit fox will be less than significant.

Potential Impacts to American Badger: Initial grading and ground disturbance of the site could injure or kill American badgers in dens or burrows, in the event any are present on the site at the time of the disturbance. Potential impacts to these species would be reduced to less than significant with implementation of Measures BIO-1.1, 1.2, 5.1, and 5.2.

Measure BIO-5.1: Pre-construction surveys shall be conducted for the American badger no more than 14 days prior to the initiation of ground-disturbing activities. Surveys shall be conducted by a qualified wildlife biologist with experience and knowledge in identifying badger burrows and include walking parallel transects looking for badger burrows and sign. Any badger dens identified shall be flagged and mapped.

Measure BIO-5.2: In the event active badger dens are identified, a no-work buffer of 200 feet shall be established around the den and associated occupied areas. If avoidance is not feasible, a biologist shall determine if the burrow is being used as an active maternity den through utilization of remote cameras. If young are determined to be present, the burrow shall be avoided until the young have vacated the burrow as determined by a qualified biologist. If the burrow is determined not to be an active maternity den and young are not present, in coordination with the CDFW, a one-way eviction door shall be installed between September 1 and January 1 to passively relocate the badger and to avoid impacts during the breeding season. If the badger digs back into the burrow, CDFW staff may allow the use of live traps to relocate badgers to suitable habitat from the area of project impact.

Potential Impacts to Monarch Butterfly: Development of the site will result in the loss of small numbers of narrow-leaved milkweed, the larval food plant for the monarch butterfly. If monarch eggs, larvae, or chrysalides are on the milkweed at the time they are removed it would result in mortality. After construction, the solar panels will lead to the loss of milkweed plants and therefore monarch breeding habitat. Potential impacts to monarch butterfly would be reduced to less than significant with implementation of Measures BIO-1.1, 1.2, 3.4, 6.1, 6.2, and 6.3.

Measure BIO 6.1: The MMP described in Measure BIO-3.4 for the 10-acre conservation area shall include prescription of an appropriate seed mix and planting plan targeted for the monarch butterfly, including milkweed and native flowering plant species known to be visited by monarch butterflies and containing a mix of flowering plant species with continual floral availability through the entire breeding season for monarch butterfly (early spring to fall). The MMP will include success criteria for monarch butterfly.

Measure BIO 6.2: A qualified biologist will conduct a minimum of two pre-construction surveys conducted within 30 days during appropriate activity periods (i.e., March through September) and conditions prior to the start of ground disturbing activities to look for milkweed host plants and signs of monarch breeding activity (larvae or chrysalides). Appropriate conditions for conducting the survey include surveying when temperatures are above 60° Fahrenheit (15.5°Celsius) and not during wet conditions (e.g., foggy, raining, or drizzling). The survey should be conducted at least 2 hours after sunrise and 3 hours before sunset and should occur at least 1 hour

after rain subsides. Preferably, the survey should be conducted during sunny days with low wind speeds (less than 8 miles per hour) but surveying during partially cloudy days or overcast conditions are permissible if the surveyors can still see their own shadow.

Measure BIO 6.3: If monarch butterflies are observed within the project site, a plan to protect monarch butterflies shall be developed and implemented in consultation with USFWS. The plan shall include, but not be limited to, the following measures:

- Specifications for construction timing and sequencing requirements;
- Establishment of appropriate no-disturbance buffers for milkweed and construction monitoring by a qualified biologist to ensure compliance if milkweed is identified;
- Restrictions associated with construction practices, equipment, or materials that may harm monarch butterflies (e.g., avoidance of pesticides/herbicides, BMPs to minimize the spread of invasive plant species); and
- Provisions to avoid monarch butterflies if observed away from a milkweed plant during project activity (e.g., ceasing of project activities until the animal has left the active work area on its own volition).

*b. **Impacts on Sensitive Communities:** 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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service (No Impact)*

No riparian habitats or other sensitive natural communities are present on or immediately adjacent to the project site, and thus none will be impacted by the project.

*c. **Impacts on Wetlands:** Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (No Impact)*

No wetlands or other waters of the U.S./state occur on, or immediately adjacent to, the project site. Thus, the project would result in no direct or indirect impacts on jurisdictional wetlands.

*d. **Impacts on Wildlife Movement:** 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)*

For many species, the landscape is a mosaic of suitable and unsuitable habitat types. Environmental corridors are segments of land that provide a link between these different habitats while also providing cover. Development that fragments natural habitats (i.e., breaks them into smaller, disjunct pieces) can have a twofold impact on wildlife: first, as habitat patches become smaller, they are unable to support as many individuals (patch size), and second, the area between habitat patches may be unsuitable for wildlife species to traverse (connectivity).

The proposed project activities are located within an already disturbed footprint, which is largely surrounded by existing development. Furthermore, the grassland to be developed on the project site is mostly separated from similar nearby habitats by the Mendota Canal, a busy road, and orchard, and residential development. As a result, the project site does not currently provide high-quality areas for wildlife movement. Nevertheless, some animals are expected to move through the site.

The project would further reduce the value of the project site for use by dispersing animals by removing vegetation and solar input. Development of grassland would result in the removal of natural habitat that is used by resident and dispersing wildlife. Noise and human activity would increase during construction of the project, potentially altering animal behavior and discouraging some animals from moving through the site. Lighting during operation of the project could disorient migrating animals.

However, the project's impacts on wildlife movement are not expected to substantially impede the movement of any species, or of animals in general, within the site vicinity. Many animals are still expected to move through the site despite any incremental increase in project noise, lighting, or human activity. Also, the project site is not the only location where animals can move between open space areas to the north and south; a vegetated strip similar to that on the project site is present to the west of the project site along the Mendota Canal. Therefore, the proposed project would not result in the fragmentation of natural habitats or substantial impediments to wildlife movement, and any common, urban adapted species that currently move through the project site would continue to be able to do so following project construction. As such, the project would not significantly interfere with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, and this impact would be less than significant.

Small numbers of native bird species likely nest on the project site, but this does not meet the definition of a wildlife nursery site. The project site does not provide extensive and/or high-quality habitat areas that would support large breeding populations of any wildlife species, and therefore no native wildlife nursery sites are present.

e. ***Impacts due to Conflicts with Local Policies:*** *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance (No Impact)*

The project would not conflict with any local policies or ordinances regarding biological resources. Thus, there would be no impact.

f. ***Impact due to Conflicts with an Adopted Habitat Conservation Plan:*** *Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan (No Impact)*

The project site is not located within an area covered by an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Thus, the project would not conflict with any such documents. The project also

would not conflict with the goals or policies of the Alameda County General Plan's East County Area Plan. Therefore, there would be no impact.

LITERATURE CITED

American Ornithologists' Union. 1998. *Check-list of North American Birds*, Seventh Edition. Washington, D.C. American Ornithologists' Union.

Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, editors. 2012. *The Jepson Manual: Vascular Plants of California*, Second Edition. University of California Press, Berkeley.

Bradley, R.D., L.K. Ammerman, R.J. Baker, L.C. Bradley, J.A. Cook, R.C. Dowler, D.J. Schmidly, F.B. Stangl, Jr., R.A. Van Den Bussche, and B. Würsig. 2014. Revised Checklist of North American Mammals North of Mexico, 2014. Occasional Papers, Museum of Texas Tech University No. 237.

California Department of Fish and Wildlife (CDFW). 2021. California Natural Diversity Database (CNDDB), commercial version. Biogeographic Data Branch, California Department of Fish and Wildlife, Sacramento. May 1.

California Native Plant Society (CNPS), Rare Plant Program. 2021. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website: www.rareplants.cnps.org (accessed April 2021).

California Natural Diversity Database (CNDDB). July 2021. State and Federally Listed Endangered, Threatened, and Rare Plants of California. California Department of Fish and Wildlife. Sacramento, CA.

Clark, H.O., D.A. Smith, B.L. Cypher, and P.A. Kelly. 2003. Detection Dog Surveys for San Joaquin Kit Foxes in their Northern Range. Prepared for Endangered Species Recovery Program. Contract #4600013447.

Crother, B.I. (ed). 2017. Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, 104 pp. SSAR Herpetological Circular 43.

DeSante, D.F., et al. 2007. A census of Burrowing Owls in central California in 1991. Pages 38-48. J.L. Lincer and K. Steenhof, editors. In *The Burrowing Owl, Its Biology and Management: Including the Proceedings of the First International Symposium*. Raptor Research Report No. 9.

Fallon, C., B. Borders, E. Lee-Mader, and S.H. Black. Milkweeds and Monarchs in the Western U.S. A Xerces Society Guide.

iNaturalist. Website: www.inaturalist.org (accessed January 21, 2022).

Kolar, P.S., and Wiens, J.D., 2017, Distribution, nesting activities, and age-class of territorial pairs of golden eagles at the Altamont Pass Wind Resource Area, California, 2014–16: U.S. Geological Survey Open-File Report 2017–1035, 18 p. Website: https://doi.org/10.3133/ofr20171035 (accessed January 19, 2022).

Marty, J, and E. Zakowski. Monarch Butterfly Habitat Creation in California – A Technical Field Guide. Environmental Defense Fund. 35 pp.

Petranka, James W. 1998. Salamanders of the United States and Canada. Smithsonian Institution Press. Shaffer, H.B., R.N. Fisher, and S.E. Stanley. 1993. Status Report: the California tiger salamander (*Ambystoma californiense*). Final report. Prepared for California Department of Fish and Game. 36 pp. + appends.

Trenham, Peter C., H. Bradley Shaffer, Walter D. Koenig, and Mark R. Stromberg. 2000. Life History and Demographic Variation in the California Tiger Salamander (*Ambystoma californiense*). Copeia 2000 (2): 365–377.

U.S. Department of Agriculture Soil Conservation Service in Cooperation with the University of California Agricultural Experiment Station. 1977. Soil Survey of Alameda County, California.

U.S. Fish and Wildlife Service. 1998. Recovery plan for upland species of the San Joaquin Valley, California. Region 1, Portland, OR. 319 pp.

_____. 1999. San Joaquin Kit Fox Survey Protocol for the Northern Range. Sacramento Fish and Wildlife Office. June.

_____. 2017. Recovery Plan for the Central California Distinct Population Segment of the California Tiger Salamander (*Ambystoma californiense*). U.S. Fish and Wildlife Service, Pacific Southwest Region, Sacramento, California. v + 69 pp.

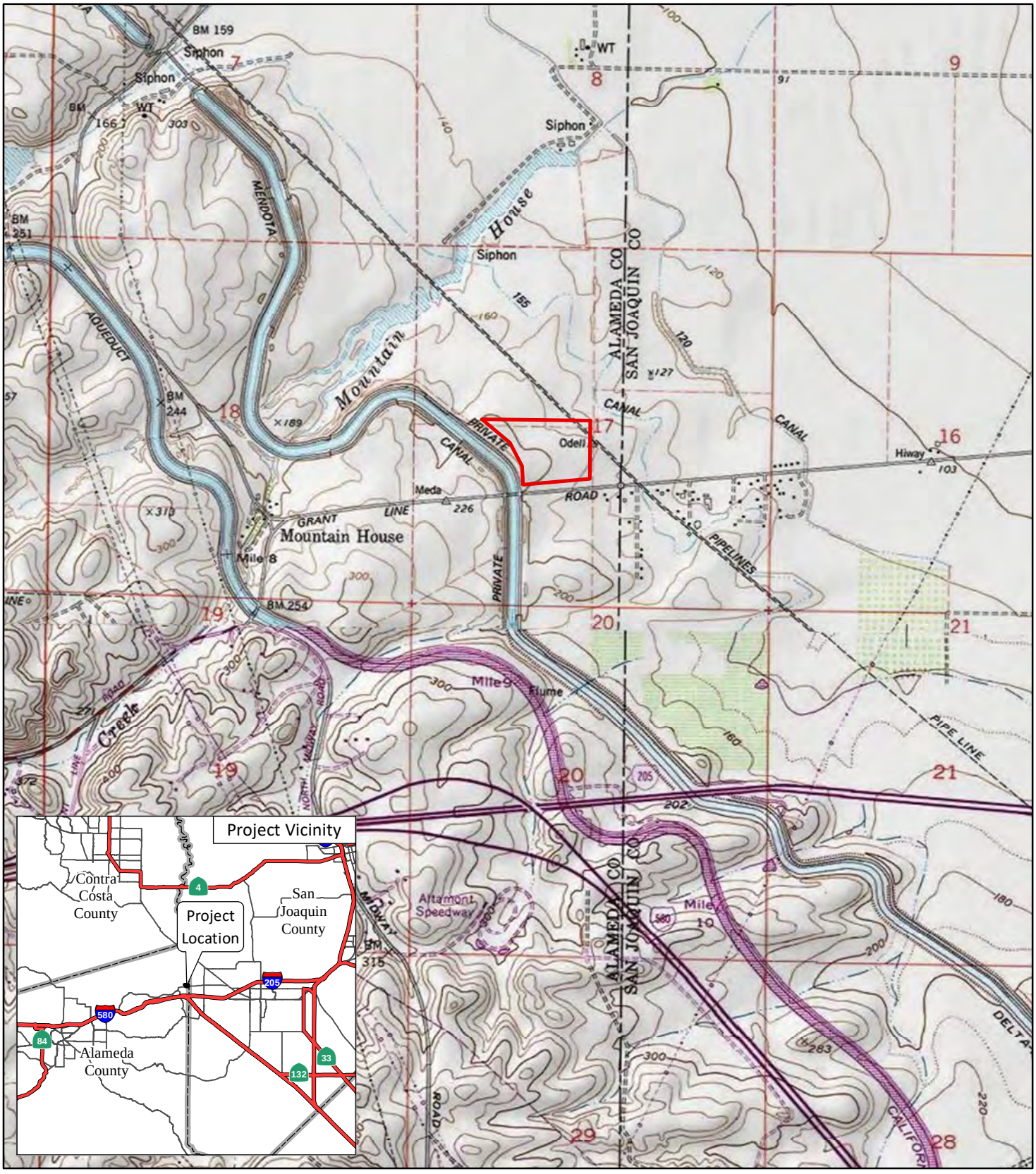
_____. 2020. Species Status Assessment, Report for the San Joaquin kit fox (*Vulpes macrotis mutica*). Sacramento Fish and Wildlife Office. 74pp.

_____. 2020. Monarch (*Danaus plexippus*) Species Status Assessment Report. V2.1 96 pp + appendices.

USGS (United States Geological Survey). 1978. *Clifton Court Forebay, California* 7.5-minute quadrangle.

Western Monarch Milkweed Mapper. 2022. https://www.monarchmilkweedmapper.org/

FIGURES



LSA

LEGEND

Project Site

FIGURE 1

N

0 1000 2000

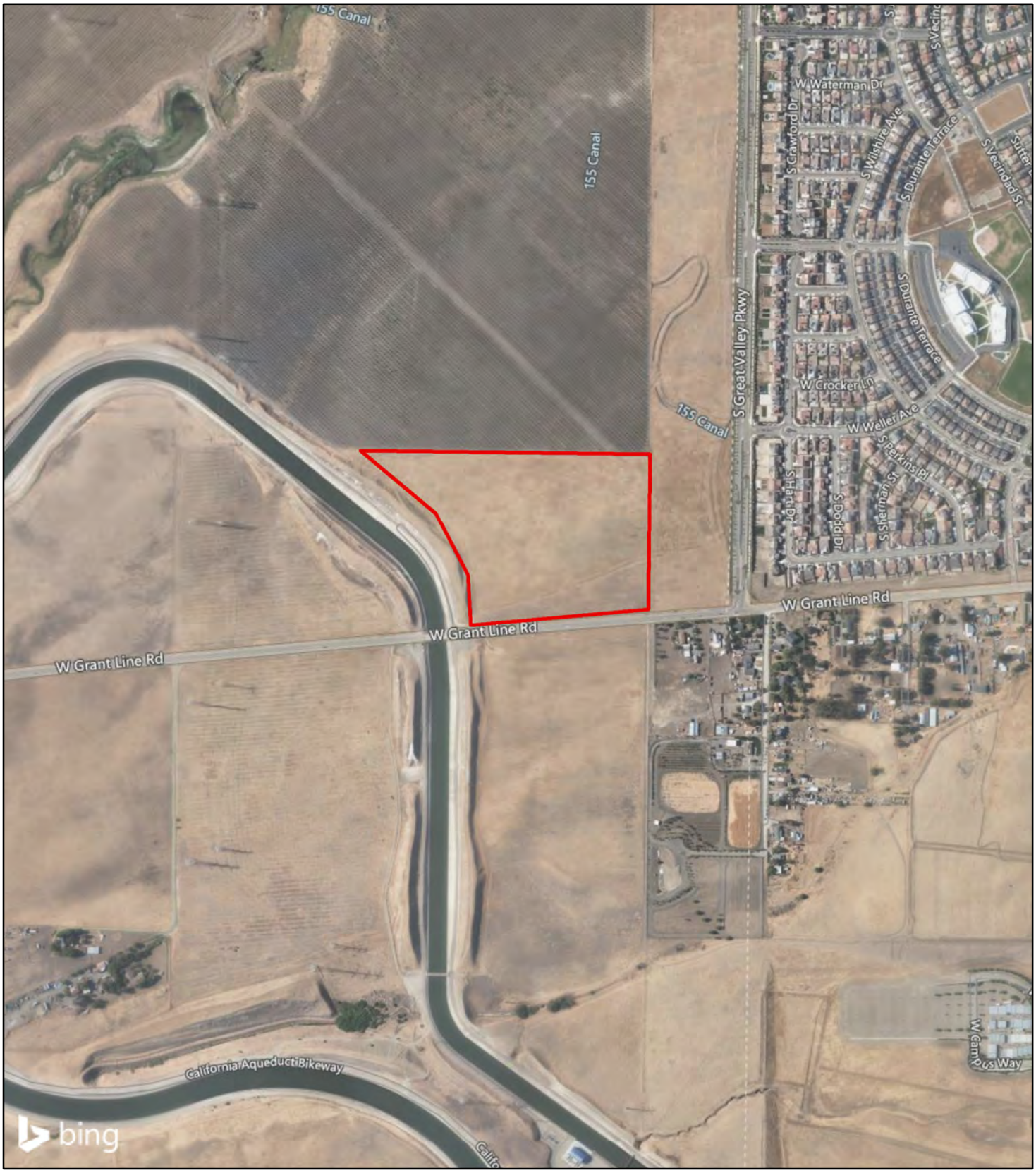
FEET

Alameda Grant Line Solar 1 Project

Project Location and Vicinity

SOURCE: USGS 7.5' Quad.- *Clifton Court Forebay, CA* (1978) and *Midway, CA* (1980)

\\PTR11\images\PLN2101\GIS\Maps\Cultural\Figure1_ProjectLocation.mxd (7/6/2021)



LSA

LEGEND

Project Site

FIGURE 2

N

0 375 750

FEET

SOURCE: Bing Maps, 2021

Alameda Grant Line Solar 1 Project

Project Site

\\PTR11\images\PLN2101\GIS\Maps\Cultural\Figure2_ProjectSite.mxd (7/6/2021)

APPENDIX A

USFWS SPECIES LIST

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Consultation Code: 08ESMF00-2021-SLI-1785
Event Code: 08ESMF00-2021-E-05205
Project Name: PLN2101

May 17, 2021

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2021-SLI-1785
Event Code: 08ESMF00-2021-E-05205
Project Name: PLN2101
Project Type: POWER GENERATION
Project Description: Potential solar farm
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.75707295,-121.56099249433669,14z

Counties: Alameda County, California

Endangered Species Act Species

There is a total of 11 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Reptiles

NAME	STATUS
Alameda Whipsnake (=striped Racer) *Masticophis lateralis euryxanthus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5524	Threatened
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
San Bruno Elfin Butterfly *Callophrys mossii bayensis* There is **proposed** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3394	Endangered
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* https://ecos.fws.gov/ecp/species/321#crithab	Final

APPENDIX F

NOISE DATA

Fundamentals of Noise

NOISE

Noise is most often defined as unwanted sound; whether it is loud, unpleasant, unexpected, or otherwise undesirable. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

Characteristics of Sound

When an object vibrates, it radiates part of its energy in the form of a pressure wave. Sound is that pressure wave transmitted through the air. Technically, airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure that creates sound waves.

Sound can be described in terms of amplitude (loudness), frequency (pitch), or duration (time). Loudness or amplitude is measured in dB, frequency or pitch is measured in Hertz [Hz] or cycles per second, and duration or time variations is measured in seconds or minutes.

Amplitude

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale. Because of the physical characteristics of noise transmission and perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 1 presents the subjective effect of changes in sound pressure levels. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud). Changes of 1 to 3 dB are detectable under quiet, controlled conditions, and changes of less than 1 dB are usually not discernible (even under ideal conditions). A 3 dB change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dB is readily discernible to most people in an exterior environment, and a 10 dB change is perceived as a doubling (or halving) of the sound.

Table 1 Noise Perceptibility

Change in dB	Noise Level
± 3 dB	Barely perceptible increase
± 5 dB	Readily perceptible increase
± 10 dB	Twice or half as loud
± 20 dB	Four times or one-quarter as loud

Source: California Department of Transportation (Caltrans). 2013, September. Technical Noise Supplement ("TeNS").

Frequency

The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all, but are "felt" more as a vibration. Similarly, though people with extremely sensitive hearing can hear sounds as

high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz.

When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to approximate the response of the human ear. The A-weighted noise level has been found to correlate well with people's judgments of the "noisiness" of different sounds and has been used for many years as a measure of community and industrial noise. Although the A-weighted scale and the energy-equivalent metric are commonly used to quantify the range of human response to individual events or general community sound levels, the degree of annoyance or other response also depends on several other perceptibility factors, including:

- Ambient (background) sound level
- General nature of the existing conditions (e.g., quiet rural or busy urban)
- Difference between the magnitude of the sound event level and the ambient condition
- Duration of the sound event
- Number of event occurrences and their repetitiveness
- Time of day that the event occurs

Duration

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called L_{eq}), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the L_{50} noise level represents the noise level that is exceeded 50 percent of the time; half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_2, L_8 and L_{25} values represent the noise levels that are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour, respectively. These "n" values are typically used to demonstrate compliance for stationary noise sources with many cities' noise ordinances. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period, respectively.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law and many local jurisdictions use an adjusted 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level (L_{dn}). The CNEL descriptor requires that an artificial increment (or "penalty") of 5 dBA be added to the actual noise level for the hours from 7:00 PM to 10:00 PM and 10 dBA for the hours from 10:00 PM to 7:00 AM. The L_{dn} descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 PM and 10:00 PM. Both descriptors give roughly the same 24-hour level, with the CNEL being only slightly more restrictive (i.e., higher). The CNEL or L_{dn} metrics are commonly applied to the assessment of roadway and airport-related noise sources.

Sound Propagation

Sound dissipates exponentially with distance from the noise source. This phenomenon is known as "spreading loss." For a single-point source, sound levels decrease by approximately 6 dB for each doubling of distance from the source (conservatively neglecting ground attenuation effects, air absorption factors, and

barrier shielding). For example, if a backhoe at 50 feet generates 84 dBA, at 100 feet the noise level would be 79 dBA, and at 200 feet it would be 73 dBA. This drop-off rate is appropriate for noise generated by on-site operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dB for each doubling of distance over a reflective ("hard site") surface such as concrete or asphalt. Line source noise in a relatively flat environment with ground-level absorptive vegetation decreases by an additional 1.5 dB for each doubling of distance.

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. Extended periods of noise exposure above 90 dBA results in permanent cell damage, which is the main driver for employee hearing protection regulations in the workplace. For community environments, the ambient or background noise problem is widespread, through generally worse in urban areas than in outlying, less-developed areas. Elevated ambient noise levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance. Since most people do not routinely work with decibels or A-weighted sound levels, it is often difficult to appreciate what a given sound pressure level number means. To help relate noise level values to common experience, Table 2 shows typical noise levels from familiar sources.

Table 2 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Onset of physical discomfort	120+	
	110	Rock Band (near amplification system)
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three feet		
	90	
Diesel Truck at 50 feet, at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: California Department of Transportation (Caltrans). 2013, September. Technical Noise Supplement ("TeNS").

Vibration Fundamentals

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities stemming from operations of railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. As with noise, vibration can be described by both its amplitude and frequency. Vibration displacement is the distance that a point on a surface moves away from its original static position; velocity is the instantaneous speed that a point on a surface moves; and acceleration is the rate of change of the speed. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure.

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the root mean square (RMS) velocity. PPV is the maximum instantaneous peak of the vibration signal and RMS is the

square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage and RMS is typically more suitable for evaluating human response.

As with airborne sound, annoyance with vibrational energy is a subjective measure, depending on the level of activity and the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Persons accustomed to elevated ambient vibration levels, such as in an urban environment, may tolerate higher vibration levels. Table 3 displays the human response and the effects on buildings resulting from continuous vibration (in terms of various levels of PPV).

Table 3 Human Reaction to Typical Vibration Levels

Vibration Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e. not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to "architectural" damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: California Department of Transportation (Caltrans). 2013, September. Transportation and Construction Vibration Guidance Manual.

LOCAL REGULATIONS AND STANDARDS

NOISE ELEMENT
OF THE ALAMEDA COUNTY GENERAL PLAN

Alameda County Planning Commission
July 31, 1975
Revised September 29, 1975

AMENDMENTS TO
ALAMEDA COUNTY NOISE ELEMENT
(Adopted January 8, 1976)

Amended May 5, 1994
Board of Supervisors Resolution 94-272

New language is indicated in *italics;* deletions are shown in ~~strikeout~~.

Page 4-12, The following was inserted as the first paragraph under the title "III. Noise Levels In Alameda County."

> *Existing and future noise conditions for the East County Area are contained in the East County Area Plan (see Volume I - Goals, Policies and Programs, Figure 7). The discussion in this Noise Element refers exclusively to noise conditions in that part of Alameda County west of the Pleasanton/Dublin ridgeline.*

Page 4-12, The third paragraph on the page was deleted, as follows:

> ~~Some of the areas where data is lacking are: Highway 84 between Sunol and Livermore and the Livermore Airport. This information will be provided as it becomes available.~~

Page 4-13a, Index Map of Noise Element Maps, Subareas 7 through 12 have been deleted; readers are referred to East County Area Plan (see Volume I - Goals, Policies and Programs, Figure 7).

Maps 5 and 6, Existing noise contours, Portions of map within East County Area Plan were blacked out and readers are referred to East County Area Plan (see Volume I - Goals, Policies and Programs, Figure 7).

Maps 7 through 12, have been deleted.

Page 4-16, A reference was inserted under Section VI., Unincorporated Area Policies, to read as follows:

> *See East County Area Plan for policies and programs addressing noise in the East County Area (Policies 265 through 267 and Implementation Program 100.*

4 - NOISE ELEMENT

I. INTRODUCTION

Noise, for the purposes of the Noise Element, may be briefly defined as unwanted sound. Increasing urbanization and greater volumes of traffic are creating noise problems which adversely affect the quality of the environment for both humans and animals. Although sounds that are pleasant to one person may be noise to another person, it is recognized that excessive sound can be physiologically and psychologically harmful for man and beast. Federal, state, and local governments and private industry are presently involved in attempts to achieve noise reduction through source emission reduction, improved highway design, and land use control.

II. BACKGROUND

Authority:

Under Section 65302 (g) of the California Government Code, all counties and cities in the State must prepare a noise element to their general plans, as follows:

> A noise element in quatitative, numerical terms, showing contours of present and projected noise levels associated with all existing and proposed major transportation elements. These include but are not limited to the following:
>
> 1. Highways and freeways
> 2. Ground rapid transit systems
> 3. Ground facilities associated with all airports operating under a permit from the State Department of Aeronautics.

All agencies, public and private, who are responsible for the construction and maintenance of such transportation facilities are to provide to the local agency producing the noise element of the general plan a statement of the present and projected noise levels of the facility and any information that was used in the development of such levels.

Sources of Noise:

Noise is produced by transportation vehicles, the operation of machinery, radios, and other forms of human activity. It is generally recognized that noise from transportation vehicles has had the most significant effect on the quality of the urban environment. Transportation noise sources are governed by many factors such as: (a) the design, construction, maintenance, and manner of operating a vehicle, and (b) the path that the sound waves travel to meet the observer-distance, obstructions, reflections off surfaces, etc.

Definition of Noise and Methods of Measurement:

> Noise is usually defined as unwanted sound. One person's music may be nothing but noise to another. For example, the sound of rock music from your teenager's hi-fi may be music to him or her, but noise to you if you are trying to converse or relax in an adjoining room. To describe

> noise and its effects on people in a quantitative way, we must include human factors related to the way we perceive noise. These factors include differences in the way our ears hear sounds at different frequencies, whether the sound contains any irritating "screech," such as squeaky chalk on the blackboard, and how long the sound lasts. Applying all these factors enables us to translate from a physical measurement of a sound to its value on a subjective scale.
>
> Sound travels through the air in the form of small waves of tiny air pressure fluctuations. (these waves are similar to the circular waves of motion seen on the surface of the water when a stone is dropped into a pool.) Sound is measured by letting these air pressure fluctuations strike a microphone, and then measuring the electrical signal produced by the microphone. A complete description of the sound must include the magnitude of the pressure at the audible frequencies contained in the sound, and the way the magnitude and frequencies change with time.[1]

Sound levels are commonly measured in units called decibels (dB), and these units are used in a logarithmic scale to define noise according to the perceptions of the human ear. A sound level of zero decibels (0 dB) is the weakest sound normal human ears can detect. Because the scale is logarithmic, a sound ten times more intense than a 0 dB sound has a sound level of 10 dB. A sound 100 times greater than 0 dB has a sound level of 20 dB. In terms of loudness, a sound which is measured as being ten times more intense than another (10 dB higher) is perceived by the human ear as being twice as loud, not ten times as loud.

When combining two sounds, each with equal sound levels, the sum of the sounds is not twice the original level but the original level plus 3 dB. The resulting sound pressure level in decibels from the combined sources would be 3 dB higher than the level produced by either source alone. When combining significantly different sound levels (10 dB or more between the two), the sum is a level not significantly different from that produced by the greater source alone. This is illustrated in Figure 1. Applying this concept to community noise reduction means that the loudest sounds must be quieted in order to achieve real reductions in ambiant levels.

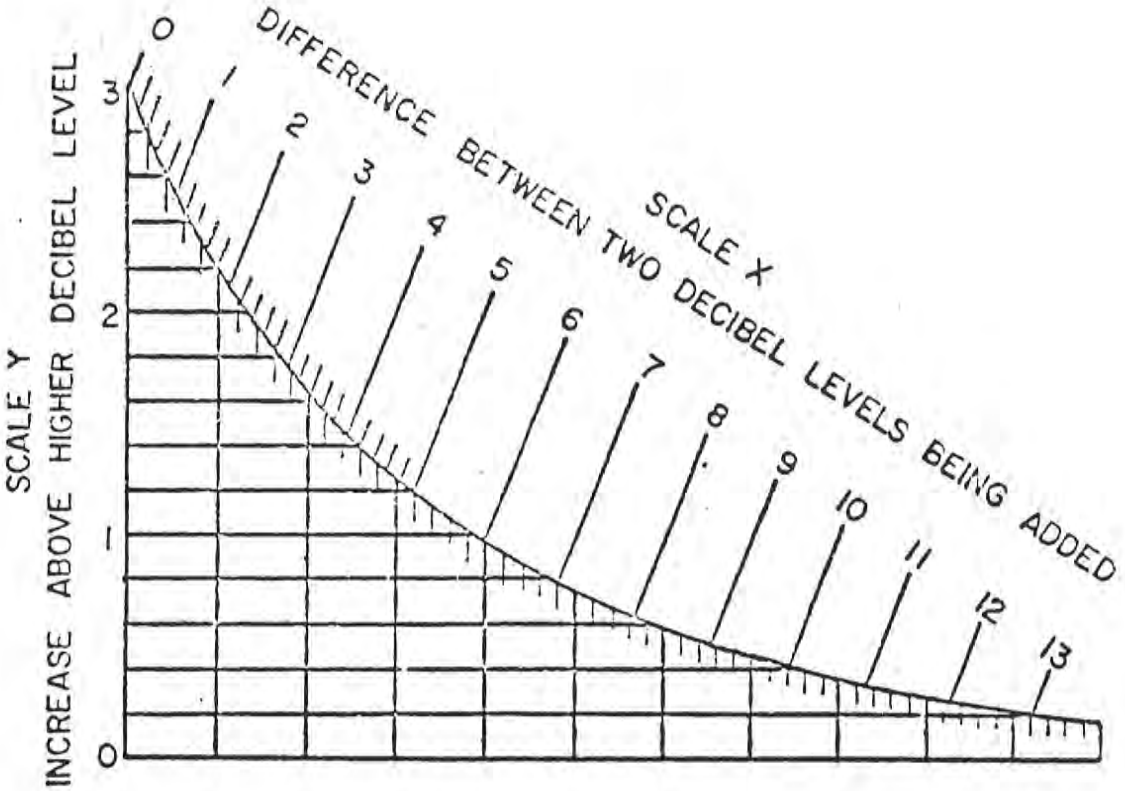
Because of the complex way in which the ear works, strict measurement of noises does not always correlate with their relative loudness of annoyance. Consequently, different scales have been developed to aid in evaluating the importance of different noise sources. Sound, and noise, is usually a variable quantity in the environment. Sounds have variable levels and frequencies, and both of these variables may change with time. The precise measurement of all these variables becomes so complex that the general usefulness is lost except for some scientific purposes. A way is needed to make accurate, comparable measurements of sounds which are related to the effects of those sounds on the human ear.

---

[1] U.S. Department Transportation, Transportation Noise and Its Control (June, 1972), p. 19.

FIGURE 1

CHART FOR COMBINING LEVELS OF UNCORRELATED SOUNDS



The combined noise of a truck (90 dB) and a bus (84 dB) can be calculated in the following manner:

1. Determine the difference in levels (6 dB).
2. Locate 6 dB on Scale X.
3. Read directly across to the left-hand scale (Y) to the answer (approximately 1.0 dB).
4. Add this amount to the higher noise, the truck noise (90 dB + 1.0 dB = 91.0 dB).

The aggregate of these two noise sources is 91 dB.

Source: Measurement of Noise, County of Santa Clara Planning Department, October 1972.

For most purposes, the variable of sound frequency has been eliminated by using a weighting which accounts for the frequency response of the human ear. The human ear is more sensitive to mid-frequency sounds than it is to both high and low frequency sounds. The "A" scale weighting on a sound level meter accounts for the frequency response of the human ear in its measurements and frequency is thus eliminated as a variable in common sound measurements. When a sound level is measured on the A scale, the unit of measurement is the dBA, for example 45 dBA. All measurements of environmental and community noise are made on the dBA scale because they relate to human noise perceptions.

With the sound level being the most important factor for sound measurements, time is the only remaining variable to be eliminated by assumption. There has not been a unanimity of opinion as to the best method of fixing time for environmental noise measurements. Two types of noise measurements are affected by time: (1) the length of exposure to a given sound level, or energy averaged sound level, if the level changes; and (2) the time in the 24 hour day that the sound occurs. Length of exposure is important because this effects the potential for hearing loss as well as the degree to which sounds become annoying to people. Time of day is important because the same sound level occuring at night will usually be much more offensive than during the daytime.

The three systems for dealing with the time variable in sound which are relevant to the sound level measurements taken in Alameda County are presented below:

L_{10}: The most commonly used of a family of statistical sound level measurements, the L_{10} system reflects the level of sound which is exceeded 10% of the time. Intuitively, this results in a sound level measure which reflects nearly the peak sound level during the test period, excluding the top 10% of the noise level as unrepresentative. The L_{10} system used in the California Department of Transportation[1] work was measured at the loudest one hour period of the morning or evening commute. No attempt was made to present noise levels with respect to the different times of day.

L_{dn}: The L_{dn} system of sound level measurement attempts to show a composite, 24 hour representation of the sound level. The exact definition of L_{dn} is complex[2] but it is generally a 24 hour sound measurement which adds a 10 dBA penalty to sounds produced between the night time hours of 10 p.m. and 7 a.m. the next day. Sound levels of this type are sometimes called community sound levels. Bay Area Rapid Transit District, Western Pacific Railroad and the Southern Pacific Transportation Company sound level data will all be in the L_{dn} system.

CNEL: A method very similar to the L_{dn} method, CNEL is a complex expression of community noise levels[2].

---

[1] Formerly California State Division of Highways.

[2] See glossary.

The only difference between L_{dn} and CNEL is that CNEL divides the 24 hour day into three parts and uses slightly different penalties. The CNEL system adds a 5 dBA penalty to sounds produced between 7 p.m. and 10 p.m. and a 10 dBA penalty on sounds between 10 p.m. and 7 a.m. the next day. The results of CNEL and L_{dn} measurements may be compared directly with an insignificant loss of accuracy. L_{10} measurements cannot be compared with L_{dn} or CNEL data. Noise levels of the Metropolitan Oakland International Airport are presented in the CNEL system.

Effects of Noise on Human Health:

The effects of noise on man are the basic motivation for understanding and controlling noise. At the upper extreme, noise can cause temporary or permanent loss of hearing. Additionally, noise may cause changes in cardiovascular, gastro-intestinal, endocrine, neurologic, and other physiologic functions, although the medical evidence is not conclusive. At much lower levels of noise, the unwanted sound begins to obscure the wanted sounds such as speech, music or signals; when discussing environmental or community noise levels, this problem of activity interference is the major issue.

Noise Level Standards and References:

Table 1 shows the sound (noise) levels identified by the Federal Environmental Protection Agency (EPA) as requisite to protect the public health and welfare with an adequate margin of safety. The table gives several land use categories, indoors or outdoors, and type of noise problem, activity interference or hearing loss, as factors in specifying problematical noise levels. The noise levels are given in either the L_{dn} noise measurement system explained above or in the L_{eq} system. The L_{eq} method is called the equivalent sound level and represents the average of the energy in the sound over the specified time period. The specified time period is the number in parentheses immediately after the L_{eq}, for example, L_{eq} (24). It should be restated that the energy in sound increases many times faster than the decibel level; louder sounds are counted more heavily in the L_{eq} system than are quieter sounds.

Figure 2 shows information similar to that in Table 1 but from a different source and in another sound measuring system. The noise levels for each land use category were selected in the ABAG sponsered Regional Airport Systems Study and converted from the NEF system to CNEL. The figure gives another interpretation of desirable noise levels similar to the levels of Table 1. (L_{dn} and CNEL are approximately comparable)

Effective August, 1974, the Alameda County Building Code includes specifications for noise levels inside and outside of any new hotels, motels, apartment houses, and attached dwellings. These specifications are contained in Section 3502, Noise Insulation from Exterior Sources". The ordinance adopted a standard of an annual CNEL of 45 dB inside all new residential construction. Further, any proposed residential construction within a CNEL contour of 60 dB requires an acoustical analysis showing that the structure has been designed to limit intruding noise to the prescribed allowable level (45 dB). Noise sources considered are proposed and existing airports, rapid transit systems, railroads, highways, freeways, etc.

Table 1

YEARLY AVERAGE* EQUIVALENT SOUND LEVELS IDENTIFIED AS REQUISITE TO PROTECT THE PUBLIC HEALTH AND WELFARE WITH AN ADEQUATE MARGIN OF SAFETY

	Measure	Indoor Activity Interference	Indoor Hearing Loss Consideration	Indoor To Protect Against Both Effects (b)	Outdoor Activity Interference	Outdoor Hearing Loss Consideration	Outdoor To Protect Against Both Effects (b)
Residential with Outside Space and Farm Residences	L_{dn}	45		45	55		55
	$L_{eq(24)}$		70			70	
Residential with No Outside Space	L_{dn}	45		45			
	$L_{eq(24)}$		70				
Commercial	$L_{eq(24)}$	(a)	70	70(c)	(a)	70	70(c)
Inside Transportation	$L_{eq(24)}$	(a)	70	(a)			
Industrial	$L_{eq(24)(d)}$	(a)	70	70(c)	(a)	70	70(c)
Hospitals	L_{dn}	45		45	55		55
	$L_{eq(24)}$		70			70	
Educational	$L_{eq(24)}$	45		45	55		55
	$L_{eq(24)(d)}$		70			70	
Recreational Areas	$L_{eq(24)}$	(a)	70	70(c)	(a)	70	70(c)
Farm Land and General Unpopulated Land	$L_{eq(24)}$				(a)	70	70(c)

Code:

a. Since different types of activities appear to be associated with different levels, identification of a maximum level for activity interference may be difficult except in those circumstances where speech communication is a critical activity. (See Figure D-2 for noise levels as a function of distance which allow satisfactory communication.)
b. Based on lowest level.
c. Based only on hearing loss.
d. An $L_{eq(8)}$ of 75 dB may be identified in these situations so long as the exposure over the remaining 16 hours per day is low enough to result in a negligible contribution to the 24-hour average, i.e., no greater than an L_{eq} of 60 dB.

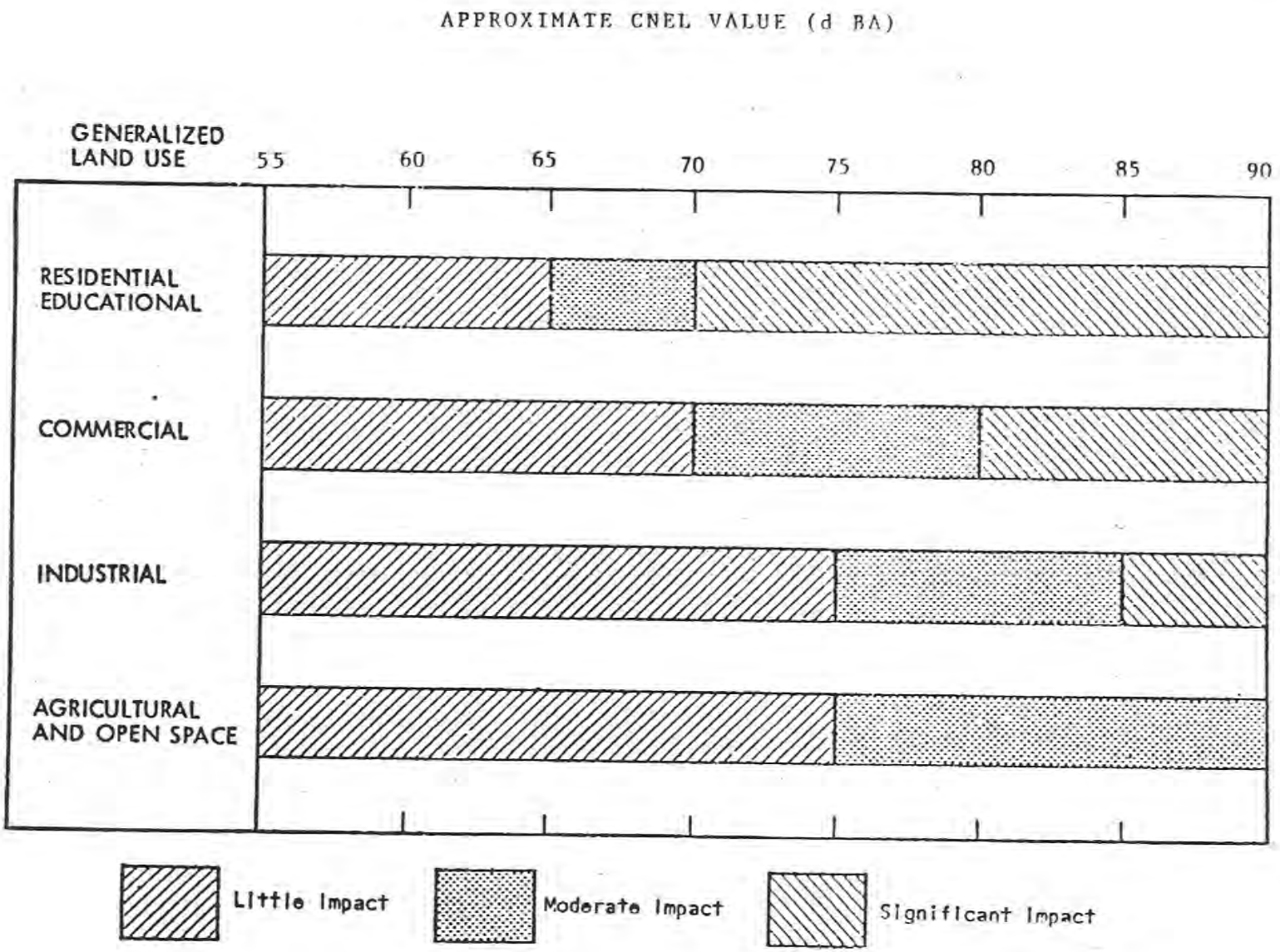
Note: Explanation of identified level for hearing loss: The exposure period which results in hearing loss at the identified level is a period of 40 years.

*Refers to energy rather than arithmetic averages.

Source: U.S. Environmental Protection Agency, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (March, 1974), p. 29.

Figure 2

SIMPLIFIED LAND USE INTERPRETATIONS OF COMMUNITY EQUIVALENT LEVEL NOISE EXPOSURE

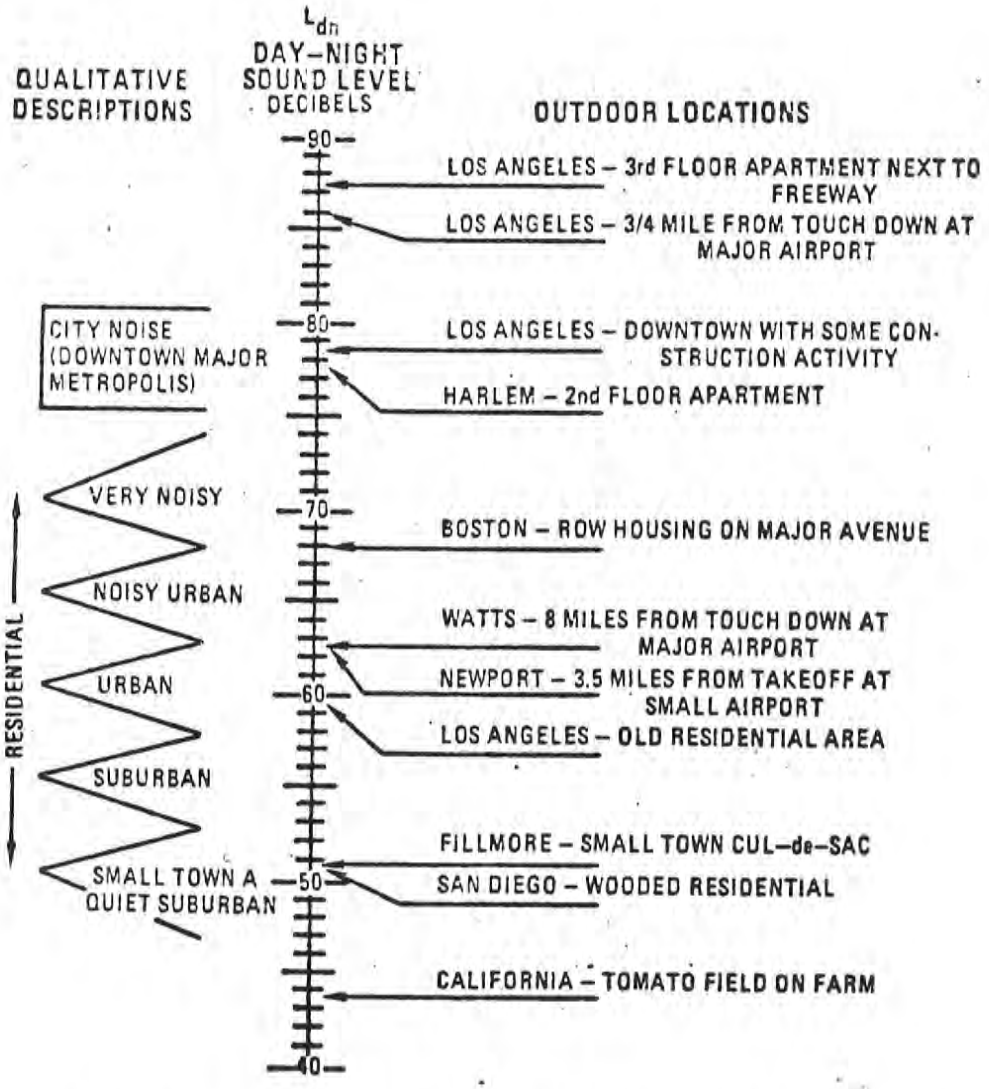


Source: Adopted from Regional Airport Systems Study, Final Plan (June, 1972), by Alameda County Planning Department, July, 1975.

As a qualitative reference, Figure 3 shows some typical community noise level measurements for different outdoor locations. Table 2 also correlates decibel levels with familar sounds.

Figure 3

OUTDOOR DAY-NIGHT SOUND LEVEL IN dB AT VARIOUS LOCATIONS



Source: U.S. Environmental Protection Agency, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (March, 1974), p. 14.

TABLE 2

SOUND LEVEL AND LOUDNESS OF TYPICAL SOUNDS
IN INDOOR AND OUTDOOR ENVIRONMENTS

dBA	SUBJECTIVE IMPRESSION	COMMUNITY* (Outdoor)	HOME OR INDUSTRY* (Indoor)	RELATIVE LOUDNESS (Human Judgment of Different Sound Levels)
130	Painful	Military Jet Aircraft Take-Off With After-Burner From Aircraft Carrier @ 50 Ft. (130)	Oxygen Torch (121)	32 Times as Loud
120	Uncomfortably Loud	Turbo-Fan Aircraft @ Take-Off Power @ 200 Ft. (118)	Rock-N-Roll Band (108-114)	16 Times as Loud
110		Jet Flyover @ 1000 Ft. (103) Boeing 707, DC-8 @ 6080 Ft. Before Landing (106), Bell J-2A Helicopter @ 100 Ft. (100)		8 Times as Loud
100	Very Loud	Boeing 737, DC-9 @ 6080 Ft. Before Landing (97), Motorcycle @ 25 Ft. (90)	Newspaper Press (97)	4 Times as Loud
90		Car Wash @ 20 Ft. (89), Prop. Plane Flyover @ 1000 Ft. (88), Diesel Truck, 40 MPH @ 50 Ft. (84), Diesel Train, 45 MPH @ 100 Ft. (83)	Food Blender (88) Milling Machine (85)	2 Times as Loud
80				

*Numbers in parenthesis are A-Levels

(CONTINUED NEXT PAGE)

TABLE 2 (Contd.)

dBA	SUBJECTIVE IMPRESSION	COMMUNITY* (Outdoor)	HOME OR INDUSTRY* (Indoor)	RELATIVE LOUDNESS (Human Judgment of Different Sound Levels)
80	Moderately Loud	High Urban Ambient Sound (80), Passenger Car, 65 MPH @ 25 Ft. (77), Freeway @ 50 Ft. from Pavement Edge, 10 a.m. (76 ± 6)	TV-Audio, Vacuum Cleaner (70)	REFERENCE LOUDNESS 70 dBA
70		Air Conditioning Unit @ 100 Ft. (60)	Cash Register @ 10 Ft. (65-70), Electric Typewriter @ 10 Ft. (64), Dishwasher (Rinse) @ 10 Ft. (60), Conversation (60)	1/2 as Loud
60		Large Transformers @ 100 Ft. (50)		1/4 as Loud
50	Quiet			
40		Bird Calls (44), Lower Limit Urban Ambient Sound (40)		1/8 as Loud
	Just Audible	(dBA Scale Interrupted)		
10				
0	Threshold of Hearing			

Source: HUD Noise Assessment Guidelines Technical Background, Bolt, Beranek and Newman, Inc., December 1971.

Cities within Alameda County have provided input to the County Noise Element during the preparations and hearing stages. In addition the County, at the request of the City Managers is investigating means of providing a continuing data base on noise for use of all jurisdictions within the County.

Airport Land Use Commission (ALUC):

The Alameda County Airport Land Use Commission staffed by the Alameda County Planning Department consists of seven members and has a basic assignment of formulating a comprehensive, long range plan for each airport and its surroundings so as to provide for orderly growth of the airport and airport planning area, to safeguard the general welfare of the inhabitants in the County and the public in general. Within the airports planning area the Commissioners may determine standards, including soundproofing adjacent to airports.

California Airport Noise Standards[1]

In 1969, the California Public Utilities Code was amended, directing the Division of Aeronautics to

> "...adopt noise standards governing the operation of aircraft and aircraft engines for airports operating under a valid permit issued by the department (division) to an extent not prohibited by federal law. The standards shall be based upon the level of noises acceptable to a reasonable person residing in the vicinity of the airport."

The legislation stated that:

> "Statewide uninformity in standards of acceptable airport noise need not be required, and the maximum amount of local control and enforcement shall be permitted.
>
> Due consideration shall be given to the economic and technological feasibility of complying with the standards promulagated".

Implementation of the legislation has been slow due to the requirement for complex and expensive noise monitoring systems at noise problem airports.

Airport Noise Standards, in the California Administrative Code (1970) are measured in CNEL with 65 dB as the level of noise acceptable to a reasonable person residing in the vicinity of an airport.

---

[1] Source: An Investigative Study of California Experience in Airport Noise Regulation, Harrison C. Dunning. Final Report to Environmental Protection Agency, June 12, 1975.

III. Noise Levels in Alameda County

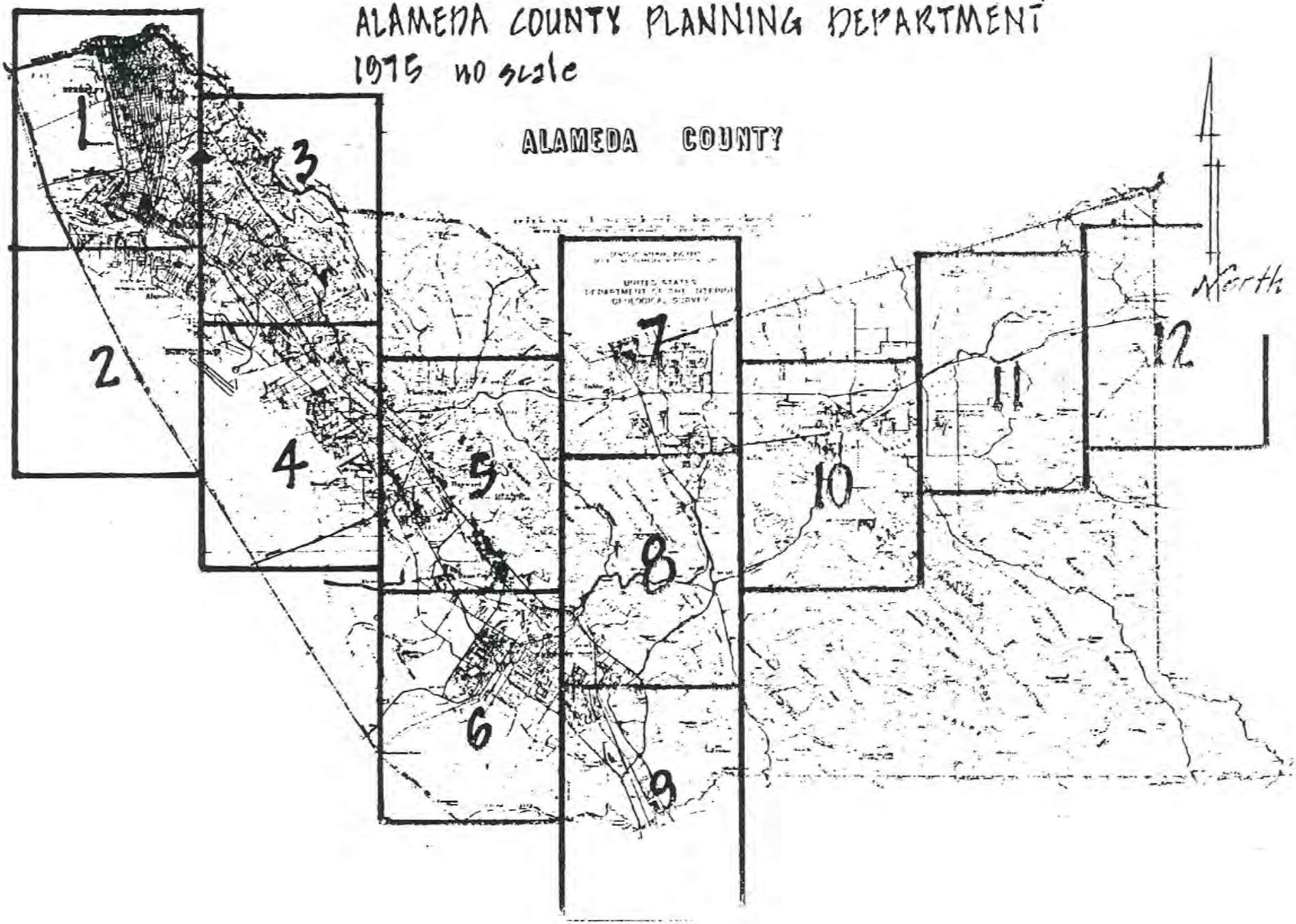
The existing noise environment in Alameda County is the result of many noise sources, however, transportation systems are the largest single contributor. Noise contours, representing lines of equal sound/noise levels, have been shown adjacent to selected transportation facilities in the County. For purposes of clarity, only the lower level contours have been shown for most transportation facilities.[1] Generally, the projected noise contours are based on the existing conditions and the assumptions on growth of the particular facility. Not all of the noise levels are projected to the same year.

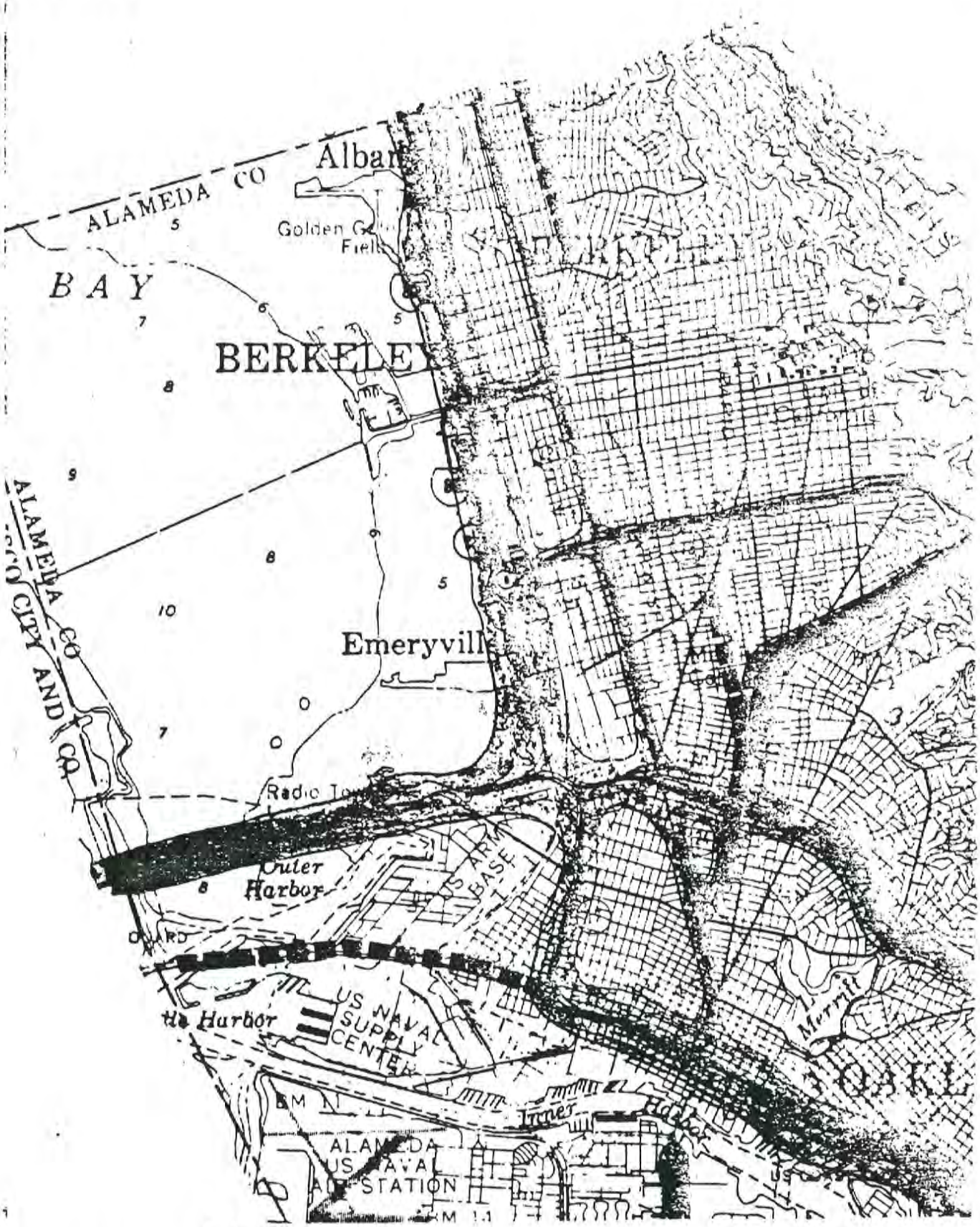
This section contains maps of 65 dB CNEL, L_{dn}, or L_{10} noise contours for major highways and BART. The scale of these maps is 1" to 62,500 feet and show only the existing 65 dB 1975 contour. Because of the small scale the 1990 65 dB contours would vary from 1/16 of an inch wider on each side to that shown for 1975. Information on these maps is plotted directly from maps prepared by Cal Trans and BART. The BART noise contours are shown in constant width only to identify the location of the impacted area. The noise contours vary significantly and are only relevant at the large scale originals on file with BART.

Some of the areas where data is lacking are: Highway 84 between Sunol and Livermore and the Livermore Airport. This information will be provided as it becomes available.

[1] The complete background data showing greater detail is available at the Alameda County Planning Department, 399 Elmhurst Street, Hayward.

INDEX MAP OF NOISE ELEMENT MAPS
ALAMEDA COUNTY PLANNING DEPARTMENT
1975 no scale



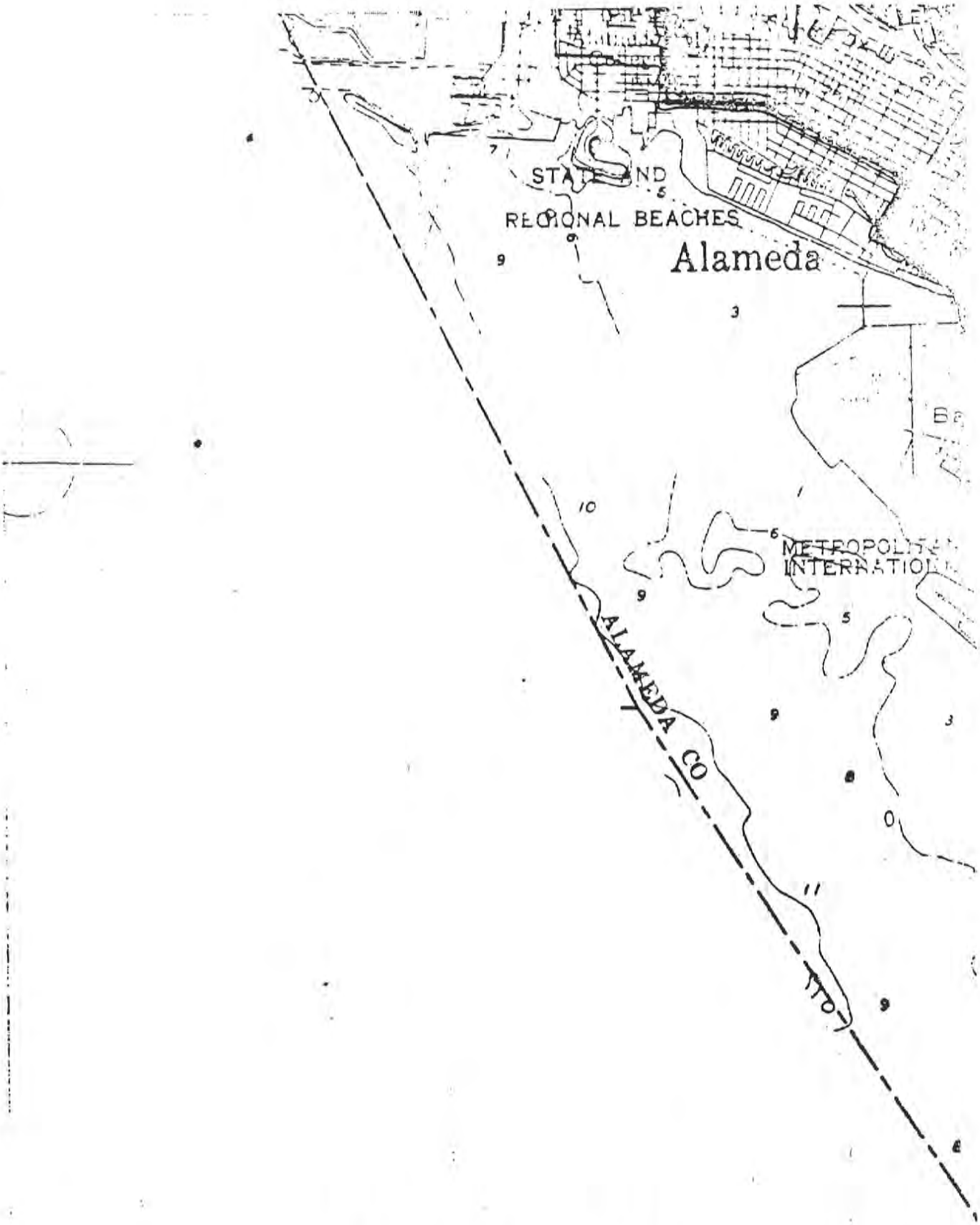


NOISE ELEMENT

ALAMEDA COUNTY

SOURCE: 1975 - 65 dB$_{L-10}$ SCALE: 1" = 1 mile
CALIF. DEPT. OF TRANSPORTATION

North



NOISE ELEMENT

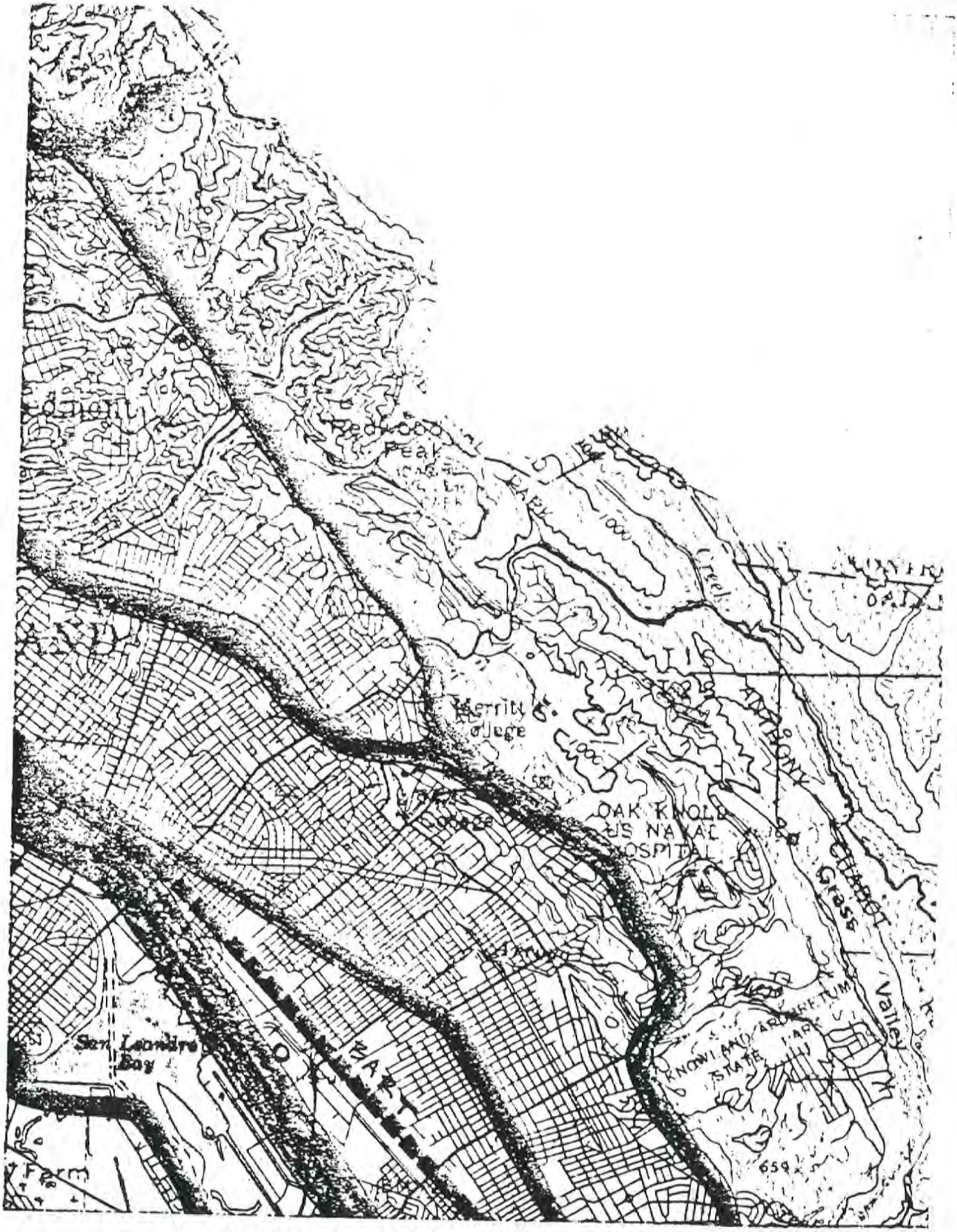
ALAMEDA COUNTY

SOURCE: 1975 - 65 dB$_{L_{10}}$ SCALE: 1" = 1 mile

CALIF. DEPT. OF TRANSPORTATION

4-13c

2



NOISE ELEMENT

ALAMEDA COUNTY

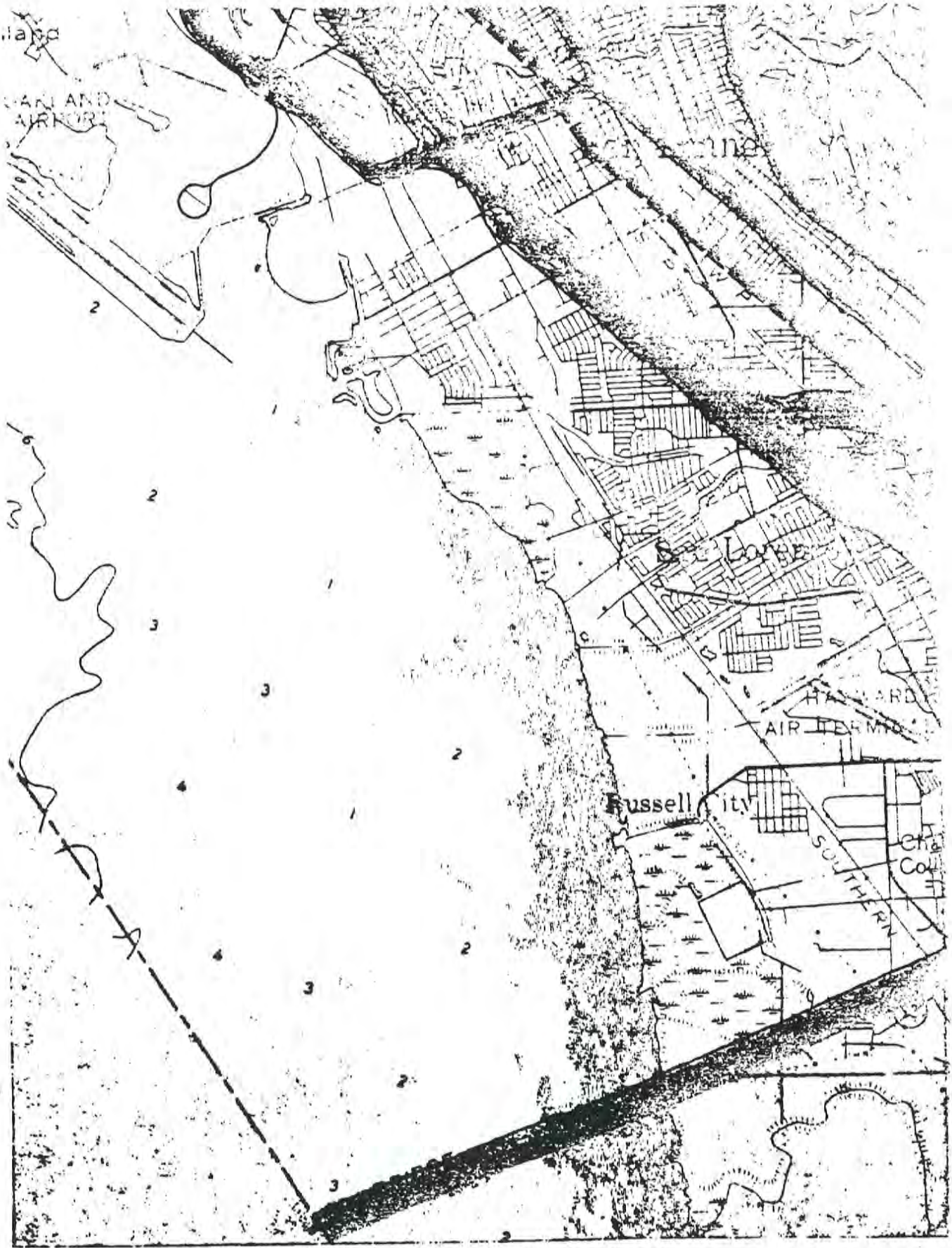
SOURCE: 1975 - 65 dB L-10 SCALE: 1" = 1 mile

CALIF. DEPT. OF TRANSPORTATION

4-13d

North

3



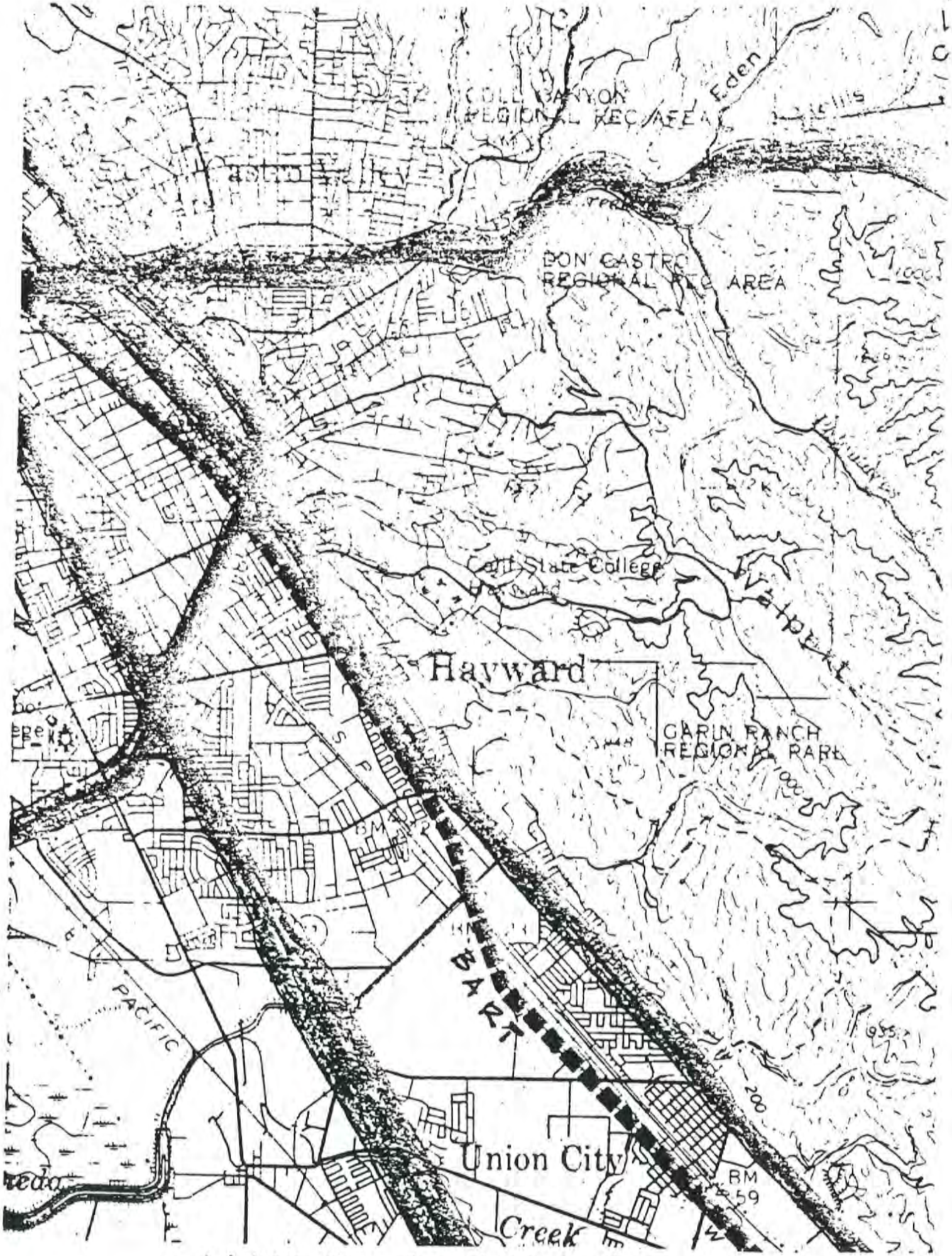
NOISE ELEMENT

ALAMEDA COUNTY

SOURCE: 1975 - CSdbL_{10} SCALE: 1" = 1 mile
CALIF. DEPT. OF TRANSPORTATION

North

4



NOISE ELEMENT

ALAMEDA COUNTY

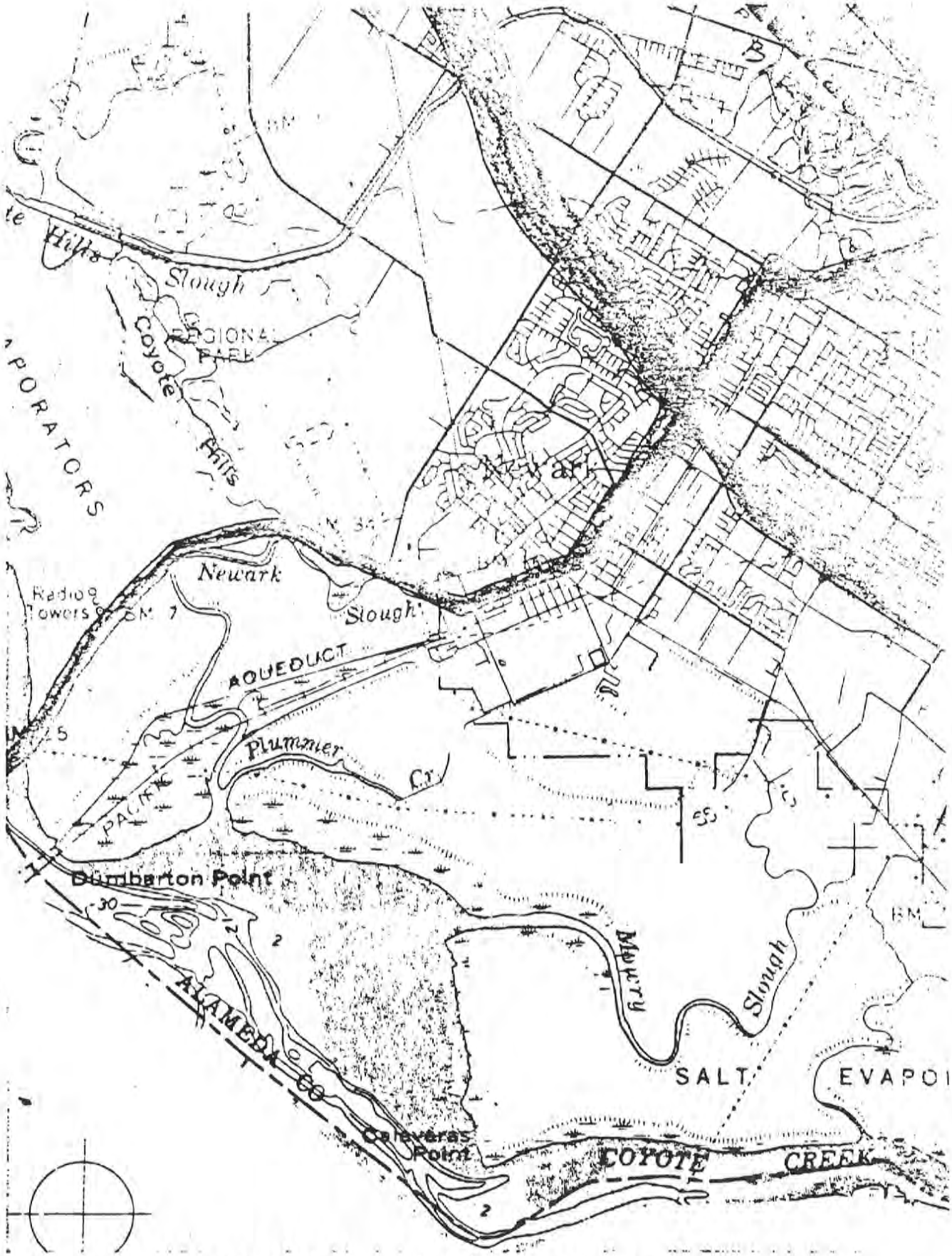
SOURCE: 1975 - 65 dB_{L-10} SCALE: 1" = 1 mile

CALIF. DEPT. OF TRANSPORTATION

North

4-13f

5

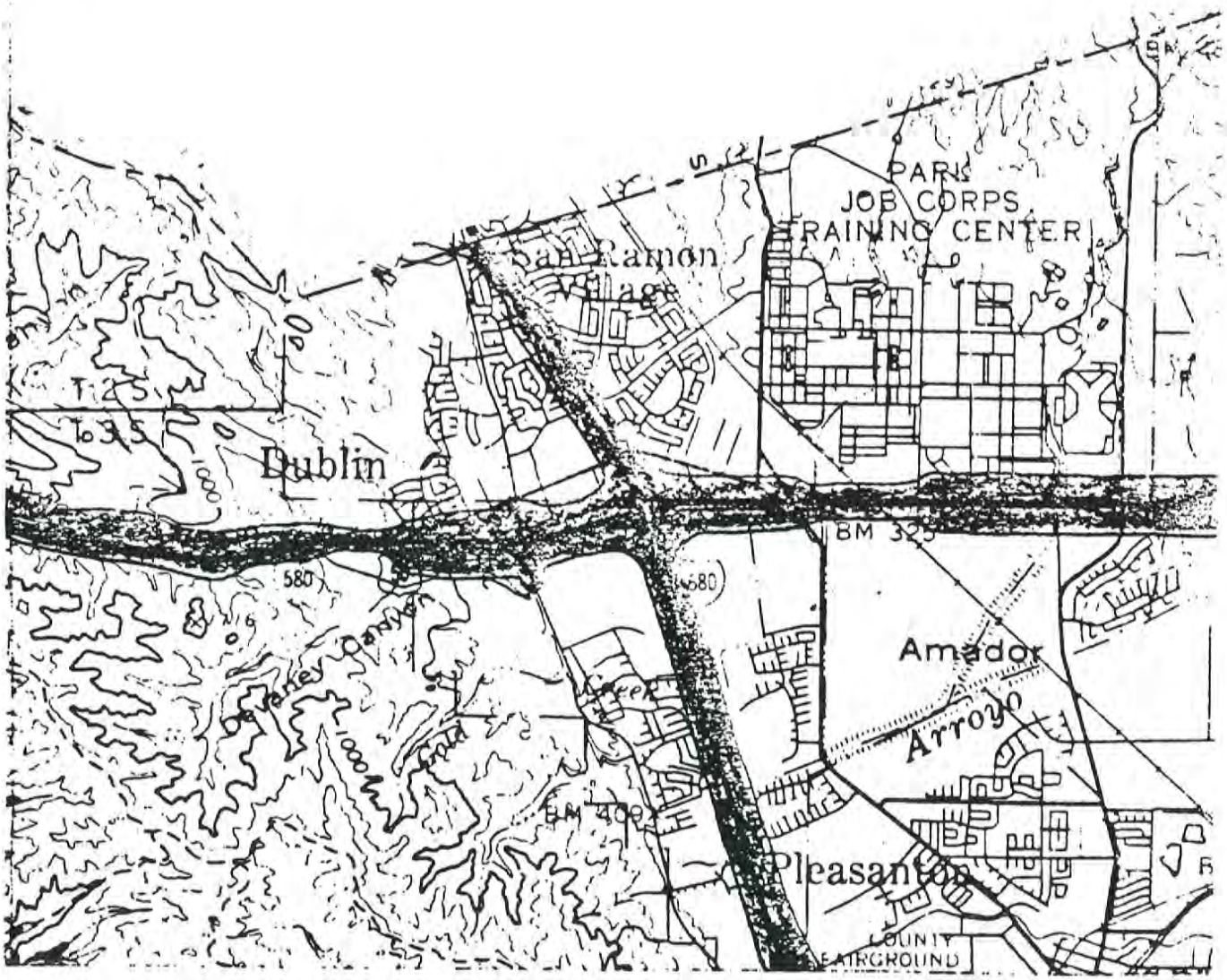


NOISE ELEMENT

ALAMEDA COUNTY

SOURCE: 1975 - 65 dB L-10 SCALE: 1" = 1 mile 4-13g

CALIF. DEPT. OF TRANSPORTATION



NOISE ELEMENT

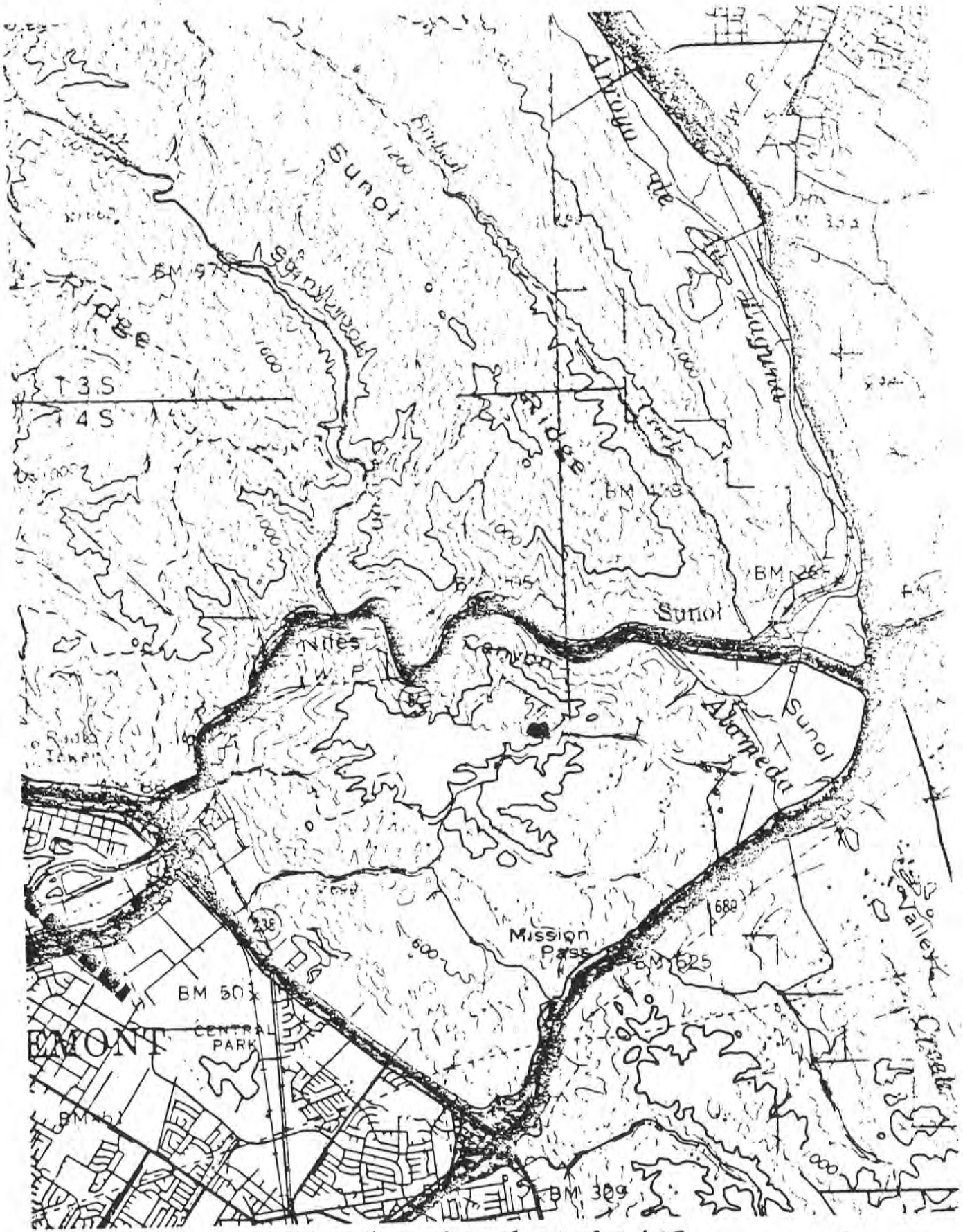
ALAMEDA COUNTY

SOURCE: 1975 - CS dbL-10 SCALE: 1" = 1 mile
CALIF. DEPT. OF TRANSPORTATION

4-13h

North

7



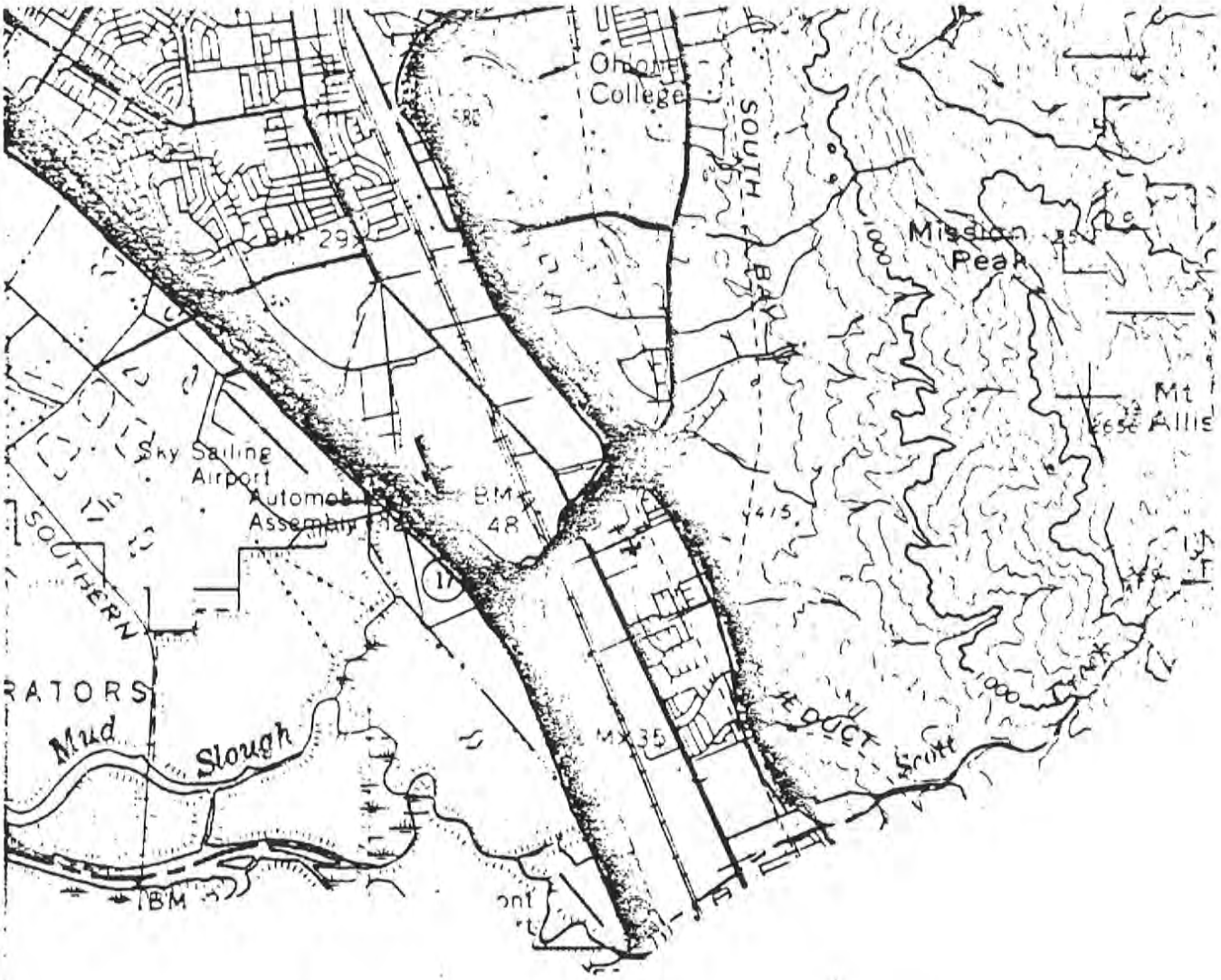
NOISE ELEMENT

ALAMEDA COUNTY

SOURCE: 1975 - Ldn L-10 SCALE: 1" = 1 mile

CALIF. DEPT. OF TRANSPORTATION

4-13i



NOISE ELEMENT

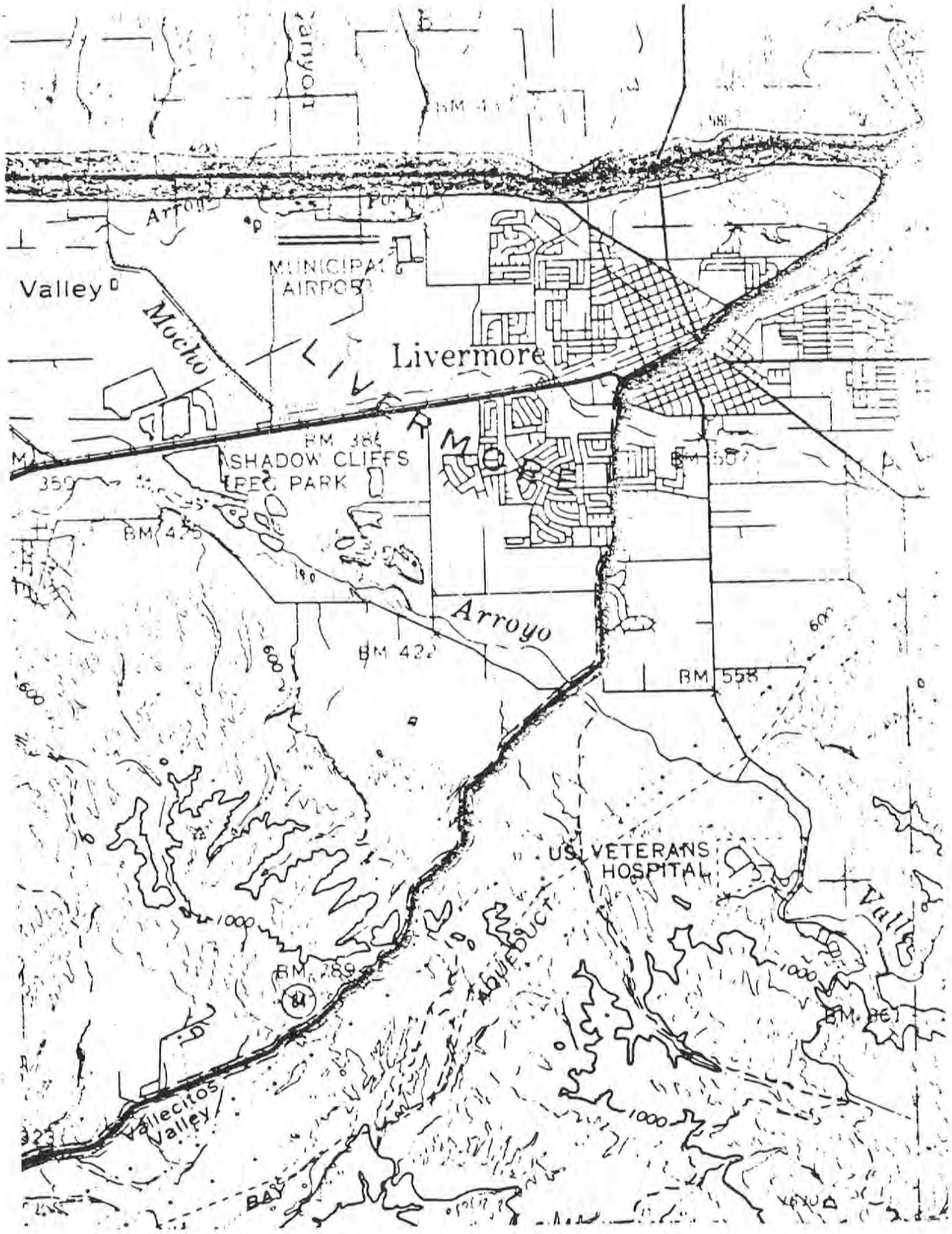
ALAMEDA COUNTY

SOURCE: 1975 - US dbL-10 SCALE: 1" = 1 mile

CALIF. DEPT. OF TRANSPORTATION

North

4-13j



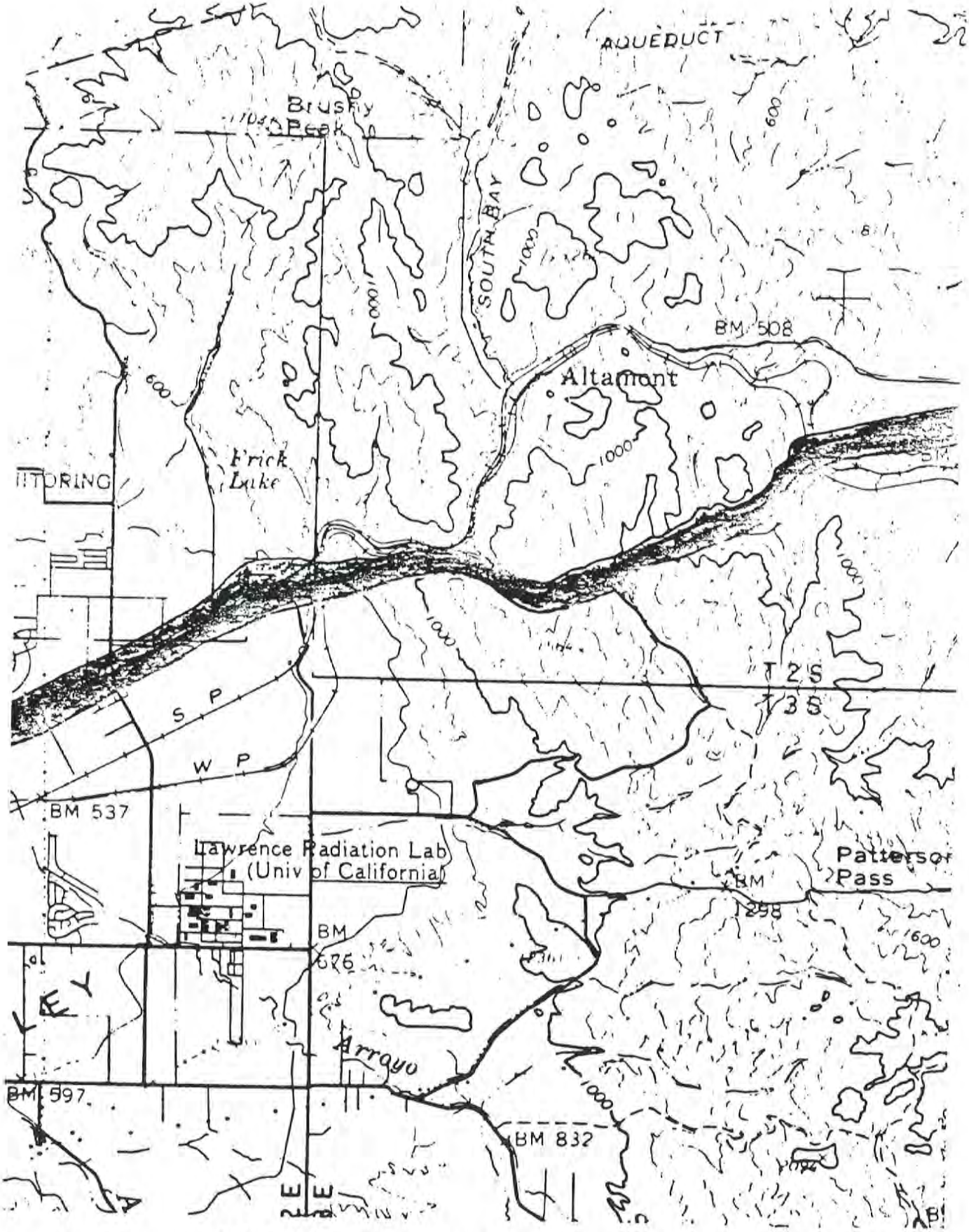
NOISE ELEMENT

ALAMEDA COUNTY

SOURCE: 1975 - 65 db L_{10} SCALE: 1" = 1 mile

CALIF. DEPT. OF TRANSPORTATION

4-13k



NOISE ELEMENT

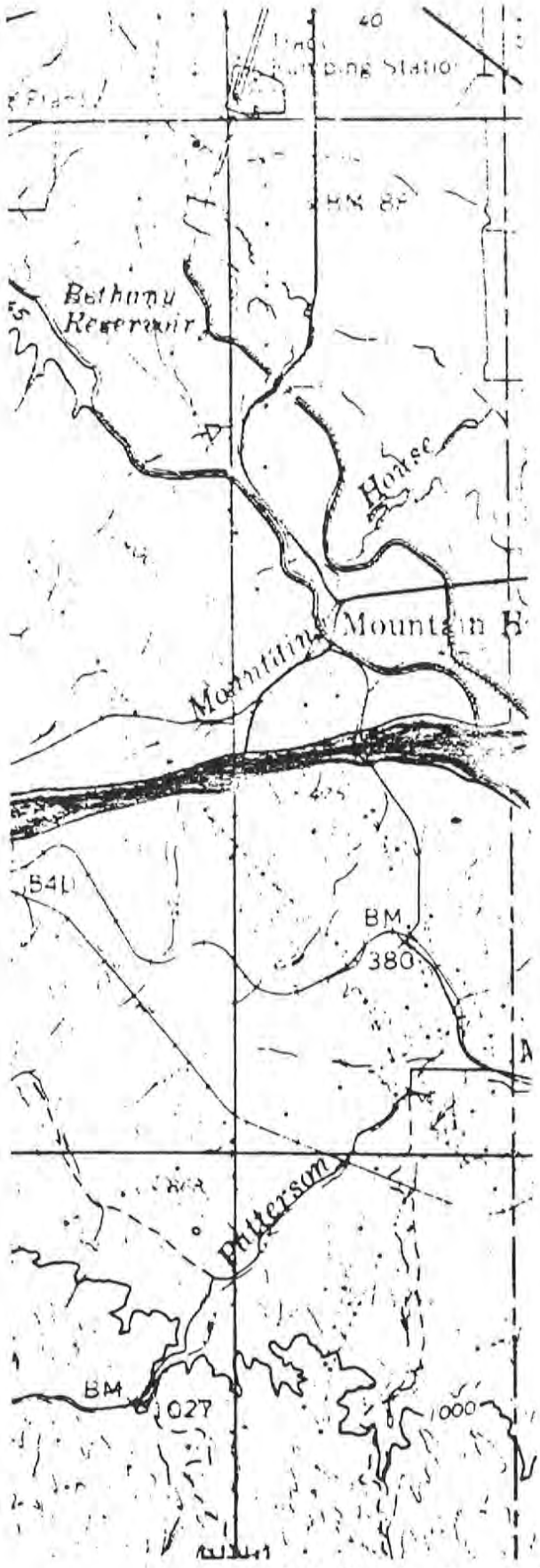
ALAMEDA COUNTY

SOURCE 1975 - CSdbL-10 SCALE: 1" = 1 mile

CAL. DEPT. OF TRANSPORTATION

North

11



NOISE ELEMENT

ALAMEDA COUNTY

SOURCE: 1975 - 65 dB L-10 SCALE: 1" = 1 mile
CALIF. DEPT. OF TRANSPORTATION

North

4-13m

12

IV. PLANNING CONSIDERATIONS IN UNINCORPORATED AREA, ALAMEDA COUNTY

Because noise is a type of environmental pollution which has detrimental effects on human health, it is a responsibility of all levels of government to control undesirable noise. Local government can discourage the development of noise sensitive land uses-homes, schools, hospitals, libraries, rest homes, etc - in highway noise impacted areas. or local government can ensure that any development which occurs is planned to minimize the adverse effects of noise.

A major planning consideration is the compatibility of land uses with respect to noise. Users of residential land are sensitive to noise, while users of industrial and agricultural land are less sensitive, for example, there are two basic types of methods available for the prevention of noise incompatible with land use: (1) the physical techniques which reduce noise impacts, and (2) the administrative methods available to local governments to encourage their use.

1. Physical Techniques: Architectural designers, developers and builders can employ acoustical site planning, acoustical architectural design, acoustical construction methods, and barrier construction.

> "Acoustical site design uses the arrangement of buildings on a tract of land to minimize noise impacts by capitalizing on the sites natural shape and contours. Open space, non-residential land uses, and barrier buildings can be arranged to shield residential areas or other noise sensitive activities from noise, and residences can be oriented away from noise".
>
> "Acoustical architectural design incorporates noise reducing concepts in the details of individual buildings. The areas of architectural concern include building height, room arrangement, window placement, and balcony and courtyard design.
>
> "Acoustical construction involves the use of building materials and techniques to reduce noise transmission through walls, windows, doors, ceilings, and floors. This area includes many of the new and traditional (soundproofing) concepts.
>
> "Noise barriers can be erected between noise sources and noise-sensitive areas. Barrier types include beams made of sloping mounds of earth, walls and fences constructed of a variety of materials, thick plantings of trees and shrubs, and combinations of these materials."[1]

2. Administrative Techniques: Administrative techniques to ensure that physical methods of noise minimization are implemented may be categorized into five groups: (1) zoning; (2) legal restrictions such as subdivision control,building and health codes; (3) public ownership or control of the land; (4) financial incentives for compatible development; and (5) educational and advisory services.

---

[1] Urban Systems Research and Engineering, Inc. for U.S. Department of Transportation, The Audible Landscape: A Manual for Highway Noise and Land Use (November, 1974),p.34.

While certain land uses are associated with higher noise levels (quarry, industrial, commercial, circulation), areas within a community which suffer from excessive noise may not coincide with traditional zoning districts. As a result, a method to define the areas where acoustical regulations could apply needs to be investigated. Zoning specifications could be applied to newly created noise impacted zones or to a single "overlay zone" which is superimposed over regular zoning.

> "Zoning can be used in four ways to insure that future development will be compatible with nearby noise sources:
> 1. by exclusion of typically incompatible uses from noise impacted areas,
> 2. by regulating specific details of development design or construction,
> 3. by permitting, special development techniques such as cluster and planned unit development which enable noise compatible site design, and
> 4. by defining the areas of applicability of other local regulations."[1]

Noise compatible land use controls also include other ordinances besides zoning. Subdivision ordinances can require acoustical site planning of the development or noise barrier construction. Building codes may specify construction techniques and details (such as insulation and sealed windows). Health codes may establish noise level standards for habitable buildings. If they are exceeded, the building can be declared uninhabitable, or local laws may require that an occupancy permit be received before a building can be used. The individual review of each building application is a special permit procedure which can be included in the zoning ordinance or the general city/county ordinance code. Also, the environmental impact review process could include noise impacts of the project which would require site-specific acoustical analysis.

If the local government owns the noise-impacted land, it could keep the land vacant or develop it with noise compatible land uses. Financial incentives to deal with noisy areas could include assessing undeveloped and underdeveloped land at a low rate, reducing pressures on landowners to sell because of high property taxes. Government could also provide, at low cost, information concerning noise compatibility measures to builders, developers, architects, and the general public.

Another planning consideration is the abatement of highway and circulation noise. Noise created by highway traffic permeates communities quite distant from the highway. Community noise levels are controlled or influenced by noise from one or more highways within a certain distance and by single-vehicle noise from immediately adjacent streets. While trucks are the greatest source of highway noise, motorcycles and sports cars can be as noisy as trucks and are often judged by the public to be even more annoying. The way in which these vehicles are operated is

---

1 Urban Systems Research and Engineering, Inc., for U. S. Department of Transportation, The Audible Landscape: A Manual for Highway Noise and Land Use (November, 1974), p. 11.

a particular problem and accounts for much of the noise problem on both highways and local streets. Thus, highway and land use planners can curtail the noise from traffic that adversely affects sensitive land uses by constructing barriers, elevating or depressing highways, regulating speed limits, limiting access of certain vehicles to particular routes by time of day, and providing for compatible use of land adjacent to highways and expressways.

While a noise ordinance has little or no effect on controlling the compatibility of land uses constructed in areas where noise exists, it can have a significant effect in reducing noise at its source if it is well-written and enforced. Alameda County does not have a noise ordinance, but standards and limitations concerning acceptable levels of noise are prescribed in the Building Code and Zoning Ordinance. The Zoning Ordinance sets performance standards with respect to exterior levels of noise on industrial properties. No discernable noise from an industrial (M) district is to impinge on adjacent residential (R) districts. The County Zoning Ordinance also places restrictions on noise levels at quarries and car washes. Within residential districts, home occupation noise is restricted. Enforcement of a community noise ordinance could be assigned to the police, building inspectors, and/or environmental control officers.

V. COUNTYWIDE POLICIES

Goal #1: The peace, health, safety, and welfare of the residents of Alameda County require protection from excessive, unnecessary, and unreasonable noises from any and all sources in the cities and unincorporated territory.

Goal #2: Promote the compatibility of land uses with respect to noise generation by legislatively protecting sensitive land uses from noise sources.

Objective #1: Investigate and implement physical and legislative techniques to reduce noise impacts where appropriate.

Principle #1: Community noise control standards which establish maximum permitted noise levels for sensitive land uses-residential, community care facilities (hospitals, nursing homes, etc.), schools, and any other use considered by the community to be sensitive to noise should be developed and implemented by each jurisdiction.

Principle #2: Local govenments in cooperation with transportation agencies should promote the abatement of highway, circulation, aircraft,and rapid transit noise.

Principle #3: Local governments should exercise significant authority in controlling the noise problem because they have the responsibility for land development control and zoning.

VI. UNINCORPORATED AREA POLICIES

Goal #1: Alameda County should provide its residents and wildlife with an environment which is free from excessive noise pollution by preventing and suppressing undesirable levels, frequencies, and time durations of noise.

Goal #2: Alameda County should encourage noise compatible land uses near highways and other noise generators.

Objective #1: In order to control objectionable noise, Alameda County should survey noise sources and impacts in the unincorporated area and develop acceptable noise level standards for noise impacted areas.

Objective #2: The County should seek to develop regional planning agreements for zoning and soundproofing to reduce noise incompatibilities across jurisdictional boundaries.

Objective #3: The County should examine existing County ordinances and regulations to determine the effectiveness of existing controls and where additional performance standards are needed to reduce noise problems.

Objective #4: Alameda County should develop and adopt a County Noise Ordinance to prohibit unwanted and unnecessary sounds of all types within the unincorporated territory.

Objective #5: The County should encourage architectural designers, developers, and builders to employ physical techniques to reduce noise impacts.

Objective #6: The public should be informed of the significant financial and social costs of noise incompatibilities.

XII. IMPLEMENTATION PROGRAM, UNINCORPORATED AREA

1. Problem Identification:

   a. Continue to study existing noise problems in the unincorporated communities. Collect data on ambient noise levels, source noise levels, and frequency of occurrence.

   b. Survey public attitudes toward noise in order to determine desirable noise levels and to further define noise compatibility goals.

   c. Study potential noise incompatibilities and potential land uses in noise impacted areas.

2. Preventing and Minimizing Noise Impacts:

   a. Examine the existing administrative structure to determine which administrative techniques are most desirable for implementing physical solutions to minimize noise. These techniques include zoning; subdivision, building, and health codes; public ownership of land; financial incentives; and advisory services.

   b. Develop and adopt a County Noise Ordinance to prevent unwanted and excessive sound. The ordinance would contain the County's philosophy toward noise and standards, such as residential property noise limits, to prevent noise.

c. Contact state and federal officials to convey the County's concern over noise problems beyond the County's immediate control, i.e. source emission reduction on highways and improved highway design.

d. Require environmental impact reports for proposed projects to include an examination of anticipated noise impacts.

3. Study of Legal Status:

a. Examine legal limitations on powers of County government to restrict and regulate land use control. Not all of the desirable physical solutions may be possible under existing administrative structures.

4. Public Participation:

a. Increase public awareness of noise incompatibility in the County.

b. Examine local traditions and attitudes toward noise compatibility control techniques.

5. City-County Coordination:

a. Continue liason with the cities and investigate methods to reduce noise problems across city-county boundaries.

GLOSSARY

AIRBORNE SOUND. Sound that reaches the point of interest by propagation through air.

AMPLITUDE. Peak value of a periodically varying quantity such as traveling sound wave.

ATTENUATION. A reduction in strength,effect, or amplitude of a sound.

A-WEIGHTING NETWORK (A-Scale). The ear does not respond equally to sounds of all frequencies, but is less efficient at low and high frequencies than it is at medium or speech range frequencies. Thus, to obtain a single number representing the sound level of a noise containing a wide range of frequencies in a manner representative of the ear's response, it is necessary to reduce, or weight, the effects of the low and high frequencies with respect to the medium frequencies. The resultant sound level is said to be A-weighted, and the units are dBA. The A-weighted sound level is also called the noise level. Sound level meters have an A-weighting network for measuring A-weighted sound level.

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL). A scale which takes account of all the A-weighted acoustic energy received at a point, from all noise events causing noise levels above some prescribed value. Weighting factors are included which place greater importance upon noise events occurring during the evening hours (7:00 p.m. to 10:00 p.m.) and even greater importance upon noise events at night (10:00 p.m. to 6:00 a.m.).

CONTINOUS NOISE. On-going noise whose intensity remains at measurable level (which may vary) without interruption over an indefinite period or a specified period of time.

DEAFNESS. 100 percent impairment of hearing associated with an organic condition. Note: This is defined for medical and cognate purposes as the hearing threshold level for speech or the average hearing threshold level for pure tones of 500, 1000 and 2000 Hz in excess of 92 dB.

DECIBEL. A unit measure of sound (noise) level relative to a standard reference sound on a logarithmic scale. The quantity "zero decibels" corresponds to the sound pressure level of the least powerful sound --the standard reference sound —that a very sensitive human ear can hear. (This standard reference sound has a sound pressure level which is .00002 times atmospheric pressure.)

ENVIRONMENTAL NOISE. By Sec.3(11) of the Noise Control Act of 1972, the term "environmental noise" means the intensity, duration, and character of sounds from all sources.

FREQUENCY. The number of oscillations per second of a sine-way of sound; now expressed in Hertz (Hz),formerly in cycles per second (cps).

L10 (level). The noise level that is exceeded for 10% of any specific sampling time.

NOISE EXPOSURE FORECAST (NEF). A scale (analogous to CNEL) which has been used by the Federal government and other agencies in land use planning guides for use in connection with airports. The noise exposure level at a point expressed in the NEF scale is numerically about 35 dB lower than if expressed in the CNEL scale.

NOISE LEVEL CONTOURS. Noise sources such as airports and trafficways generate a noise environment which can be described by drawing contours on a map. The contour lines connect the points on a land surface map that have the same noise level. and are analogous to lines of equal elevation on a topographic map.

SOUND EXPOSURE LEVEL. The level of sound accumulated over a given time interval or event. Technically,the sound exposure levels is the level of the time integrated mean square A-weighted sound for a stated time interval or event, with a reference time of one second.

SOUND LEVEL. The quantity in decibels measured by a sound level meter satisfying the requirements of American National Standards Specification for Sound Level Meters S1.4-1971. Sound level is the frequency-weighted sound pressure level obtained with the standardized dynamic characteristic "fast" or "slow" and weighting A, B or C; unless indicated otherwise, the A-weighting is understood. The unit of any sound level is the decibel, having the unit symbol dB.

SOUND LEVEL METER. An instrument, comprising a microphone, an amplifier, an output meter, and frequency-weighting networks, that is used for the measurement of noise and sound levels.

SOUND PRESSURE LEVEL. The variation from atmospheric pressure caused by a sound wave. (Expressed mathematically, the sound pressure level of a sound in question is, in decibels, 20 times the logarithm to the base 20 of the ratio of the pressure of the sound in question to the reference pressure, where the reference pressure is .00002 times atmospheric pressure.) Generally, the greater the sound pressure, the louder the sound.

APPENDIX A

TERMINOLOGY FOR COMMUNITY NOISE CNEL AND L_{dn}[1]

Community Noise Equivalent Level (CNEL)

The following simplified expressions are derived from the exact definitions in the report, "Supporting Information for the Adopted Noise Regulations for California Airports." They can be used to estimate values of CNEL where one type of aircraft and one flight path dominate the noise exposure level.

Single event noise is specified by the single event noise exposure level (SENEL) in dB and can be closely approximated by:

$$SENEL = NL_{max} + 10 \log t_{ea}, \quad dB$$

where

NL_{max} = maximum noise level as observed on the A scale of a standard sound level meter

and

t_{ea} = effective time duration of the noise level (on A scale) in seconds

The effective duration is equal to the "energy" of the integrated noise level (NL), divided by the maximum noise level, NL_{max}, when both are expressed in terms of antilogs. It is approximately 1/2 of the 10 dB down duration, which is the duration for which the noise level is within 10 dB of NL_{max}.

A measure of the average integrated noise level over 1 hour is also used in the California Airport Noise Regulation. This is the hourly noise level (in dB), defined as:

$$HNL = \overline{SENEL} + 10 \log n - 35.6, \quad dB$$

where

$\overline{SENEL}$ = energy mean value of SENEL for each single event,

and

n = number of flights per hour

The total noise exposure for a day is specified by the community noise equivalent level (CNEL) in dB, and may be expressed as:

Source: American Standard Acoustical Terminology, S1.1-1960, Revision of Z24.1-1951 and including Z24.1a, American Standards Association, May 26, 1960.

$$CNEL = \overline{SENEL} + 10 \log N_c - 49.4, \text{ dB}$$

where

$$N_c = (N_d + 3N_e + 10N_n)$$

or

$$= (12\bar{n}_d + 9\bar{n}_e + 90\bar{n}_n)$$

$N_d, \bar{n}_d$ = total number and average number per hour, respectively, of flights during the period 0700 to 1900

$N_e, \bar{n}_e$ = total number and average number per hour, respectively, of flights during the period 1900 to 2200

and

$N_n, \bar{n}_n$ = total number and average number per hour, respectively, of flights during the period 2200 to 0700

Day-Night Average Level (L_{dn})

A new composite noise scale is currently under consideration by the Environmental Protection Agency for specification of community noise from all sources. Called Day-Night Average Level, it is nearly the same as CNEL except that the weighting for the evening time period in CNEL is eliminated and the "day" extends from essentially 7 a.m. to 10 p.m. while the "night," with a 10 dB weighting penalty, extends from 10 p.m. to 7 a.m.

Defined in the approximate manner as above,

$$L_{dn} \simeq \overline{SENEL} + 10 \log N_e - 49.4$$

where

$$N_e = N_d' + 10 N_n$$

N_d' = total number of events (flights) during the daytime (0701 to 2200)

N_n = total number of events (flights) during the nighttime (2201 to 0700)

$\overline{SENEL}$ = energy mean value of SENEL for each single event

When defined in the more general way for application to continuous monitoring of community noise, L_{dn} would be given by

$$L_{dn} = 10 \log \left[\frac{15}{24} \cdot \log^{-1} \left(\frac{\overline{L_d}}{10} \right) + \frac{9}{24} \cdot \log^{-1} \left(\frac{\overline{L_n} + 10}{10} \right) \right]$$

where

$\overline{L_d}$ = energy mean A-weighted noise level during the daytime (0701 to 2200)

$\overline{L_n}$ = energy mean A-Weighted noise level during the nighttime (2201 to 0700)

$\log^{-1}$ denotes an inverse logarithm

Chapter 6.60 - NOISE

Sections:

6.60.010 - Declaration of policy.

In order to control unnecessary, excessive and annoying noise in the county, it is hereby declared to be the policy of the county to prohibit such noise generated from or by all sources as specified in this chapter. It shall be the policy of the county to maintain quiet in areas which exhibit low noise levels and to implement programs aimed to reduce noise in those areas within the county where noise levels are above acceptable values.

It is determined that certain noise levels are detrimental to the public health, welfare and safety, and are contrary to public interest. Therefore, the Board of Supervisors does ordain and declare that creating, maintaining, causing or allowing to be created, caused or maintained, any noise in a manner prohibited by or not in conformity with the provisions of this chapter, is a public nuisance and shall be punishable as such.

(Prior gen. code 3-107.101)

6.60.020 - Definitions.

"Ambient noise level" means the all encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding the alleged offensive noise, at the location and approximate time at which a comparison with the alleged offensive noise is to be made.

"'A' weighted sound level" means the total sound level in decibels of all sound as measured with a sound level meter with a reference pressure of twenty (20) micropascals using the 'A' weighted network (scale) at slow response. The unit of measurement shall be defined as dB(A).

"Church" means any building or portion thereof regularly used by people as a place to worship God and known by those familiar with the neighborhood to be so used.

"Commercial properties" means any building, structure, premise or portion thereof used for wholesale or retail purposes on which the property user or employees are engaged in work for which it is intended that compensation be received for goods or services.

"Construction" means construction, erection, enlargements, alteration, conversion or movement of any building, structures or land together with any scientific surveys associated therewith.

"Cumulative period" means an additive period of time composed of individual time segments which

may be continuous or interrupted.

"Decibel (dB)" means a unit for measuring the amplitude of sounds, equal to twenty (20) times the logarithm to the base ten of the ratio of the pressure of the sound measured to the reference pressure, which is twenty (20) micropascals.

"Director" means the director of environmental health of the county or his duly authorized deputy.

"Dwelling unit" means a single unit providing complete independent living facilities for one or more persons including permanent provisions for living, sleeping, eating, cooking and sanitation.

"Emergency work" means the use of any machinery, equipment, vehicle, manpower or other activity in a short term effort to protect or restore safe conditions in the community, or work by private or public utilities when restoring utility service.

"Hospital" means any building or portion thereof used for the accommodation and medical care of the sick, injured or infirm persons and includes rest homes and nursing homes.

"Impulsive noise" means a noise of short duration usually less than one second and of high intensity with an abrupt onset and rapid decay.

"Intruding noise level" means the total sound level in decibels, created, caused, maintained or originating from an alleged offensive source at a specified location while the alleged offensive source is in operation.

"Noise disturbance" means any sound as judged by any person empowered to enforce this chapter, which (A) endangers or injures the safety or health of human beings or animals, or (B) endangers or injures personal or real property, or (C) annoys or disturbs a reasonable person of normal sensitivity. The factors which shall be considered in determining whether a violation of (C) exists shall include, but not be limited to the following:

1. The relative sound level of the objectionable noise to the ambient noise;
2. The proximity of the objectionable noise to residential sleeping facilities or public camping facilities;
3. The number of persons affected by the objectionable noise;
4. The day of the week and time of day or night the objectionable noise occurs;
5. The duration of the objectionable noise and its tonal, informational or musical content;
6. Whether the objectionable noise is continuous, recurrent or intermittent;
7. The nature and zoning of the area within which the objectionable noise emanates.

"Person" means a person, firm, association, partnership, joint venture, corporation or any entity, public or private in nature.

"Recreational motor vehicle" means any motor vehicle (as that term is defined in the California Vehicle Code) and shall also include, but not be limited to, motorcycles, go-carts, campers, dune buggies and commercial or noncommercial racing vehicles. A "recreational motor vehicle" does not include a motorboat.

"Residential property" means a parcel of real property which is developed and used either in whole or in part for residential purposes.

"School" means public or private institutions, including vocational schools, conducting regular academic instruction at preschool, kindergarten, elementary, secondary or collegiate levels.

"Simple tone noise" means any sound which is distinctly audible as a single pitch or a set of single pitches as judged by any person empowered to enforce this chapter.

"Sound level meter" means an instrument used for measurement of sound levels, which meets the American National Standard Institute's Standard S14-1971 or most recent revision thereof for Type 1 or Type 2 sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.

"Sound pressure level" of a sound, in decibels, means twenty (20) times the logarithm to the base ten of the ratio of the pressure of the sound to a reference pressure which is twenty (20) micropascals.

(Prior gen. code §§ 3-107.201—3-107.221)

6.60.030 - Noise measurement criteria.

A. Any noise measurement made pursuant to the provisions of this chapter shall be made with a sound level meter using the 'A' weighted network (scale) at slow meter response. Fast meter response shall be used for an impulsive noise. Calibration of the measurement equipment, utilizing an acoustic calibrator, shall be performed immediately prior to recording any noise date.

B. The exterior noise levels shall be measured at any point on the affected residential property, school, hospital, church, public library or commercial property. Where practical, the microphone shall be positioned three to five feet above the ground and away from reflective surfaces.

(Prior gen. code §§ 3-107.301, 3-107.302)

6.60.040 - Exterior noise level standards.

A. It is unlawful for any person at any location within the unincorporated area of the county to create any noise or to allow the creation of any noise on property owned, leased, occupied or

otherwise controlled by such person which causes the exterior noise level when measured at any single- or multiple-family residential, school, hospital, church, public library or commercial properties situated in either the incorporated or unincorporated area to exceed the noise level standards as set forth in Table 6.60.040A or Table 6.60.040B following:

Table 6.60.040A

RECEIVING LAND USE — SINGLE- OR MULTIPLE-FAMILY RESIDENTIAL, SCHOOL, HOSPITAL, CHURCH OR PUBLIC LIBRARY PROPERTIES

NOISE LEVEL STANDARDS, dB(A)

Category	Cumulative Number of Minutes in any one hour time period	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65

Table 6.60.040B

RECEIVING LAND USE — COMMERCIAL PROPERTIES

NOISE LEVEL STANDARDS, dB(A)

Category	Cumulative Number of Minutes in any one hour time period	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
1	30	65	60
2	15	70	65
3	5	75	70
4	1	80	75
5	0	85	80

B. In the event the measured ambient noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted so as to equal said ambient noise level.

C. Each of the noise level standards specified in Tables 6.60.040A and B shall be reduced by five dB(A) for simple tone noises, noises consisting primarily of speech or music or for recurring impulsive noises.

D. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the applicable noise level standards in Table 6.60.040A and Table 6.60.040B.

E. Notwithstanding the noise level standards set forth in this section, the noise level standard applicable to the emission of sound from transformers, regulators, or associated equipment in electrical substations shall be 60 dB(A).

(Prior gen. code §§ 3-107.401—3-107.405)

6.60.050 - Prohibited noise disturbances.

A. No person shall make or cause to be made any noise disturbance as defined in Section

6.60.020 of this chapter.

B. Notwithstanding any of the provisions of this chapter, the following acts are prohibited within the unincorporated area of the county of Alameda, subject only to the exceptions of Section 6.60.070:

1. Radio, Television Sets, Musical Instruments and Similar Devices. Operating, playing or permitting the operation or playing of any radio, stereo, television set, audio equipment, electronic equipment, drum, musical instrument, or device which produces or reproduces sound at any time of day plainly audible at a distance of fifty (50) feet from such device. This section does not apply to places of public entertainment or to events for which a lawful permit has been obtained, provided that the activities producing sound are being conducted in compliance with the permit. This section does not apply to the operation of sound amplification systems in vehicles to the extent those systems are subject to California Vehicle Code Section 27007.
2. Animals and Birds. The keeping of any animal or bird, as pet or livestock, which causes frequent or continuous noise plainly audible at a distance of fifty (50) feet from such animal. For the purposes of this subsection, the animal noise shall not be deemed a disturbance or nuisance if the noise is in response to a person trespassing or threatening to trespass upon private property in or upon which the animal is situated or if the noise is in response to someone teasing or provoking the animal.

However, any person teasing or provoking the animal noise shall be guilty of a violation of this chapter.

3. Electric/Gas Powered Tools in Residential Areas: Vehicle Maintenance.
   a. Operation or use in residential areas between the hours of seven p.m. and seven a.m. on a weekday or between the hours of seven p.m. and eight a.m. on a weekend, of any electric or gasoline powered leaf blower, sweeper, vacuum, lawn mower, trimmer, edger, hedger or similar tool or device which produces sound which is plainly audible at a distance of fifty (50) feet from such device.
   b. Repairing, rebuilding, modifying or testing any vehicle in residential areas between the hours of seven p.m. and seven a.m., in such a manner as to produce sound which is plainly audible at a distance of fifty (50) feet from the vehicle.
4. Emergency Signaling Devices. The intentional sounding or permitting the sounding outdoors of any fire, burglar, or civil defense alarm, siren, whistle, or similar stationary emergency signaling device, except for emergency purposes or for testing; provided such testing is conducted as follows:
   a. The testing of a stationary emergency signaling device shall not occur before seven

a.m. or after seven p.m. Any such testing shall use only the minimum cycle test time, in no case shall such test time exceed sixty (60) seconds.

b. The testing of the complete emergency signaling system, including the functioning of the signaling device, and the personnel response to the signaling device, shall not occur more than once in each calendar month. Such testing shall not occur before seven a.m. or after ten p.m. The time specified in subsection (B)(4)(a) of this section shall not apply to such complete system testing;

5. Sounding or permitting the sounding of any exterior burglar or fire alarm or any motor vehicle burglar alarm unless such alarm is terminated within fifteen (15) minutes of activation. Pre-existing installations will be allowed a period of ninety (90) days for correction;

6. Stationary Nonemergency Signaling Devices.

   a. Sounding or permitting the sounding of any electronically amplified signal from any stationary bell, chime, siren, whistle, or similar device, intended primarily for nonemergency purposes, from any place, for more than ten seconds in any hourly period,

   b. Churches shall be exempt from the operation of this provision,

   c. Sound sources covered by this provision and not exempted under subsection (B)(6)(b) of this section may be exempted by a variance issued by the director of environmental health;

7. Loading and Unloading. Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of nine p.m. and six a.m. in such a manner as to cause a noise disturbance across a residential real property line or at any time to violate the provisions of Section 6.60.040.

8. Vibration. Operating or permitting the operation of any device that creates a vibration which is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property or at one hundred fifty (150) feet (forty-six (46) meters) from the source if on a public space or public right-of-way.

C. Notwithstanding the provisions of Section 6.60.040, where the intruding noise source, as measured pursuant to Section 6.60.030, is a residential air conditioning or refrigeration system or associated equipment installed prior to July 1, 1980, the exterior noise level shall not exceed fifty-five (55) dB(A). The exterior noise level shall not exceed fifty (50) dB(A) for such equipment installed after July 1, 1980.

D. "Plainly audible" means any sound that can be detected by a person using his or her unaided hearing faculties. As an example, if the sound source under investigation is a portable or

personal vehicular sound amplification or reproduction device, the enforcement officer need not determine the title of a song, specific words, or the artist performing the song. The detection of the rhythmic base component of the music is sufficient to constitute a plainly audible sound.

E. The restrictions contained in Section 6.60.050(B)(1), (2) and (3) shall not apply to:

1. Activities which are governed by conditional use permits or other permits issued by the county, if those permits expressly regulate or control the amount of noise or sound which may be generated by the activities which are governed by the permit;
2. Unincorporated areas of the county within the east county area plan; or
3. Unincorporated areas of the county outside the urban growth boundary, as defined by "Measure D" ("Save Agricultural and Open Space Lands Initiative of 2000").

(Ord. 2005-16 §§ 1-4; prior gen. code §§ 3-107.501—3-107.503)

6.60.060 - Vehicle noise limits.

A. Recreational Motorized Vehicles Operating Off A Public Highway. No person shall operate or cause to be operated any recreational motorized vehicle off a public highway in such a manner as to create a noise disturbance or exceed the standards set forth in Section 6.60.040 of this chapter.

B. Vehicle, Motorboat or Aircraft Repair and Testing. No person shall repair, rebuild, modify or test any vehicle, motorboat, or aircraft in such a manner as to create a noise disturbance or exceed the standards set forth in Section 6.60.040 of this chapter.

(Prior gen. code §§ 3-107.601—3-107.602)

6.60.070 - Special provisions or exceptions.

A. Emergency Exception. The provisions of this chapter shall not apply to:

1. The emission of sound for the purpose of alerting persons to existence of an emergency; or
2. The emission of sound in the performance of emergency work.

B. Warning Devices. Warning devices, necessary for the protection of public safety as, for example, police, fire and ambulance sirens and train horns shall be exempted from the provisions of this chapter.

C. Federal or State Preempted Activities. The provisions of this chapter shall not apply to any other activity to the extent regulation thereof has been preempted by state or federal law.

D. Public Health, Welfare and Safety Activities. The provisions of this chapter shall not apply to

construction or maintenance and repair operations conducted by public agencies and/or utility companies or their contractors which are deemed necessary to serve the best interests of the public and to protect the public health, welfare and safety, including, but not limited to street sweeping, debris and limb removal, removal of downed wires, restoring electrical service, repairing traffic signals, unplugging sewers, vacuuming catch basins, repairing of water hydrants and mains, gas lines, oil lines, sewers, storm drains, roads, sidewalks, etc.

E. Construction. The provisions of this chapter shall not apply to noise sources associated with construction, provided said activities do not take place before seven a.m. or after seven p.m. on any day except Saturday or Sunday, or before eight a.m. or after five p.m. on Saturday or Sunday.

F. Maintenance of Residential Property. The provisions of this chapter shall not apply to noise sources associated with the maintenance of residential property provided said activities take place between the hours of seven a.m. and nine p.m. on any day except Saturday or Sunday, or between the hours of nine a.m. and eight p.m. on Saturday or Sunday.

G. Proviso. Notwithstanding the provisions of subsections D, E and F of this section, no exemptions from the provisions at this chapter shall be granted for activities specified in said sections where equipment used for those activities, including mufflers, is not maintained in the condition for which it was designed or intended and thereby unnecessarily increases noise levels so as to cause a noise disturbance or exceed the standards set forth in Section 6.60.040 of this chapter.

(Prior gen. code §§ 3-107.701—3-107.707)

6.60.080 - Zone change.

Prior to the approval of any zone change, general plan amendment, precise development plan, conditional, use permit, zone variance or specific plan; upon request

A. The director shall review the noise impact of the proposed action by identifying existing and projected noise sources and the associated sound levels.

B. The director shall recommend usage of adequate control measures on noise sources identified in subsection A of this section which will be in violation of any provision of this chapter or the noise quality standards of the noise element of the county general plan.

(Prior gen. code § 3-107.801)

6.60.090 - Violations.

A. Any violation of this chapter is an infraction punishable by (1) a fine of one hundred dollars

($100.00) for a first violation; (2) a fine of two hundred dollars ($200.00) for a second violation of this chapter within one year; (3) a fine of five hundred dollars ($500.00) for each additional violation of this chapter within one year.

B. As an additional remedy, the operation or maintenance of any device, instrument, vehicle or machinery in violation of any provision of this chapter, so as to cause a noise disturbance, shall be deemed and is hereby declared to be a public nuisance and may be subject to abatement summarily by a restraining order or injunction issued by a court of competent jurisdiction.

(Ord. 2005-16 § 5: prior gen. code §§ 3-107.901—3-107.903)

6.60.100 - Manner of enforcement.

A. The director is directed to enforce the provisions of this chapter except for Section 6.60.050(B)(1), (2) and (3) which shall be enforced by peace officers. The director and peace officers may jointly enforce Sections 6.60.050(A) and 6.60.060 of this chapter.

B. No person shall interfere with, oppose or resist any authorized person charged with the enforcement of this chapter while such person is engaged in the performance of his duties.

(Ord. 2005-16 § 6: prior gen. code § 3-107.904)

6.60.110 - Variances.

A. The owner or operator of a noise source which the director has determined violates any of the provisions of this chapter may file an application with the director for variance from strict compliance with any particular provision of this chapter where such variance will not result in a hazardous condition or a nuisance and strict compliance would be unreasonable in view of all the circumstances. Said owner or operator shall set forth all actions taken to comply with said provision(s) and the reasons why immediate compliance cannot be achieved. A separate application shall be filed for each noise source; provided, however, that several mobile sources under common ownership or fixed sources under common ownership on a single property may be combined into one application.

Upon receipt of said application and within thirty (30) days thereof, the director shall either approve such request, in whole or in part, or deny the request. In the event the variance is approved, reasonable conditions may be imposed which may include restrictions on noise level, noise duration and operating hours, an approved method of achieving compliance and a time schedule for its implementation.

Factors which the director must consider shall include but not be limited to the following:

1. Uses of property within the area affected by the noise;

2. Factors related to initiating and completing all remedial work;
3. Age and useful life of the existing noise source;
4. The general public interest, welfare and safety;
5. Conditions, policies, or guidelines imposed by other agencies or other commissions including the planning commission conditions and planning commission or ALUC policies and guidelines.

B. Within thirty (30) days following the decision of the director on an application for a variance, the applicant may appeal the decision to the Board of Supervisors for a hearing de novo by filing a notice of appeal with the clerk of the Board of Supervisors. The Board of Supervisors shall either affirm, modify or reverse the decision of the director. Such decision shall be final and shall be based upon the considerations set forth in this section.

(Prior gen. code § 3-107.905)

6.60.120 - Construction.

This chapter shall be liberally construed so as to effectuate its purposes.

(Prior gen. code § 3-107.906)

CONSTRUCTION NOISE MODELING

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 02/09/2022
Case Description: Site Prep

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
50 ft	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0
Man Lift	No	20		74.7	50.0	0.0
Excavator	No	40		80.7	50.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80.7	80.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 02/09/2022
Case Description: Utility Trenching

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
50 feet	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0
Compactor (ground)	No	20		83.2	50.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Equipment	Calculated (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	83.2	76.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	83.2	81.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 02/09/2022
Case Description: PV Installation

**** Receptor #1 ****

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
50 feet	Residential	60.0	55.0	50.0

Equipment

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	50.0	0.0
Auger Drill Rig	No	20		84.4	50.0	0.0
Backhoe	No	40		77.6	50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0

Results

Noise Limits (dBA)

Noise Limit Exceedance (dBA)

Calculated (dBA) Day Evening

Equipment	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Man Lift	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Auger Drill Rig	84.4	77.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	80.7	76.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	Total	84.4	82.1		N/A		N/A		N/A		N/A		N/A		N/A		N/A		N/A
N/A		N/A		N/A		N/A		N/A		N/A		N/A							

APPENDIX G

TRIBAL CONSULTATION CORRESPONDENCE

Allison Dagg

From: Chauhan, Nisha, CDA <nisha.chauhan@acgov.org>
Sent: Thursday, January 27, 2022 2:32 PM
To: Allison Dagg; Steve Noack
Subject: FW: AB 52 Alameda Grant Line Solar 1 Project

Hi Allison,

This is the only response I received.

Regards,
Nisha

From: Corrina Gould <cvltribe@gmail.com>
Sent: Sunday, December 5, 2021 7:02 PM
To: Chauhan, Nisha, CDA <nisha.chauhan@acgov.org>
Subject: Re: AB 52 Alameda Grant Line Solar 1 Project

Thank you for reaching out to the Tribe about the proposed project. At this time the Tribe has no further information to supply about the proposed site for this plan. As always we encourage developers in our traditional territories to remain cognizant of the facts that our tribal people lived all over the Bay Area and because of colonization and genocidal practices that reached into the late 19th century and early 20thCentury,it is not always possible to know for certain if you may find cultural resources or burials at sites where you anticipate ground disturbance. The Tribe wishes to be contacted if there are any findings.

'Uni (Respectfully),

Corrina Gould, Tribal Chair
Confederated Villages of Lisjan Tribe

On Tue, Nov 16, 2021 at 2:41 PM Chauhan, Nisha, CDA <nisha.chauhan@acgov.org> wrote:

> Hello Corrina,
>
> I have attached the results of the Sacred Lands File search. This letter from the Native American Heritage Commission indicates negative findings regarding sacred lands at this site. Please let us know if you have feedback regarding this letter and the findings.

Regarding your previous email request on November 10, 2021 pertaining to the final results of the CHRIS, I have attached the Phase I Cultural Resources Assessment that was prepared for this project. This report includes the CHRIS results.

Please let us know if you have any questions or feedback to share. We look forward to working with you.

Respectfully,

Nisha

Nisha Chauhan, AICP

Senior Planner

Alameda County Planning Department

Phone: (510) 670-6541

Hours: Monday-Friday 9am – 5:30pm

General Plan and Zoning information is now available online. Go here to access the Public Access Map (PAM.)

The Planning Dept is working normal business hours and remotely in compliance with the Shelter in Place Order issued by the County Public Health Officer

From: Corrina Gould <cvltribe@gmail.com>
Sent: Tuesday, November 16, 2021 9:43 AM
To: Chauhan, Nisha, CDA <nisha.chauhan@acgov.org>
Subject: AB 52 Alameda Grant Line Solar 1 Project

Hello,

Thank you for your letter. Can you please send additional information regarding the site? Has there been a Sacred Lands File search at the Native American Heritage Commission with Negative or Positive findings? Once this information is available, we can move forward with the consultation process.

'Uni (Respectfully),

Corrina Gould, Tribal Chair

Confederated Villages of Lisjan Tribe

** This email was sent from an external source. If you do not know the sender, do not click on links or attachments. **

APPENDIX H

HAZARDOUS MATERIALS INFORMATION

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

22 October 2020

[redacted]

Enclosed are the results of analyses for samples received by the laboratory on 10/15/20 14:39. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Joann Marroquin
Director of Operations

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

[redacted]
[redacted]
[redacted]

Project: [redacted]
Project Number: [redacted]
Project Manager: [redacted]

Reported:
10/22/20 16:01

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Sample #1	T203608-01	Soil	10/15/20 00:00	10/15/20 14:39
Sample #2	T203608-02	Soil	10/15/20 00:00	10/15/20 14:39
Sample #3	T203608-03	Soil	10/15/20 00:00	10/15/20 14:39

SunStar Laboratories, Inc

Joann Marroquin, Director of Operations

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

[redacted]	Project: [redacted]	
[redacted]	Project Number: [redacted]	**Reported:**
[redacted]	Project Manager: [redacted]	10/22/20 16:01

DETECTIONS SUMMARY

Sample ID: Sample #1 **Laboratory ID:** T203608-01

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	0.38	0 10	mg/l	EPA 1311/6010/7000	
Lead	1.4	0 10	mg/l	EPA 1311/6010/7000	

Sample ID: Sample #2 **Laboratory ID:** T203608-02

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	0.46	0 10	mg/l	EPA 1311/6010/7000	
Lead	1.5	0 10	mg/l	EPA 1311/6010/7000	

Sample ID: Sample #3 **Laboratory ID:** T203608-03

Analyte	Result	Reporting Limit	Units	Method	Notes
Barium	0.37	0 10	mg/l	EPA 1311/6010/7000	
Lead	1.3	0 10	mg/l	EPA 1311/6010/7000	

SunStar Laboratories, Inc

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Joann Marroquin

Joann Marroquin, Director of Operations

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

[redacted]	Project: [redacted]	
[redacted]	Project Number: [redacted]	**Reported:**
[redacted]	Project Manager: [redacted]	10/22/20 16:01

Sample #1

T203608-01 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
TCLP Metals by 6000/7000 Series Methods									
Mercury	ND	2.0	ug/l	1	0101637	10/16/20	10/21/20	EPA 1311/7470	
Arsenic	ND	0 10	mg/l	"	0101636	10/16/20	10/21/20	EPA 1311/6010/7000	
Barium	**0.38**	0.10	"	"	"	"	"	"	
Cadmium	ND	0.10	"	"	"	"	"	"	
Chromium	ND	0.10	"	"	"	"	"	"	
Lead	**1.4**	0.10	"	"	"	"	"	"	
Selenium	ND	0.10	"	"	"	"	"	"	
Silver	ND	0.10	"	"	"	"	"	"	

SunStar Laboratories, Inc

Joann Marroquin

Joann Marroquin, Director of Operations

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

[redacted]	Project: [redacted]	
[redacted]	Project Number: [redacted]	**Reported:**
[redacted]	Project Manager: [redacted]	10/22/20 16:01

Sample #2

T203608-02 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
TCLP Metals by 6000/7000 Series Methods									
Mercury	ND	2.0	ug/l	1	0101637	10/16/20	10/21/20	EPA 1311/7470	
Arsenic	ND	0.10	mg/l	"	0101636	10/16/20	10/21/20	EPA 1311/6010/7000	
Barium	**0.46**	0.10	"	"	"	"	10/21/20	"	
Cadmium	ND	0.10	"	"	"	"	10/21/20	"	
Chromium	ND	0.10	"						
Lead	**1.5**	0.10	"	"	"	"	10/21/20	"	
Selenium	ND	0.10	"	"	"	"	10/21/20	"	
Silver	ND	0.10	"	"	"	"	"	"	

SunStar Laboratories, Inc

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Joann Marroquin

Joann Marroquin, Director of Operations

SunStar Laboratories, Inc.
Providing Quality Analytical Services Nationwide

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

[redacted]	Project: [redacted]	
[redacted]	Project Number: [redacted]	**Reported:**
[redacted]	Project Manager: [redacted]	10/22/20 16:01

Sample #3

T203608-03 (Soil)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
SunStar Laboratories, Inc.									
TCLP Metals by 6000/7000 Series Methods									
Mercury	ND	2.0	ug/l	1	0101637	10/16/20	10/21/20	EPA 1311/7470	
Arsenic	ND	0.10	mg/l	"	0101636	10/16/20	10/21/20	EPA 1311/6010/7000	
Barium	**0.37**	0.10	"	"	"	"	"	"	
Cadmium	ND	0.10	"	"	"	"	"	"	
Chromium	ND	0.10	"						
Lead	**1.3**	0.10	"	"	"	"	"	"	
Selenium	ND	0.10	"	"	"	"	"	"	
Silver	ND	0.10	"	"	"	"	"	"	

SunStar Laboratories, Inc

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Joann Marroquin

Joann Marroquin, Director of Operations

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

[redacted]	Project: [redacted]	
[redacted]	Project Number: [redacted]	**Reported:**
[redacted]	Project Manager: [redacted]	10/22/20 16:01

TCLP Metals by 6000/7000 Series Methods - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0101636 - TCLP Metals										
Blank (0101636-BLK1)				Prepared: 10/16/20 Analyzed: 10/21/20						
Arsenic	ND	0 10	mg/l							
Barium	ND	0 10	"							
Cadmium	ND	0 10	"							
Chromium	ND	0 10	"							
Lead	ND	0 10	"							
Selenium	ND	0 10	"							
Silver	ND	0 10	"							
LCS (0101636-BS1)				Prepared: 10/16/20 Analyzed: 10/21/20						
Arsenic	0 568	0 10	mg/l	0 500		114	75-125			
Barium	0 488	0 10	"	0 500		97 7	75-125			
Cadmium	0 527	0 10	"	0 500		105	75-125			
Chromium	0 496	0 10	"	0 500		99 3	75-125			
Lead	0 484	0 10	"	0 500		96 9	75-125			
Matrix Spike (0101636-MS1)	**Source: T203608-01**			Prepared: 10/16/20 Analyzed: 10/21/20						
Arsenic	0 510	0 10	mg/l	0 500	ND	102	75-125			
Barium	0 810	0 10		0 500	0 378	86 3	75 125			
Cadmium	0 469	0 10	"	0 500	0 000237	93 7	75-125			
Chromium	0 446	0 10	"	0 500	0 00161	88 8	75-125			
Lead	1 82	0 10	"	0 500	1 42	80 4	75-125			
Matrix Spike Dup (0101636-MSD1)	**Source: T203608-01**			Prepared: 10/16/20 Analyzed: 10/21/20						
Arsenic	0 497	0 10	mg/l	0 500	ND	99 4	75-125	2 64	30	
Barium	0 792	0 10	"	0 500	0 378	82 7	75-125	2 19	30	
Cadmium	0 460	0 10	"	0 500	0 000237	91 9	75-125	2 02	30	
Chromium	0 433	0 10	"	0 500	0 00161	86 3	75-125	2 83	30	
Lead	1 79	0 10	"	0 500	1 42	74 4	75-125	1 64	30	QM-05

SunStar Laboratories, Inc

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Joann Marroquin

Joann Marroquin, Director of Operations

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

[redacted]
[redacted]
[redacted]

Project: [redacted]
Project Number: [redacted]
Project Manager: [redacted]

Reported:
10/22/20 16:01

TCLP Metals by 6000/7000 Series Methods - Quality Control

SunStar Laboratories, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0101637 - TCLP Hg CV										
Blank (0101637-BLK1)				Prepared: 10/16/20 Analyzed: 10/21/20						
Mercury	ND	2 0	ug/l							
LCS (0101637-BS1)				Prepared: 10/16/20 Analyzed: 10/21/20						
Mercury	5 34	2 0	ug/l	5 00		107	75-125			
Matrix Spike (0101637-MS1)		**Source: T203608-01**		Prepared: 10/16/20 Analyzed: 10/21/20						
Mercury	4 90	2 0	ug/l	5 00	0 0140	97 8	75-125			
Matrix Spike Dup (0101637-MSD1)		**Source: T203608-01**		Prepared: 10/16/20 Analyzed: 10/21/20						
Mercury	5 10	2 0	ug/l	5 00	0 0140	102	75-125	3 96	30	

SunStar Laboratories, Inc

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Joann Marroquin

Joann Marroquin, Director of Operations

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive
Lake Forest, California 92630
949.297.5020 Phone
949.297.5027 Fax

[redacted]	Project: [redacted]	
[redacted]	Project Number: [redacted]	**Reported:**
[redacted]	Project Manager: [redacted]	10/22/20 16:01

Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to possible matrix interference. The LCS was within acceptance criteria. The data is acceptable as no negative impact on data is expected.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

SunStar Laboratories, Inc

Joann Marroquin

Joann Marroquin, Director of Operations

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

SunStar Laboratories, Inc.

PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive, Lake Forest, CA 92630
949-297-5020

Chain of Custody Record

Client: [redacted]
Address:
Phone:
Project Manager:

Date: 10/15/20 Page: Of
Project Name: [redacted]
Collector: Client Project #:
Batch #: T203608 EDF #:

Laboratory ID #	Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	6020 ICP-MS Metals	TCLP RCRA 8 (minus Hg) SR4			Comments/Preservative	Total # of containers
	#1	10/15/20														✓			Solar Panel Sample	
	#2	10/15/20														✓			Solar Panel Sample	
	#3	10/15/20														✓			Solar Panel Sample	

Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
[signature]	10/15/20, 2:39pm	[signature]	10-15-20 14:39
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time
Relinquished by: (signature)	Date / Time	Received by: (signature)	Date / Time

Total # of containers
Chain of Custody seals Y/N/NA
Seals intact? Y/N/NA
Received good condition/cold

Turn around time:

Notes

Sample disposal Instructions: Disposal @ $2.00 each ____ Return to client ____ Pickup ____

COC 192343

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

Printed: 10/15/2020 3:33:49PM

WORK ORDER

T203608

Client:	[redacted]	**Project Manager:**	**Joann Marroquin**
Project:		**Project Number:**	**[none]**

Report To:

[redacted]

Date Due:	10/22/20 17:00 (5 day TAT)		
Received By:	Joann Marroquin	Date Received:	10/15/20 14:39
Logged In By:	Joann Marroquin	Date Logged In:	10/15/20 15:20

Samples Received at:

Custody Seals	No	Received On Ice	No
Containers Intact	Yes		
COC/Labels Agree	Yes		
Preservation Confirme	No		

Analysis	Due	TAT	Expires	Comments
T203608-01 Sample #1 [Soil] Sampled 10/15/20 00:00 (GMT-08:00) Pacific Time (US &				
TCLP Leaching Procedure Metals	10/22/20 15:00	5	04/13/21 00:00	
TCLP RCRA 8	10/22/20 15:00	5	04/13/21 00:00	
T203608-02 Sample #2 [Soil] Sampled 10/15/20 00:00 (GMT-08:00) Pacific Time (US &				
TCLP Leaching Procedure Metals	10/22/20 15:00	5	04/13/21 00:00	
TCLP RCRA 8	10/22/20 15:00	5	04/13/21 00:00	
T203608-03 Sample #3 [Soil] Sampled 10/15/20 00:00 (GMT-08:00) Pacific Time (US &				
TCLP Leaching Procedure Metals	10/22/20 15:00	5	04/13/21 00:00	
TCLP RCRA 8	10/22/20 15:00	5	04/13/21 00:00	

Analysis groups included in this work order

TCLP RCRA 8

sub TCLP RCRA 8 sub TCLP Hg CV

Reviewed By Date

SunStar Laboratories, Inc.
PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

Printed: 10/16/2020 9:29:22AM

WORK ORDER

T203608

Client:	[redacted]	**Project Manager:**	**Joann Marroquin**
Project:		**Project Number:**	**[none]**

Report To:

[redacted]

Date Due:	10/22/20 17:00 (5 day TAT)		
Received By:	Joann Marroquin	Date Received:	10/15/20 14:39
Logged In By:	Joann Marroquin	Date Logged In:	10/15/20 15:20

Samples Received at:

Custody Seals	No	Received On Ice	No
Containers Intact	Yes		
COC/Labels Agree	Yes		
Preservation Confirme	No		

Analysis	Due	TAT	Expires	Comments
T203608-01 Sample #1 [Soil] Sampled 10/15/20 00:00 (GMT-08:00) Pacific Time (US &				
TCLP Leaching Procedure Metals	10/22/20 15:00	5	04/13/21 00:00	
TCLP RCRA 8	10/22/20 15:00	5	04/13/21 00:00	
T203608-02 Sample #2 [Soil] Sampled 10/15/20 00:00 (GMT-08:00) Pacific Time (US &				
TCLP Leaching Procedure Metals	10/22/20 15:00	5	04/13/21 00:00	
TCLP RCRA 8	10/22/20 15:00	5	04/13/21 00:00	
T203608-03 Sample #3 [Soil] Sampled 10/15/20 00:00 (GMT-08:00) Pacific Time (US &				
TCLP Leaching Procedure Metals	10/22/20 15:00	5	04/13/21 00:00	
TCLP RCRA 8	10/22/20 15:00	5	04/13/21 00:00	

Analysis groups included in this work order

TCLP RCRA 8

sub TCLP RCRA 8 sub TCLP Hg CV

Reviewed By Date

Excelchem Laboratories, Inc.
A Silver State Analytical Company

STLC/TTLC Regulatory Limits

Soluble Threshold Limit Concentration (STLC) and Total Threshold Limit Concentration (TTLC) Regulatory Limits*

Organic Substances	STLC Level (mg/L)	TTLC Level (mg/Kg - wet weight)
Aldrin	0.14	1.4
Chlrodane	0.25	2.5
DDT, DDE, DDD	0.1	1
2,4-Dichlorophenoxyacetic acid	10	100
Dieldrin	0.8	8
Dioxin (2,3,7,8-TCDD)	0.001	0.01
Endrin	0.02	0.2
Heptachlor	0.47	4.7
Kepone	2.1	21
Lead compounds, organic	-	13
Lindane (gamma-BHC)	0.4	4
Methoxychlor	10	100
Mirex	2.1	21
Pentachlorophenol	1.7	17
PCBs (Polychlorinated Biphenyls)	5.0	50
Toxaphene	0.5	5
Trichloroethylene	204	2040
2,4,-Trichlorophenoxypropionic acid	1.0	10

* Used for California regulated hazardous waste. Source is California Code of Regulations, Title 22, Chapter 11, Article 3.

Excelchem Laboratories, Inc.
A Silver State Analytical Company

STLC/TTLC Regulatory Limits

Soluble Threshold Limit Concentration (STLC) and Total Threshold Limit Concentration (TTLC) Regulatory Limits*

Inorganic Substances	STLC** Level (mg/L)	TTLC*** Level (mg/Kg - wet weight)
Antimony (and/or Sb compounds)	15	500
Arsenic (and/or As compounds)	5	50
Asbestos	-	1%
Barium (and/or Ba compounds)	100	10000****
Beryllium (and/or Be compounds)	0.75	75
Cadmium (and/or Cd compounds)	1	100
Chromium VI compounds	5	500
Chromium (and/or Cr III compounds)	5*****	2500
Cobalt (and/or Co compounds)	80	8000
Copper (and/or Cu compounds)	25	2500
Fluoride salts	180	18000
Lead (and/or Pb compounds)	5	1000
Mercury (and/or Hg compounds)	0.2	20
Molybdenum (and/or Mo compounds)	350	3500
Nickel (and/or Ni compounds)	20.0	2000
Selenium (and/or Se compounds)	1	100
Silver (and/or Ag compounds)	5	500
Thallium (and/or Tl compounds)	7.0	700
Vanadium (and/or V compounds)	24	2400
Zinc (and/or Zn compounds)	250	5000

* Used for California regulated hazardous waste. Source is California Code of Regulations, Title 22, Chapter 11, Article 3.

** If a substance is ten times (by rule of thumb) the STLC value found on the TTLC, the Waste Extraction test (WET) should be used. If any substance in the waste so analyze equals or exceeds the STLC value, it is considered a hazardous toxic waste.

***If a substance in a waste equals or exceeds the TTLC level, it is considered a hazardous toxic waste.

**** Excludes barium Sulfate

***** If the soluble chromium as determined by the TCLP is less than 5mg/L, and the soluble chromium as determined by the STLC test equals or exceeds 560mg/L, and the waste is not otherwise identified as a RCRA hazardous waste, then the waste is a non-RCRA hazardous waste.

Excelchem Laboratories, Inc.
A Silver State Analytical Company

TCLP

Toxicity Characteristic Leaching Procedure Regulatory Levels

Metals	TCLP Reg Level	units
Arsenic	5.0	mg/L
Barium	100.0	mg/L
Cadmium	1.0	mg/L
Chromium	5.0	mg/L
Lead	5.0	mg/L
Mercury	0.2	mg/L
Selenium	1.0	mg/L
Silver	5.0	mg/L

Volatile Organics	TCLP Reg Level	units
Benzene	0.5	mg/L
Carbon Tetrachloride	0.5	mg/L
Chlorobenzene	100.0	mg/L
Chloroform	6.0	mg/L
1,4-Dichlorobenzene	7.5	mg/L
1,2-Dichloroethane	0.5	mg/L
1,1-Dichloroethylene	0.7	mg/L
Methyl Ethyl Ketone	200.0	mg/L
tetrachloroethylene	0.7	mg/L
Trichloroethylene	0.5	mg/L
Vinyl Chloride	0.2	mg/L

Semi-Volatile Organics	TCLP Reg Level	units
o-Creosol*	200.0	mg/L
m-Creosol*	200.0	mg/L
p-Creosol*	200.0	mg/L
Creosol*	200.0	mg/L
2,4-Dinitrotoluene**	0.1	mg/L
Hexachlorobenzene**	0.1	mg/L
Hexachlorobutadiene	0.5	mg/L
Hexachloroethane	3.0	mg/L
Nitrobenzene	2.0	mg/L
Petachlorophenol	100.0	mg/L
Pyridine**	5.0	mg/L
2,4,5-Trichlorophenol	400.0	mg/L
2,4,6-Trichlorophenol	2.0	mg/L

* If o-, m-, and p-Creosol cannot be differentiated, total Creosol can be used.

** Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

Excelchem Laboratories, Inc.
A Silver State Analytical Company

TCLP

Toxicity Characteristic Leaching Procedure Regulatory Levels

Organochlorine Pesticides	TCLP Reg Level	units
Chlordane	0.03	mg/L
Endrin	0.02	mg/L
Heptachlor (and Heptachlor Epoxide)	0.008	mg/L
Lindane (gamma-BHC)	0.40	mg/L
Methoxychlor	10.0	mg/L
Toxaphene	0.50	mg/L

Chlorophenoxy Acid Herbicides	TCLP Reg Level	units
2,4-D	10.0	mg/L
2,4,5-TP (Silvex)	1.0	mg/L