Draft
Environmental Impact Report
Technical Appendices

SCH #2020099017

Volume 2 of 3
Appendices A to E

KUDU SOLAR PROJECT
by 69SV 8ME LLC (8Minute Energy) (PP20405)

Zone Change Case No. 14, Map No. 152;
Conditional Use Permit No. 28, Map No. 152;
General Plan Amendment No. 10, Map No. 152 (Circulation);
Non-Summary Vacations of Public Access Easements

Kern County
Planning and Natural Resources Department
Bakersfield, California

November 2021

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Kern County
Planning and Natural Resources Department

Technical Assistance by:
Michael Baker International

November 2021

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Appendix A

Notice of Preparation and Supporting Documents

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Notice of Preparation/Initial Study

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Lorelei H. Oviatt, AICP, Director
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Bakersfield, CA 93301-2323
Phone: (661) 862-8600
Fax: (661) 862-8601 TTY Relay 1-800-735-2929
Email: planning@kerncounty.com
Web Address: http://kernplanning.com/

PLANNING AND NATURAL RESOURCES DEPARTMENT

Planning
Community Development
Administrative Operations

DATE: September 15, 2020

TO: See Attached Mailing List

FROM: Kern County Planning and Natural Resources Department
Attn: Ronelle Candia
2700 "M" Street, Suite 100
Bakersfield, CA 93301
(661)862-8997; CandiaR@kerncounty.com

SUBJECT: NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT

The Kern County Planning and Natural Resources Department as Lead Agency (per CEQA Guidelines Section 15062) has determined that preparation of an Environmental Impact Report (per CEQA Guidelines 15161) is necessary for the proposed project identified below. The Planning and Natural Resources Department solicits the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIR prepared by our agency when considering your permit or other approval of projects.

You are invited to view the NOP and submit written comments regarding this proposed project should you wish to do so. Due to the limits mandated by State law, your response must be received by **October 15, 2020 at 5:00 p.m**. Comments can be submitted to the Kern County Planning and Natural Resources Department at the address shown above. A Scoping meeting that will be held on **Friday, October 2, 2020 at 1:30 p.m.** In compliance with the Governor's Executive Order, the California Department of Public health's guidelines on gatherings regarding COVID-19, and Kern County Local Emergency Declaration, the scoping meeting required by the CEQA Guidelines will be conducted online. Closed captioning in Spanish will be available to attendees. Instructions for accessing the virtual scoping meeting will be available three (3) days before the virtual scoping meeting on the Kern County Planning and Natural Resources website at https://kernplanning.com.

Comments on the scope and content of the NOP should be sent to CandiaR@kerncounty.com.

PROJECT TITLE: Kudu Solar Farm by 69SV 8ME LLC (PP20405); ZCC 14, Map # 152; CUP 28, Map #152; and GPA 10, Map #152 (Circulation).

PROJECT LOCATION: The proposed project site is located in portions of unincorporated Kern County and the City of California City, north of the California City Municipal Airport. The majority of the project site is bisected to the east-west by Washburn Boulevard (which is also the Kern County/California City limit line) and to the north-south by Neuralia Road. State Route 14, a four-lane divided highway located approximately one mile to the west, provides regional access to the project site. Access to the site would be from Phillips Road, Gantt Road, Neuralia Road, Pioneer Road, Sage Street, or through the Eland 1 project site. The site is located within Township 31S, Range 37E – portions of Sections 14, 15, 22, 23, 26, 27 , 28, 29, 30, 31, 32, 33, 34, 35 and Township 32S, Range 37E – portions of Sections 1, 2, 3, 4, 9, 10, 11, 12.

PROJECT DESCRIPTION: The Kudu Solar Farm Project by 69SV 8ME LLC (project proponent), is a proposed photovoltaic solar facility and energy storage system capable of producing up to 500 MW of alternating current power and 600 MW hours of storage capacity on approximately 1,955.13 acres of privately-owned land. The proposed project would be supported by a 230-kV gen-tie overhead and/or underground generation tie-line (gen-tie) from originating from the Eland substation and terminating at the Los Angeles Department of Water and Power's Barren Ridge Substation located approximately two miles to the northwest of the project site, or through an upgraded connection through Eland 1. The proposed project intends to share the Eland 1 Solar Project's gen-tie line and right of way, which will be accomplished by constructing the line conductor capable of supporting both projects. Construction of the gen-tie and substation will be done as part of the Eland 1 Solar Project, consistent with the conditions of approval outlined in that project's CUP(s). If the proposed project cannot share these facilities, a new gen-tie line would be developed within one of the routes previously analyzed in the Eland 1 Solar Supplemental Environmental Impact Report (State Clearinghouse No. 2012011029). The proposed project's permanent facilities would include solar arrays and inverters, service roads, a power collection system, communication cables, overhead and underground electrical switchyards, project substations, energy storage system(s), and operations and maintenance (O&M) facilities.

Implementation of the project as proposed includes the following requests:

The proposed project consists of the following requests:

- Kern County
    - Zone Change Case No. 14, Map No. 152 as follows:
        - From A-1 (Limited Agriculture) to A (Exclusive Agriculture) for approximately 164.76 acres;
        - From A-1 MH (Limited Agriculture, Mobile Home Combining) to A for approximately 2.39 acres;
        - From PL RS (Platted Lands, Residential Suburban Combining) to A for approximately 10.29 acres; and
        - From PL RS MH (Platted Lands, Residential Suburban Combining, Mobile Home Combining) to A for approximately 7.73 acres.
    - Issuance of Conditional Use Permit No. 28, Map No. 152 to allow for the construction and operation, within the A (Exclusive Agriculture) pursuant to Section 19.12.030G of the Kern County Zoning Ordinance, of a 673.60-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 500 MW of alternating current power and 600 MW hours of storage capacity
    - General Plan Amendment No. 10, Map No. 152 to the Circulation Element of the Kern County General Plan to remove road reservations on section and mid-section lines within the Kern County project boundaries.
- City of California City (Responsible Agency)

    The City of California City is a Responsible Agency under CEQA. For the parcels within California City city limits, the City will require that the project proponent complete a CUP from the City to allow for the construction and operation of a solar facility, in the O/RA (Openspace/Residential Agriculture) zone, of a 1,281.53-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 500 MW of alternating current power and 600 MW hours of storage capacity (CUP 19-04). If deemed

necessary by the City of California City, the project proponent may request a zone change from O/RA to M-1 (Light Industrial) for the portion of the facility located in California City. The project proponent has requested to remove the future section and mid-section lines for the portion of the project within the City of California City's jurisdiction. The City will determine during the CUP process (Sec. 9-2-2501 of the California City Municipal Code) what section lines will be required to be preserved and what ones will be removed.

Documents can be viewed online at: https://kernplanning.com/planning/notices-of-preparation/

Signature:

Name: Ronelle Candia, Supervising Planner

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179985KuduExhibits.indd
9/4/2020 JN H:\pdata\179985\GIS\MXD\Fig 1_Kudu Project Location Map.mxd DR

ZCC 24, Map No. 152 CUP 28, Map No. 152 GPA 10, Map No. 152

KERN COUNTY, CALIFORNIA ■ KUDU SOLAR FARM ■ BY: 69SV 8ME LLC

REGIONAL VICINITY MAP

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GPA #10; ZC #14; CUP #25, Map #152
WO #PP20405 (EIR 09-19 - Kudu Solar)
Sc 08/05/20

City of Arvin
P.O. Box 548
Arvin, CA 93203

Bakersfield City Planning Dept
1715 Chester Avenue
Bakersfield, CA 93301

Bakersfield City Public Works Dept
1501 Truxtun Avenue
Bakersfield, CA 93301

California City Planning Dept
21000 Hacienda Blvd.
California City, CA 93515

Delano City Planning Dept
P.O. Box 3010
Delano, CA 93216

City of Maricopa
P.O. Box 548
Maricopa, CA 93252

City of McFarland
401 West Kern Avenue
McFarland, CA 93250

City of Ridgecrest
100 West California Avenue
Ridgecrest, CA 93555

City of Shafter
336 Pacific Avenue
Shafter, CA 93263

City of Taft
Planning & Building
209 East Kern Street
Taft, CA 93268

City of Tehachapi
Attn: John Schlosser
115 South Robinson Street
Tehachapi, CA 93561-1722

City of Wasco
764 E Street
Wasco, CA 93280

Inyo County Planning Dept
P.O. Drawer "L"
Independence, CA 93526

Kings County Planning Agency
1400 West Lacey Blvd, Bldg 6
Hanford, CA 93230

Los Angeles Co Reg Planning Dept
320 West Temple Street
Los Angeles, CA 90012

San Bernardino Co Planning Dept
385 North Arrowhead Avenue, 1st Floor
San Bernardino, CA 92415-0182

San Luis Obispo Co Planning Dept
Planning and Building
976 Osos Street
San Luis Obispo, CA 93408

Santa Barbara Co Resource Mgt Dept
123 East Anapamu Street
Santa Barbara, CA 93101

Tulare County Planning & Dev Dept
5961 South Mooney Boulevard
Visalia, CA 93291

Ventura County RMA Planning Div
800 South Victoria Avenue, L1740
Ventura, CA 93009-1740

U.S. Bureau of Land Management
Ridgecrest Field Office
300 South Richmond Road
Ridgecrest, CA 93555

China Lake Naval Weapons Center
Tim Fox, RLA - Comm Plans & Liaison
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Mail Stop 4001
China Lake, CA 93555

Edwards AFB, Mission Sustainability Liaison
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195 East Popson Avenue
Edwards AFB, CA 93524

Federal Aviation Administration
Western Reg Office/
777 South Aviation Boulevard
Suite 150
El Segundo, CA 90245

Environmental Protection Agency
Region IX Office
75 Hawthorn Street
San Francisco, CA 94105

U.S. Fish & Wildlife Service
777 East Tahquitz Canyon Way, Suite 208
Palm Springs, CA 92262

Eastern Kern Resource Cons Dist
300 South Richmond Road
Ridgecrest, CA 93555-4436

U.S. Army Corps of Engineers
Regulatory Division
1325 "J" Street, #1350
Sacramento, CA 95814-2920

U.S. Dept of Agriculture/NRCS
5080 California Avenue, Ste 150
Bakersfield, CA 93309-0711

U.S. Army Corps of Engineers
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Lake Isabella, CA 93240

Caltrans/Dist 6
Planning/Land Bank Bldg.
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Fresno, CA 93778

State Air Resources Board
Stationary Resource Division
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Sacramento, CA 95812

So. San Joaquin Valley Arch Info Ctr
California State University of Bkfd
9001 Stockdale Highway
Bakersfield, CA 93311

State Clearinghouse
Office of Planning and Research
1400 - 10th Street, Room 222
Sacramento, CA 95814

Caltrans/Dist 9
Planning Department
500 South Main Street
Bishop, CA 93514

Caltrans/
Division of Aeronautics, MS #40
P.O. Box 942873
Sacramento, CA 94273-0001

California State University
Bakersfield - Library
9001 Stockdale Highway
Bakersfield, CA 93309

State Dept of Conservation
Director's Office
801 "K" Street, MS 24-01
Sacramento, CA 95814-3528

State Dept of Conservation
Geologic Energy Management Division
4800 Stockdale Highway, Ste 108
Bakersfield, CA 93309

California Highway Patrol
Planning & Analysis Division
P.O. Box 942898
Sacramento, CA 94298-0001

California Energy Commission
James W. Reed, Jr.
1516 Ninth Street
Mail Stop 17
Sacramento, CA 95814

California Fish & Wildlife
1234 East Shaw Avenue
Fresno, CA 93710

State Lands Commission
100 Howe Avenue, Ste 100-South
Sacramento, CA 95825-8202

Public Utilities Comm Energy Div
505 Van Ness Avenue
San Francisco, CA 94102

California Regional Water Quality
Control Board/Lahontan Region
15095 Amargosa Road - Bld 2, Suite 210
Victorville, CA 92392

State Dept of Water Resources
San Joaquin Dist.
3374 East Shields Avenue, Room A-7
Fresno, CA 93726

State Dept of Toxic Substance Control
Environmental Protection Agency
1515 Tollhouse Road
Clovis, CA 93612

Cal Environmental Protection Agency/
Dept of Toxic Substances Control, Reg 1
Attn: Dave Kereazis, Permit Div - CEQA
8800 Cal Center Drive, 2nd Floor
Sacramento, CA 95826

Kern County Administrative Officer

Kern County
Agriculture Department

Kern County Airports Department

Kern County
Env Health Services Department

Kern County Public Works Department/
Building & Development/Floodplain

Kern County Public Works Department/
Building & Development/Survey

Kern County Library/Beale
Local History Room

Kern County Fire Dept
David Witt, Fire Chief

Kern County Fire Dept

Kern County Parks & Recreation

Kern County Library/Beale
Andie Sullivan

Kern County Library
California City Branch
9507 California City Boulevard
California City, CA 93505

Kern County Public Works
Department/Operations &
Maintenance/Regulatory Monitoring &
Reporting

Kern County Sheriff's Dept
Administration

Kern County Public Works Department/
Building & Development/Development
Review

Muroc Unified School Dist
17100 Foothill Avenue
North Edwards, CA 93523

Kern County Public Works Department/
Building & Development/Code Compliance

Mojave Unified School Dist
3500 Douglas
Mojave, CA 93501

Local Agency Formation Comm/LAFCO
5300 Lennox Avenue, Suite 303
Bakersfield, CA 93309

Kern County Superintendent of Schools
Attention School District Facility Services
1300 - 17th Street
Bakersfield, CA 93301

KernCOG
1401 19th Street - Suite 300
Bakersfield, CA 93301

East Kern Air Pollution
Control District

Antelope Valley-East Kern
Water Agency
6500 West Avenue N
Palmdale, CA 93551

Kern County Water Agency
P.O. Box 58
Bakersfield, CA 93302-0058

East Kern Airport Dist
Attention Stuart Witt
1434 Flightline
Mojave, CA 93501

California City Airport
22636 Airport Way, #8
California City, CA 93505

Mojave Airport
1434 Flightline
Mojave, CA 93501

Adams, Broadwell, Joseph & Cardozo
Attention: Janet M. Laurain
601 Gateway Boulevard, Suite 1000
South San Francisco, CA 94080

East Kern Airport Dist Engineer
3900 Ridgemoor Avenue
Bakersfield, CA 93306

Northcutt and Associates
4220 Poplar Street
Lake Isabella, CA 93240-9536

Center on Race, Poverty
& the Environment
Attn: Marissa Alexander
1999 Harrison Street – Suite 650
San Francisco, CA 94612

Kern Audubon Society
Attn: Frank Bedard, Chairman
4124 Chardonnay Drive
Bakersfield, CA 93306

Los Angeles Audubon
926 Citrus Avenue
Los Angeles, CA 90036-4929

Desert Tortoise Preserve Committee
4067 Mission Inn Avenue
Riverside, CA 92501

Center on Race, Poverty
& the Environmental/
CA Rural Legal Assistance Foundation
1012 Jefferson Street
Delano, CA 93215

Defenders of Wildlife/
Kim Delfino, California Dir
980 - 9th Street, Suite 1730
Sacramento, CA 95814

Southern California Edison
Planning Dept.
421 West "J" Street
Tehachapi, CA 93561

Native American Heritage Council
of Kern County
Attn: Gene Albitre
3401 Aslin Street
Bakersfield, CA 93312

Pacific Gas & Electric Co
Land Projects
650 "O" Street, First Floor
Fresno, CA 93760-0001

Sierra Club/Kern Kaweah Chapter
P.O. Box 3357
Bakersfield, CA 93385

Southern California Edison
2244 Walnut Grove, Ave, GO-1 Quad 2C
Rosemead, CA 91770

Verizon California, Inc.
Attention Engineering Department
520 South China Lake Boulevard
Ridgecrest, CA 93555

Chumash Council of Bakersfield
2421 "O" Street
Bakersfield, CA 93301-2441

David Laughing Horse Robinson
P.O. Box 20849
Bakersfield, CA 93390

Kern Valley Indian Council
Attn: Robert Robinson, Chairperson
P.O. Box 401
Weldon, CA 93283

Kern Valley Indian Council
Historic Preservation Office
P.O. Box 401
Weldon, CA 93283

Santa Rosa Rancheria
Ruben Barrios, Chairperson
P.O. Box 8
Lemoore, CA 93245

Tejon Indian Tribe
Kathy Morgan, Chairperson
1731 Hasti-acres Drive, Suite 108
Bakersfield, CA 93309

Kitanemuk & Yowlumne Tejon Indians
Chairperson
115 Radio Street
Bakersfield, CA 93305

Tubatulabals of Kern County
Attn: Robert Gomez, Chairperson
P.O. Box 226
Lake Isabella, CA 93240

Tule River Indian Tribe
Neal Peyron, Chairperson
P.O. Box 589
Porterville, CA 93258

San Fernando Band of Mission Indians
Attn: John Valenzuela, Chairperson
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Newhall, CA 91322

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Pasadena, CA 91106

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Mojave, CA 93501

National Public Lands News
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Inyokern, CA 93555

Pleistocene Foundation
2362 Lumill Street
Ridgecrest, CA 93555

Raymond Kelso/
Pleistocene Foundation
2362 Lumill Street
Ridgecrest, CA 93555

U.S. Air Force
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Western Regional/Leg Branch
510 Hickman Ave., Bld 250-A
Travis AFB, CA 94535-2729

U.S. Army
Attn: Philip Crosbie, Chief
Strategic Plans, S3, NTC
P.O. Box 10172
Fort Irwin, CA 92310

U.S. Army
Attn: Tim Kilgannon, Region 9 Coordinator
Office of Strategic Integration
721 - 19th Street, Room 427
Denver, CO 80202

U.S. Navy
Attn: Steve Chung
Regional Community & Liaison Officer
1220 Pacific Highway
San Diego, CA 92132-5190

U.S. Marine Corps
Attn: Patrick Christman
Western Regional Environmental Officer
Building 1164/Box 555246
Camp Pendleton, CA 92055-5246

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San Diego, CA 92130

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Rupal Patel
113 South La Brea Avenue, 3rd Floor
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Charlotte, NC 28273

Fotowatio Renewable Ventures
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San Francisco, CA 94104

EDP Renewables Company
53 SW Yamhill Street
Portland, OR 97204

Wind Stream, LLC
Albert Davies
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Santa Rosa, CA 95404

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Palm Springs, CA 92263-2190

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Michael Strickler, Sr Project Mgr
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San Francisco, CA 92109

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Tehachapi, CA 93561

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Kate Kelly
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Winters, CA 95694

Beyond Coal Campaign/Sierra Club
Sarah K. Friedman
1417 Calumet Avenue
Los Angeles, CA 90026

Robert Burgett
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Mojave, CA 93501

Structure Cast
Larry Turpin, Sales Mgr
8261 McCutchen Road
Bakersfield, CA 93311

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Bakersfield, CA 93301-2323
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Fax: (661) 862-8601 TTY Relay 1-800-735-2929
Email: planning@kerncounty.com
Web Address: http://kernplanning.com/

PLANNING AND NATURAL RESOURCES DEPARTMENT

Planning
Community Development
Administrative Operations

DATE: September 15, 2020

TO: Surrounding Property Owners within 1,000 Feet of Project Boundary; and, Interested Parties

FROM: Kern County Planning and Natural Resources Department
2700 "M" Street, Suite 100
Bakersfield, CA 93301

SUBJECT: **Initial Study/Notice of Preparation of an Environmental Impact Report – Kudu Solar Farm Project by 69SV 8ME LLC (PP20405)**

Dear Sir or Madam:

The Kern County Planning and Natural Resources Department has determined that preparation of an Environmental Impact Report (EIR) is necessary for the proposed project identified below. The purpose of this letter is to notify surrounding property owners within 1,000 feet of the project boundaries of this determination. A copy of the Initial Study/Notice of Preparation (IS/NOP) prepared for this proposed project is available for viewing at the following Kern County website:

https://kernplanning.com/planning/notices-of-preparation/

The purpose of the IS/NOP is to describe the proposed project, specify the project location, and to identify the potential environmental impacts of the project so that Responsible Agencies and interested persons can provide a meaningful response related to potential environmental concerns that should be analyzed in the Environmental Impact Report.

You are invited to view the NOP and submit written comments regarding this proposed project should you wish to do so. Due to the limits mandated by State law, your response must be received by **October 15, 2020 at 5:00 p.m**. Comments can be submitted to the Kern County Planning and Natural Resources Department at the address shown above. A Scoping meeting will be held for the project on **Friday, October 2, 2020 at 1:30 p.m.** In compliance with the Governor's Executive Order, the California Department of Public health's guidelines on gatherings regarding COVID-19, and Kern County Local Emergency Declaration, the scoping meeting required by the CEQA Guidelines will be conducted online. Closed captioning in Spanish will be available to attendees. Instructions for accessing the virtual scoping meeting will be available three (3) days before the virtual scoping meeting on the Kern County Planning and Natural Resources website at https://kernplanning.com.

Comments on the scope and content of the NOP should be sent to CandiaR@kerncounty.com.

Please be advised that any comments received after the dates listed above will still be included in the public record for this project and made available to decision makers when this project is scheduled for consideration at a public hearing. Please also be advised that you will receive an additional notice in the mail once a public hearing date is scheduled for this project. You will also be provided additional opportunities to submit comments at that time.

PROJECT TITLE: Kudu Solar Farm by 69SV 8ME LLC (PP20405); ZCC 14, Map # 152; CUP 28, Map #152; and GPA 10, Map #152 (Circulation).

PROJECT LOCATION: The proposed project site is located in portions of unincorporated Kern County and the City of California City, north of the California City Municipal Airport. The majority of the project site is bisected to the east-west by Washburn Boulevard (which is also the Kern County/California City limit line) and to the north-south by Neuralia Road. State Route 14, a four-lane divided highway located approximately one mile to the west, provides regional access to the project site. Access to the site would be from Phillips Road, Gantt Road, Neuralia Road, Pioneer Road, Sage Street, or through the Eland 1 project site. The site is located within Township 31S, Range 37E – portions of Sections 14, 15, 22, 23, 26, 27 , 28, 29, 30, 31, 32, 33, 34, 35 and Township 32S, Range 37E – portions of Sections 1, 2, 3, 4, 9, 10, 11, 12, San Bernardino Base Meridian.

PROJECT DESCRIPTION: The Kudu Solar Farm Project by 69SV 8ME LLC (project proponent), is a proposed photovoltaic solar facility and energy storage system capable of producing up to 500 MW of alternating current power and 600 MW hours of storage capacity on approximately 1,955.13 acres of privately-owned land. The proposed project would be supported by a 230-kV gen-tie overhead and/or underground generation tie-line (gen-tie) from originating from the Eland substation and terminating at the Los Angeles Department of Water and Power's Barren Ridge Substation located approximately two miles to the northwest of the project site, or through an upgraded connection through Eland 1. The proposed project intends to share the Eland 1 Solar Project's gen-tie line and right of way, which will be accomplished by constructing the line conductor capable of supporting both projects. Construction of the gen-tie and substation will be done as part of the Eland 1 Solar Project, consistent with the conditions of approval outlined in that project's CUP(s). If the proposed project cannot share these facilities, a new gen-tie line would be developed within one of the routes previously analyzed in the Eland 1 Solar Supplemental Environmental Impact Report (State Clearinghouse No. 2012011029). The proposed project's permanent facilities would include solar arrays and inverters, service roads, a power collection system, communication cables, overhead and underground electrical switchyards, project substations, energy storage system(s), and operations and maintenance (O&M) facilities.

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- Kern County
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        - From A-1 (Limited Agriculture) to A (Exclusive Agriculture) for approximately 164.76 acres;
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- General Plan Amendment No. 10, Map No. 152 to the Circulation Element of the Kern County General Plan to remove road reservations on section and mid-section lines within the Kern County project boundaries.

- City of California City (Responsible Agency)

  The City of California City is a Responsible Agency under CEQA. For the parcels within California City city limits, the City will require that the project proponent complete a CUP from the City to allow for the construction and operation of a solar facility, in the O/RA (Openspace/Residential Agriculture) zone, of a 1,281.53-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 500 MW of alternating current power and 600 MW hours of storage capacity (CUP 19-04). If deemed necessary by the City of California City, the project proponent may request a zone change from O/RA to M-1 (Light Industrial) for the portion of the facility located in California City. The project proponent has requested to remove the future section and mid-section lines for the portion of the project within the City of California City's jurisdiction. The City will determine during the CUP process (Sec. 9-2-2501 of the California City Municipal Code) what section lines will be required to be preserved and what ones will be removed.

Should you have any questions regarding this project, or the Initial Study/Notice of Preparation, please feel free to contact me at (661) 862-8997 or CandiaR@kerncounty.com

Sincerely,

Ronelle Candia, Supervising Planner
Advanced Planning Division

Attachments: Figure 1 - Vicinity Map and Figure 2 – Project Boundary Map

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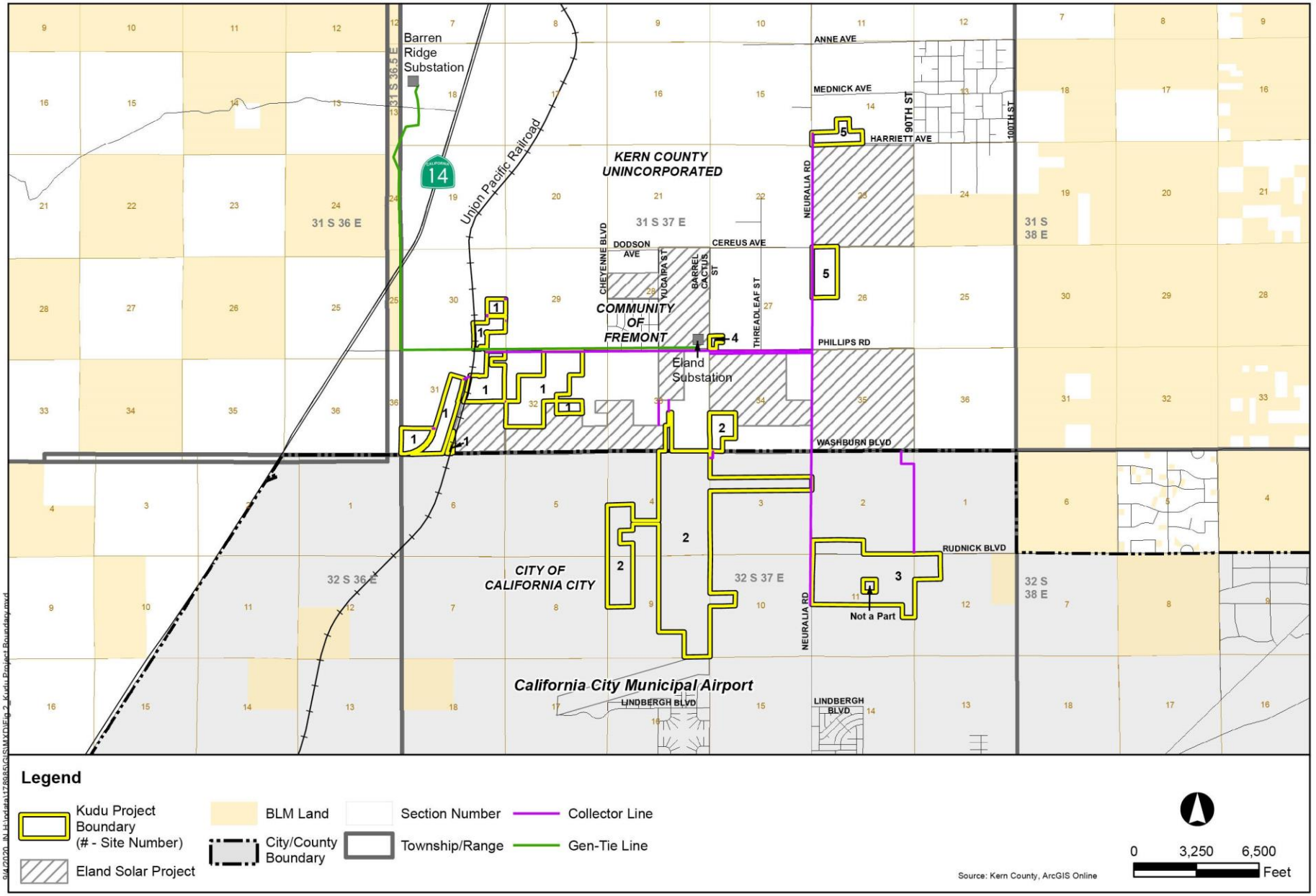
ZCC 24, Map No. 152 CUP 28, Map No. 152 GPA 10, Map No. 152

KERN COUNTY, CALIFORNIA ■ KUDU SOLAR FARM ■ BY: 69SV 8ME LLC

FIGURE 1
VICINITY MAP



ZCC 24, Map No. 152 CUP 28, Map No. 152 GPA 10, Map No. 152

KERN COUNTY, CALIFORNIA ■ KUDU SOLAR FARM ■ BY: 69SV 8ME LLC

FIGURE 2
PROJECT BOUNDARY MAP

GPA #10; ZC #14; CUP #25, Map #152
WO #PP20405 (EIR 09-19 - Kudu Solar)
Sc 08/27/20

469 170 06 00 5
2NGEL FAMILY TR
3902 PEACOCK RIDGE RD
CALABASAS CA 91301

470 322 14 00 5
68SF 8ME LLC
5455 WILSHIRE BL STE 2010
LOS ANGELES CA 90036-4220

302 325 31 00 9
ABANTO OLAVI PERCY
1307 SUMMERTIME LN
CLOVER CITY CA 90230

470 322 13 00 2
ABRAMS STUART WILLIAM
511 CASTANO CORTE
LOS ALTOS CA 94022

302 306 11 00 2
ABUTALEB FAM TR
3620 CALMBROOK LN
DIAMOND BAR CA 91765-3770

302 470 01 00 1
ACADEMIA MARIJESS B ET AL
11863 THOMAS HAYES LN
SAN DIEGO CA 92126-1146

470 322 01 00 7
ADAMS CAROL ANN
25067 DE WOLFE RD
SANTA CLARITA CA 91321

470 080 15 00 5
AEK GLOBAL INV LLC
4603 HURFORD TR
ENCINO CA 91436-3345

470 302 01 00 1
AHTIRSKI MARCO M REV LIV TR
12055 VENTURA PL
STUDIO CITY CA 91604-2602

470 020 04 00 5
AMBER JACK REV LIV TR
166 5 N ARNEZ DR
BEVERLY HILLS CA 90211

470 030 03 00 5
AMBER KATHERINE LIV TR
3603 SURFWOOD RD
MALIBU CA 90265-5652

302 305 10 00 2
AMBRIZ ANTONIO TINAJERO
REVOCABLE TRUST
14901 PURDY ST
MIDWAY CITY CA 92655-1348

470 030 01 00 9
ANDARI GHAZI N
1328 ALLEN AV
GLENDALE CA 91201

470 151 07 00 9 **DUP**
ANDERSON SANDRA J
ADDRESS UNKNOWN

302 341 24 00 7
ANDREWS WALTER L & JOYCE H TR
20643 CHERL DR
CUPERTINO CA 95014

302 020 12 00 2
ANOTHER MILLION DOLLAR CO LLC
8537 SATINWOOD AV
CALIF CITY CA 93505-3810

302 480 19 00 7 **DUP**
ANOTHER MILLION DOLLAR CO LLC
8537 SATINWOOD AV
CALIFORNIA CITY CA 93505-3810

302 303 02 00 5
APOTHIO LLC
74 S BELLERIVE DR
PERU IN 46970-6918

470 151 15 00 2
ARAGON GENARO & GUADALUPE
PO BOX 116
TECUMSEH NE 68450-0116

302 470 18 00 1
ARCE CARLOS L & MARIA C
12224 SHERIDAN ST
NORWALK CA 90650

470 330 07 00 4
AZAM JAVED & ROOBILA NAZ
FAMILY TRUST
110 STONECREST CI
KEEDYSVILLE MD 21756-1531

302 325 34 00 8
B N M FORSTIE FAMILY TRUST
605 CALLE JUAREZ
SAN CLEMENTE CA 92673-3021

470 360 01 00 5
BABASHOFF JOHN P & DIANE L TRUST
73135 DEER GRASS DR
PALM DESERT CA 92260-6087

302 306 22 00 4
BAKER TERRANCE J & PAMELA J
6945 HARCO ST
LONG BEACH CA 90808

302 303 10 00 8
BARZO TODD A
4515 S DURANGO DR APT 1080
LAS VEGAS NV 89147

302 303 11 00 1
BAUTISTA FAMILY TRUST
1912 N EVELYN CT
SANTA MARIA CA 93454-5510

470 322 34 00 3
BEAVER LYNDEE
77063 MOSBY CREEK RD
COTTAGE GROVE OR 97424-9412

302 325 07 00 0
BELL HAROLD R & DIANA L
5018 EAST AVE R-2
PALMDALE CA 93552-3829

302 325 17 00 9
BENITEZ MARIA A
512 S HARRIS AV
COMPTON CA 90221

470 322 38 00 5
BERG DONALD L
16769 DAZA DR
RAMONA CA 92065-4613

470 312 02 00 7
BESSONART DENIS & J REV LIV TR
9709 SAN YSIDRO LN
BAKERSFIELD CA 93312

302 341 29 00 2 **DUP**
BESSONART DENIS & JULIE LIVING TRUST
9709 SAN YSIDRO LN
BAKERSFIELD CA 93312

302 341 06 00 5
BIG WEST CORP
1141 POMONA RD # H
CORONA CA 92882

470 090 05 00 9
BIG WEST CORP
1403 N LAS FLORES DR
SAN MARCOS CA 92069-5943

470 322 32 00 7 **DUP**
BIG WEST CORPORATION
1141 POMONA RD U H
CORONA CA 92882-7148

302 470 06 00 6
BILBAENO CAROLINA G
5601 NATOMAS BL APT 1114
SACRAMENTO CA 95835-2246

470 151 10 00 7
BIVINS EUGENE L
1650 LUCILE AV
LOS ANGELES CA 90026-1037

302 480 17 00 1
BLY LARRY W
119 JONES ST
BODFISH CA 93205-9708

302 353 02 00 0
BONNER TRUST
P O BOX 7508
VENTURA CA 93006

302 020 22 00 1
BRADLEY JACQUELINE M
7548 TOTIER CREEK FARM RD
SCOTTSVILLE VA 24590-3962

470 152 11 00 7
BRANSON PAUL S
PO BOX 1355
CLEARLAKE OAKS CA 95423-1355

470 322 03 00 3
BREMER DAVID P
32 NELSON MANOR LN
MIDDLETOWN PA 17057

302 480 07 00 2
BROBERG WARREN K REVOCABLE LIVING TRUST
5338 E WINDSTONE TL
CAVE CREEK AZ 85331-2421

302 480 08 00 5 **DUP**
BROBERG WARREN K REVOCABLE LIVING TRUST
5338 WINDSTONE TL
CAVE CREEK AZ 85331

470 100 09 00 3
BROWN FMLY BY PASS TR
3705 HOLLINGSWORTH DR
ALTADENA CA 91001

470 312 10 00 0
BROWN FMLY REV LIV TR
11171 OAKWOOD DR F203
LOMA LINDA CA 92354

470 152 23 00 2
BROWN MICHAEL L & KATHLEEN A TRUST
4632 W TALMADGE DR
SAN DIEGO CA 92116-4833

302 325 40 00 5
BROWN WILLIAM R & BERNELL
8726 OSWEGO ST
SUNLAND CA 91040-2617

470 130 13 00 3
BULGERIN DAVID TRUST
3315 CHANATE RD STE 1A
SANTA ROSA CA 95404-1736

302 460 16 00 2
BULOSAN JERRY S & HEDELIZA TR
2327 FLINTRIDGE DR
GLENDALE CA 91206-1024

302 290 10 00 5
BURKE REV TRUST
7932 MOONMIST CI
HUNTINGTON BCH CA 92648-5436

302 470 12 00 3
BURUSCO MARY M TRUST
1509 LA LOMA RD
PASADENA CA 91105-2135

470 380 07 00 9
CABLE JAMEY
6824 FIREBAUGH ST
BAKERSFIELD CA 93313

302 342 14 00 5
CALIF LAND FUTURES INC
3921 SUNSET LN
OXNARD CA 93035-3948

469 170 07 00 8
CAMACHO PUREZA
14041 DON JULIAN RD
LA PUENTE CA 91746-2805

302 470 14 00 9
CAMARA MARGARET ELDRED TR
PO BOX 1024
PISMO BEACH CA 93448-1024

302 306 19 00 6
CANCILLA FAMILY TRUST
15546 SARANAC DR
WHITTIER CA 90604-3221

470 151 18 00 1
CARRANZA OLGA G
4033 W 160TH ST
LAWNDALE CA 90260-2726

470 360 03 00 1
CARRILLO JOSUE B & TERESA
5450 TRUMPET CT
CASTRO VALLEY CA 94552-1724

469 240 29 00 2
CARRILLO SANTIAGO
1900 E ORO DAM BL STE 12
OROVILLE CA 95966-5934

469 170 12 00 2
CASTILLO DIONEL REV TRUST
4438 VISTA LARGO
TORRANCE CA 90505

302 306 23 00 7
CERVANTES MARIA E
12425 LELAND AV
WHITTIER CA 90605-4218

470 040 02 00 5
CHACANACA JACK L & DEENA C
26201 TUOLUMNE ST
MOJAVE CA 93501

470 040 01 00 2 **DUP**
CHACANAGA JACK L
26201 TUOLUMNE ST
MOJAVE CA 93501

469 170 19 00 3
CHEN YINGLING
P O BOX 1542
ARCADIA CA 91077

470 322 33 00 0
CHIN CAROLYN & CYNTHIA J
110 MILTON ST
SAN FRANCISCO CA 94112-1429

302 305 13 00 1
CHONG SRUN CHEA
2935 N MONTEVERD RD
COVINA CA 91724

302 460 01 00 8
CHOW WILLIAM Y T & JEANETTE LI REV TR
1813 SUNSHINE CT
GLENDALE CA 91208-2430

216 010 28 00 8 **DUP**
CITY OF CALIF CITY
ADDRESS UNKNOWN

470 151 17 00 8
CLERICO ROBERT W TR
13503 HINAULT DR
BAKERSFIELD CA 93314-6607

470 322 04 00 6
COLLINS RICHARD L & KAREN L LIVING TRUST
8309 MUSCAT CT
REDDING CA 96001-9576

470 152 13 00 3
COOK JANET F
740 EDGEWATER DR U D
CHULA VISTA CA 91913

470 151 03 00 7
CORLESS DOROTHY
1040 W AMBASSADOR DR
HANFORD CA 93230-9186

461 220 34 00 4
CRAWFORD PAULA & STANLEY JR
8806 RAMSGATE AV
LOS ANGELES CA 90045

302 470 09 00 5
CRISSMAN TIMOTHY JAMES
24262 WALNUT ST # 1
NEWHALL CA 91321

302 341 11 00 9
CROTHERS ANNIE
117 LAGUNA PL
PAGOSA SPRINGS CO 81147-8852

302 020 10 01 5
DA ELITE GROUP LLC
1013 ATTICUS AV
HENDERSON NV 89015-5962

302 341 13 00 5
DAVI FAMILY TRUST
201 CHADBOURNE AV APT 216
MILLBRAE CA 94030-2572

302 460 03 00 4 **DUP**
DE GUZMAN LIZA ET AL
ADDRESS UNKNOWN

470 182 02 00 0
DEGUCHI KEIKO TR
3301 TERRACE RIDGE LN
LONG BEACH CA 90804-1203

470 152 21 00 6
DEIST PAULA OFFERMAN
2137 WATERCREST DR
AUBURN AL 36830-4116

470 152 25 00 8
DEL SOL PROPERTIES INC
12121 WILSHIRE BL STE 600
LOS ANGELES CA 90025

470 151 16 00 5
DEL SOL PROPERTIES INC
10415 STAMPS RD
DOWNEY CA 90241

470 350 03 00 8
DELMENDO NICETO FAM TR
2910 23RD AV
SACRAMENTO CA 95820

302 306 12 00 5
DESMARAIS ALBERT TRUST 1995 ET AL
39793 PAMPERO WY
TEMECULA CA 92592

469 230 03 00 3
DEUTSCH FAMILY TR
10550 ASHTON AV
LOS ANGELES CA 90024

470 152 29 00 0
DEUTSCH KONRAD B FAMILY TR
6531 CHEAMES WY
SAN DIEGO CA 92117

469 240 22 00 1
DIELISSEN ROBERT R
3000 DANVILLE BL # F
ALAMO CA 94507-1572

302 341 12 00 2
DIRVEN JOPIE
5473 S JONES BL APT 1098
LAS VEGAS NV 89118-0550

470 010 11 00 2
DISCOUNTLAND INC
2261 MONACO DR
OXNARD CA 93035-2915

470 181 07 00 8
DODSON MARK D & JULIE
4145 W 163RD ST
LAWN DALE CA 90260

470 130 15 00 9
DOHERTY KIMBERLY A
28491 FALCON CREST DR
SANTA CLARITA CA 91351

470 152 08 00 9
DREISBACH RICHARD & ELIZABETH REV TR
1681 THOMAS AV
SAN DIEGO CA 92109

470 130 02 00 1
DUGAN JEROLYN ET AL
4532 THRUSH DR
INDIANAPOLIS IN 46222-1249

470 020 08 00 7
DULBERG MARK R
130 EL TOYONAL
ORINDA CA 94563

470 370 01 00 8
DURAN CRYSTAL
7247 TAMPA AV
RESEDA CA 91335

470 152 26 00 1
DYMOTT FAMILY TR
23742 CALISTOGA PL
RAMONA CA 92065

302 290 15 00 0
EASSA MICHAEL
32433 MICHIGAN ST
ACTON CA 93510-1857

470 321 08 00 1 **DUP**
EKWUE ANN MARIE
ADDRESS UNKNOWN

302 303 12 00 4
ELEGADO BERNABE & ERNESTO
12516 RUBENS AV
LOS ANGELES CA 90066

302 290 05 00 1
EMERALD JENNY E & RICHARD J TR
1409 CAMPER DR
WEST COVINA CA 91792

302 460 15 00 9
EPSTEIN NING G REVOCABLE TRUST
3 FOXGLOVE WY
IRVINE CA 92612-2712

470 350 04 00 1
EQUITY TR CO CUSTDN FBO STEVEN HILBON IRA
24241 RHONA DR
LAGUNA NIGUEL CA 92677-4052

470 090 11 00 6
ESTRADA JAVIER & GLORIA
81784 VILLA GIARDINO DR
INDIO CA 92203

470 090 02 00 0 **DUP**
FAN LOUIS S S
ADDRESS UNKNOWN

302 470 03 00 7
FDR LAND CO
38430 PUMA LN
PALMDALE CA 93551

469 170 02 00 3
FERNANDEZ CESAR T & TERESA
9016 CECILIA ST APT I
DOWNEY CA 90241-3930

470 130 04 00 7
FERRER BERNARDO B TR
6323 DAHLIA CT
WESTMINSTER CA 92683-3664

302 480 14 00 2
FERRIS TRUST
3916 JIM BOWIE RD
AGOURA HILLS CA 91301-3606

470 321 14 00 8
FINKE DALE J
1618 MERIDIAN ST
CHARLOTTESVILLE VA 22902-6340

461 220 16 00 2
FINKLE RICHARD GARY
170 BRANDYWINE PL
CLAYTON CA 94517-2220

302 341 39 00 1
FISH JAMES R ET AL
842 E WHITEDOVE LN
FRESNO CA 93730-0727

470 152 10 00 4
FISHLER THOMAS G & ALICE LIV TR
18 GOLF AV
SAN RAFAEL CA 94903

470 152 28 00 7
FOBBS TAMAKI
315 CAMINO DE LA LUNA
PERRIS CA 92571-2993

470 322 22 00 8
FOLETTA JAMES R
125 MEADOW CREST LN
WALNUT CREEK CA 94595-2656

302 342 20 00 2
FONSECA CHARLES B
7 MANOR RD
FAIRFAX CA 94930

470 322 39 00 8
FRANCO JUAN C
9958 RIDGEHAVEN AV
LAS VEGAS NV 89148-4605

470 322 17 00 4
FRED MOSS LAND INC
704 N REXFORD DR # R36
BEVERLY HILLS CA 90210

302 342 13 00 2
FRENCH ROBERT D TR
3612 SHAWNEE RD
SAN DIEGO CA 92117-5721

470 312 11 00 3
FRIEDMAN MORTON G
7211 WHITEHALL LN
WEST HILLS CA 91306

302 306 24 00 0
FRITZ RUDOLF A & LOUELLYN D FAMILY TR
2545 GUMTREE LN
FALLBROOK CA 92028

470 321 13 00 5
GARCIA ANTHONY L
17922 RIVER CI APT 5
CANYON COUNTRY CA 91387-3594

302 325 32 00 2
GARCIA FAMILY TR
PO BOX 85
VERDI NV 89439-0085

470 302 03 00 7
GARCIA FERNANDO V
5431 BLACKWELDER ST
LOS ANGELES CA 90016-3749

302 342 18 00 7
GARCIA JOSEPHINA OCHOA
1527 KIVA LN
VISTA CA 92084-3021

470 312 06 00 9
GARCIA SALVADOR
16865 WEGMAN DR
LA PUENTE CA 91744

302 341 16 00 4
GARECHT FAMILY TRUST
72 TURRINI CI
DANVILLE CA 94526

470 322 09 00 1
GATES LIVING TRUST
645 BLUE RIDGE DR
MARTINEZ CA 94553-5905

470 370 02 00 1
GENTRY JOELLE C
PO BOX 2700
CALIFORNIA CITY CA 93504-0700

302 381 13 00 7
GEPHART ROSS & JUDITH M
3207 WHITNEY LN
BURBANK CA 91504-1646

470 330 08 00 7
GERVACIO MARTIN & JUDITH
14900 OAKVALE RD 256
ESCONDIDO CA 92027-5614

470 182 01 00 7
GILLILAND MARK W TR
619 BEVERLY PL
SAN MARCOS CA 92069-3745

302 325 30 00 6
GLOVER CARRICK GAR LIV TR
6367 MOJAVE DR
SAN JOSE CA 95120-5308

470 152 30 00 2
GOENAGA JOE JR
1113 N AVERY DR
MOORE OK 73160

302 341 31 00 7
GONZALES FRANK R & RUBY M
5669 TREVINO WY
BANNING CA 92220

470 080 19 00 7
GONZALEZ JORGE & NANCY
4032 MARTIN LUTHER KNIG BL
LYNWOOD CA 90262

302 325 52 00 0
GONZALEZ XAVIER & SOCORRO
211 WEST 120TH ST
LOS ANGELES CA 90061

470 151 05 00 3
GORDEN T V & PATRICIA V
P O BOX 2058
CALIF CITY CA 93505

470 181 06 00 5
GRANSTROM DANIEL LEE
2602 SMOKE CANYON AV
HENDERSON NV 89074-1970

470 080 31 00 1 **DUP**
GUAY SEBASTIEN & MC MULLIN SUZANNE
ADDRESS UNKNOWN

470 311 15 00 8
GUO KYLE
726 GLEN-MADY WY
FOLSOM CA 95630-6278

469 230 04 00 6
GUTOWICZ FAMILY TRUST
5223 TEESDALE AV
VALLEY VILLAGE CA 91607-2323

302 325 24 00 9
HAGENSTEIN JOHANNA J TR
2252 SUTTER VIEW LN
LINCOLN CA 95648-7718

302 325 08 00 3
HAHN JOHN W & HELEN J
3276 RANCHO DIEGO CI
EL CAJON CA 92019

302 325 15 00 3
HAMMERSTONE REV TRUST
2323 BROADRIDGE WY
STOCKTON CA 95209-1248

302 341 18 00 0
HANNA ANTOINE & LINDA
1819 MONARCH RIDGE CI
EL CAJON CA 92019

470 302 11 00 0
HANSEN BRUCE R
PO BOX 3366
LIVERMORE CA 94551-3366

469 240 28 00 9
HANZMANN ROBERTS & ANN MARGARET
4024 N HANOVER DR
PRESCOTT VALLEY AZ 86314-2370

302 341 32 00 0
HARDEN MELVIN L & DOROTHY L
53 EVANS ST
WATERTOWN MA 02472

470 321 07 00 8
HAROUTUNIAN BABKEN
8018 BONFIELD AV
NORTH HOLLYWOOD CA 91605

302 290 02 00 2
HARVEY RUTH L TR
P O BOX 240011
LOS ANGELES CA 90024

302 342 08 00 8
HAYES FAMILY TRUST
2101 FAIRFIELD ST
SAN DIEGO CA 92110

470 302 13 00 6
HAYES KENNETH D ET AL
1100 ILLINOIS ST
FAIRFIELD CA 94533

302 342 15 00 8
HEATH NORMAN E
3503 N BOND AV
FRESNO CA 93726-5715

302 030 15 00 4
HELASH JOHN
5670 WEST MALL
ATASCADERO CA 93422-7223

302 030 16 00 7
HELASH YVONNE
36945 CALLE ARRUZA
TEMECULA CA 92592

470 312 04 00 3
HELLER GARY & HELENE S AB
LIVING TRUST
23929 BERDON ST
WOODLAND HILLS CA 91367

302 341 37 00 5
HIBBING MARK A
PO BOX 26092
ANAHEIM CA 92825-6092

470 380 06 00 6
HIGGINS MICHAEL
2784 HOMESTEAD RD
SANTA CLARA CA 95051-5353

470 080 28 00 3
HINGELEY DAVID D
1382 RODEO DR
LA JOLLA CA 92037

302 325 26 00 5
HITCHHIKER FAMILY TRUST
1801 CROWFORD WY
PAHRUMP NV 89048

302 306 17 00 0
HOLMES ELENORA FAMILY TRUST
22878 S CANYON LAKE DR
CANYON LAKE CA 92587-7593

461 170 15 00 5
HOOD PAUL E & MARTHA O
8940 LILLIENTHAL AV
LOS ANGELES CA 90045

470 322 02 00 0
HOPKINS JAMES R
PO BOX 3230
CLEARLAKE CA 95422-3230

302 341 30 00 4
HOPKINSON ISAAC B & SANDRA E
18335 VINE ST
HESPERIA CA 92345-5532

302 303 01 00 2
HOUN SONN LAY & TAING HEANG
HOUE
1180 MIRA VALLE ST
MONTEREY PARK CA 91754-4829

302 306 20 00 8 **DUP**
HSU HAN SHUI & LIN RUTH
ADDRESS UNKNOWN

302 342 16 00 1
HUFFAKEN DAVID FORREST
21375 BEAR VALLEY RD # 3
APPLE VALLEY CA 92308-7201

470 321 04 00 9
HUTSON LAWRENCE R & MARION TR
622 MARGARITA AV
CORONADO CA 92118

302 341 14 00 8
IGLESIAS EMILY
1317 HARTLEY AV
SIMI VALLEY CA 93065-5206

302 342 01 00 7
INLAND MANAGEMENT LLC
405 MISSOURI CT
REDLANDS CA 92373

470 140 05 00 3
INVESTORS OF THE DECADE
8644 PARKRUN RD
SAN DIEGO CA 92129

470 301 20 00 9
J D LOOMIS INVS LLC
7100 LOCH LOMOND DR
BETHESDA MD 20817-4760

470 151 13 00 6
JAMES TRUST
2950 W MUIR MOUNTAIN WY
SAN BERNARDINO CA 92407-5185

302 460 19 00 1
JAN JAU SONG & TWU CHUN LAN
FMLY TR
169 S KINGSLEY ST
ANAHEIM CA 92806-4009

470 020 19 00 9
JANIEKAY L L C
15640 S 6TH PL
PHOENIX AZ 85048

302 324 01 00 5
JANWEJA AMIT
9654 BURNET AV
NORTH HILLS CA 91343-2311

469 190 32 00 6
JAWORSKI KRYSTYNA ET AL
34 GOLF VIEW DR
DOVE CANYON CA 92679-3802

302 310 16 00 8
JBL & ASSCS INC
9049 CALIFORNIA CITY BL
CALIFORNIA CITY CA 93505-2831

470 302 05 00 3
JEFFRIES RONALD & JERRIE A
2263 CALLENDER RD
ARROYO GRANDE CA 93420

302 341 26 00 3
JERDO LEWIS W
2705 WILMA ST
NATIONAL CITY CA 91950-7747

470 152 18 00 8
JOHANSING LOYDELL H & DAVID A
4450 COSUMNES VIEW TL
PLACERVILLE CA 95667-8821

470 321 05 00 2
JONES MARITAL TR
P O BOX 2700
CALIFORNIA CITY CA 93504

302 325 43 00 4
JOURNEY TR
PO BOX 1547
SPRING VALLEY CA 91979-1547

302 305 02 00 9
KAN RICHARD S
520 RUSSELL AV
MONTEREY PARK CA 91755

302 303 13 00 7
KANG RICHARD & JENNY
540 S KENMORE AV U 705
LOS ANGELES CA 90020-2591

470 030 04 00 8
KECK JACK R & SALLIE A KECK
FAMILY TRUST
41007 W 22ND ST
PALMDALE CA 93551-2314

302 341 15 00 1
KELLER BARBARA J
4220 MEADOW WOOD CT
EL DORADO HILLS CA 95762-7529

470 322 27 00 3
KELLY ROSE
PO BOX 46782
LAS VEGAS NV 89114-6782

470 181 04 00 9
KENSAY INTERNATIONAL CORP
2625 E FIRST ST
LOS ANGELES CA 90033

469 170 10 00 6
KEREN & ASSCS LLC
P O BOX 2016
BEVERLY HILLS CA 90213

469 170 18 00 0 **DUP**
KEREN & ASSOC LLC
P O BOX 2016
BEVERLY HILLS CA 90213

302 306 18 00 3 **DUP**
KERN COUNTY GROUP LLC
ADDRESS UNKNOWN

302 341 27 00 6
KERNICK VICTOR J
P O BOX 2113
BUCKLY WA 98321-2113

302 330 34 00 6
KHALILI ROHI
6562 BIANCA AV
VAN NUYS CA 91406-5337

470 350 06 00 7
KHATIBI RICHARD
P O BOX 16296
ENCINO CA 91416

302 342 03 00 3
KHIEU SINARA
20019 THORNLAKE AV
CERRITOS CA 90703

302 271 40 00 3
KINOSHITA KAZUO
7135 FIRMAMENT AV U 18
VAN NUYS CA 91406

470 322 07 00 5
KINOSHITA STANLEY H REVOCABLE
TRUST
3180 EL SOBRANTE ST
SANTA CLARA CA 95051-3720

470 321 06 00 5
KIRNON & WATERN TRUST
2179 N RIVERSIDE AV
RIALTO CA 92377-4007

470 360 06 00 0
KIRTLEY JOHN R
4029 CHESTNUT AV
CONCORD CA 94519-1910

470 152 12 00 0
KLEIS ARTHUR F & BERTHA M
414 W MAIN ST
ST CHARLES IA 50240

302 325 46 00 3
KLIPPNESS KELLY & JACQUELINE S
3340 SANDSTONE CT
PALMDALE CA 93551-1057

302 341 19 00 3
KOCH HARRY G & FLORDELIZA O TR
14821 OAKLINE RD
POWAY CA 92064-2995

470 322 12 00 9
KOONCE QUINTON L & CARRIE L
601 ALDERSON ST
EL CAJON CA 92019

302 341 38 00 8
KRAUS OTTO & MARY D
998 KENNARD WY
SUNNYVALE CA 94087

302 303 15 00 3
LA MONICA TRUST
28145 CALLE CASAL
MISSION VIEJO CA 92692-1745

302 341 36 00 2
LAMEE DONALD M
710 MCLEOD ST
LIVERMORE CA 94550-4766

470 010 12 00 5
LAMPRECHT LIV TRUST
42075 CALLE CORRIENTE
MURRIETA CA 92562-9121

302 460 17 00 5
LANTING CARLOS S & MARGARET R
5200 E EL CEDRAL ST
LONG BEACH CA 90815-3904

470 301 25 00 4
LAWSON NORMAN CARL LIV TR
P O BOX 1016
HEMET CA 92546

302 290 30 00 3
LAZARIS FMLY TR
38370 SHOAL CREEK DR
MURRIETA CA 92562

302 360 33 00 2
LEE DAVIS S & SUSAN
631 CAMINO VERDE
S PASADENA CA 91030

302 290 12 00 1
LEE KAM P & RENA ET AL
853 E VALLEY BL # 103
SAN GABRIEL CA 91776

302 341 25 00 0
LEONARD MICHAEL J
1378 PINE AV
SAN JOSE CA 95125-3970

302 460 06 00 3
LEVID DARNELO
4635 PALMERO DR
LOS ANGELES CA 90065

302 470 08 00 2
LEVITT FAMILY TRUST
23633 ARMINTA ST
WEST HILLS CA 91304

302 460 07 00 6
LIN OLIER CHIA HUA
1978 N GREENGROVE ST
ORANGE CA 92865-4621

302 325 42 00 1
LOHRBACH RONALD P & MARY
GUSSICK LIVING TR
10914 NEW SALEM CI
SAN DIEGO CA 92126

470 322 08 00 8
LOMBARD KEVIN & DIANE FAMILY
TRUST
3648 DRIFTWOOD ST
CHINO HILLS CA 91709

470 322 25 00 7
LONGSHORE JEFFREY WAYNE
19250 PINTO WY
APPLE VALLEY CA 92308-6719

470 090 12 00 9 **DUP**
LOO WAH & KOUI MOE
ADDRESS UNKNOWN

302 480 18 00 4
LOPEZ MARIA
13373 ANOLA ST
WHITTIER CA 90605-2806

470 090 03 00 3
LU TRINA
4016 LANDUA CT
RIVERSIDE CA 92501

469 190 23 00 0
LUGO JESS & ROSSANA
12332 WHITLEY ST
WHITTIER CA 90601-2725

302 480 01 00 4
LY VENG TIENG ET AL
3555 LOCUST AV
LONG BEACH CA 90807

470 322 35 00 6
MACRIS GEORGE FAMILY TRUST
974 WOODLAND DR
TURLOCK CA 95382-7281

470 080 29 00 6
MAGES FAMILY TRUST
10416 WILMINGTON LN BOX 15
APPLE VALLEY CA 92308

470 080 18 00 4
MAI TIMOTHY THANH & LAM MY
HONG
2157 S SPINNAKER ST
ANAHEIM CA 92802

470 181 08 00 1
MALDONADO LIONEL & YOLANDA
23612 MARIN WY
LAGUNA NIGEL CA 92677

470 090 04 00 6
MAMAYAN GEVORK
PO BOX 2387
CALIFORNIA CITY CA 93504-0387

302 290 29 00 1
MARITAL TRUST
513 EUCLID ST
SANTA MONICA CA 90402-2921

302 290 19 00 2
MARTINEZ ALEJANDRO MIGUEL
12421 VENICE BL STE 2
LOS ANGELES CA 90066-3827

470 302 12 00 3
MARTINEZ ROGELIO
5255 W JEFFERSON BL
LOS ANGELES CA 90016-3841

469 230 01 00 7
MAZIN FAMILY TR
12329 HARTSOOK ST
VALLEY VILLAGE CA 91607-3052

470 151 09 00 5 **DUP**
MAZIN FAMILY TRUST
12329 HARTSOOK ST
VALLEY VILLAGE CA 91607-3052

302 341 34 00 6
MC BRIDE THOMAS E III & CAROLYN
2021 QUEEN VICTORIA CT
LAWRENCEVILLE GA 30043

302 341 42 00 9
MC EVOY MARK P & GARIAN R
15072 SNOWSHILL ST
FRISCO TX 75035

302 325 38 00 0
MEARA JOSEPH L JR & NICOLETTE H
18180 STEEPLECHASE DR
PEYTON CO 80831-9303

470 330 11 00 5
MELGOZA AURELIO
2212 WHITE OAK AV
WHITING IN 46394

469 170 16 00 4
MERCADO NAVIDAD MENJIVAR &
AYON JUAN MERCADO
15980 GRAND AV SP M14
LAKE ELSINORE CA 92530-5649

470 152 20 00 3
MERKIN ELLIOTT & ELIZABETH
833 W 10TH ST
CLAREMONT CA 91711

470 330 03 00 2
MEUNIER STEVEN
22347 CABALLERO RD
CLOVIS CA 93611-9621

470 151 01 00 1
MILLER MELINDA J
55 N MAIN ST STE 206
LOGAN UT 84321-4584

302 330 17 00 7
MIRZAYAN ARA FAMILY TRUST
1342 DOVERWOOD DR
GLENDALE CA 91207-1147

470 152 19 00 1
MITCHELL LORI LYNN
37233 SERPENTINE LN
BURNEY CA 96013-4244

302 325 39 00 3
MOORE INVESTMENT TRUST
1140 EDGMONT RD
EMMETT ID 83617

470 080 32 00 4
MOORE JOHN T & DONNA L FMLY TR
52 VIA LARGA VISTA
BONSALL CA 92003

470 152 02 00 1
MORRIONE MICHAEL
712 WHITE OAK
RIDGECREST CA 93555

470 152 04 00 7
MORRIONE MICHAEL
27304 BALBOA CT
HEMET CA 92544

470 152 03 00 4
MORRIONE PHIL & DEBORAH
5737 FLORENCE AV
SOUTHGATE CA 90280

470 322 29 00 9
MORRISON JAN
2800 NEILSON WY STE 709
SANTA MONICA CA 90405

302 325 10 00 8
MULQUEEN MICHAEL O HEHIR
1314 GATES HEAD DR
BEL AIR MD 21014-2204

470 322 23 00 1
MUNIZ RONALD E & NANCY P
7037 PEMBROKE WY
ROCKLIN CA 95677-4528

302 325 09 00 6
MUSUNURU VAMSI
PO BOX 1000
SAN JOSE CA 95108-1000

302 342 07 00 5
MYERS WILLIAM F
5707 E 32ND ST # 972
YUMA AZ 85365

470 151 04 00 0
NAZARIAN JOHN V & MARY H
27871 ENCANTO
MISSION VIEJO CA 92692

470 360 05 00 7
NELSON ERIKA LIVING TRUST
7 DE LINO
RANCHO SANTA MA CA 92688-1635

470 302 29 00 3
NEVIS FRANK C
108 E WYNOT DR
NINE MILE FALLS WA 99026-9313

470 302 04 00 0
NEVIS PEGGY A
108 E WYNOT DR
NINE MILE FALLS WA 99026-9313

302 480 09 00 8
NEWMAN ILA MAE LIVING TRUST
11145 MORENA AV
LAKESIDE CA 92040

302 342 02 00 0
NGO CATHERINE PHUONG
13355 DURANGO PL
CERRITOS CA 90703-8640

302 325 50 00 4
NINH PHUNG KIEN
PO BOX 40033
STUDIO CITY CA 91614-4033

470 322 28 00 6
NISBET ALISON LEIGH
1977 HIGGINS LN
EL CENTRO CA 92243

470 322 05 00 9
NORTON GEORGE F
1166 MADISON AV # 129
LOVELAND CO 80537

302 271 42 00 9
NOZOMI INVESTMENTS INC
2625 E FIRST ST
LOS ANGELES CA 90033

470 152 22 00 9
NUESCH CHRISTIAN & MICHELE
26523 CARDINAL DR
SANTA CLARITA CA 91387-6318

302 325 25 00 2
O BRIEN SUSAN
3921 SUNSET LN
OXNARD CA 93035-3948

470 090 06 00 2 **DUP**
O DONNELL GERARD
ADDRESS UNKNOWN

302 330 33 00 3
O LAUGHLIN RANDALL & JEANIE M
9650 DENHART AV
CALIFORNIA CITY CA 93505-6200

469 170 09 00 4
OJENA ARTHUR B & BETH Z
10771 RICHALAND AV
LOS ANGELES CA 90064

302 020 17 00 7 **DUP**
ORTON FAMILY TR
1 ISLANDVIEW
IRVINE CA 92604-3601

302 020 21 00 8
PALMER M STACEY
615 E HOLLY AV # 202
EL SEGUNDO CA 90245-4039

470 322 19 00 0
PAPLHAM ERNEST CLAYTON
P O BOX 812
NEWPORT BEACH CA 92661-0812

469 170 04 00 9
PATEL MUKESHBHAI V & NISHA A
109 TOWERING BEECH CT
SANDY SPRING MD 20860-1072

470 152 14 00 6
PERRY JAMES F & BETTY L JOINT TRUST
1118 ICHABOD CT
NIXA MO 65714-7407

470 322 40 00 0
PIERCE DELORES A
5201 RUFFIN RD STE A
SAN DIEGO CA 92123-1699

470 330 06 00 1
POTTER ROSEMARY
2790 BRAWLEY RD
PINON HILLS CA 92372-9786

470 140 09 00 5
RAISZADEH ALI & LYNN
2875 BRIARHAVEN LN
CORONA CA 91720

469 170 23 00 4
OAK INVS LLC
P O BOX 2016
BEVERLY HILLS CA 90213

302 470 07 00 9
OLIVEIRA FAMILY TRUST
9005 FIELDING CT
BAKERSFIELD CA 93307-5962

302 321 01 00 4
ORTON JAMES L
1265 MONTEREY AV
BERKELEY CA 94707-2718

302 020 19 00 3
PALMER M STACEY PROFIT SHARING PLAN & TR
615 E HOLLY AV # 202
EL SEGUNDO CA 90245-4039

470 322 21 00 5
PAPLHAM KENNETH JOSEPH
831 LANGHOLM WY
RIVERSIDE CA 92508

302 290 03 00 5
PEACE JUDY ET AL
116 WATERFORD CI
RANCHO MIRAGE CA 92270

302 271 01 00 0
PHAM KHANH
2254 LEVIN ST
MILPITAS CA 95035-2654

470 090 32 00 7
PINETREE ENTERPRISE INC
PO BOX 16665
IRVINE CA 92623-6665

470 151 02 00 4
POWERS RICHARD J & SANDRA JEAN
6780 KENYON AV
HESPERIA CA 92345

302 342 21 00 5
RANDALL GRACE DACONG TR
4855 SAN FELIPE RD U 309
SAN JOSE CA 95135-1296

302 290 04 00 8
OCZKOWSKI EDWARD T
660 EUCLID AV
EL CENTRO CA 92243

302 020 08 00 1
ORTON DAVID M & PATRICIA D FAMILY TRUST
1 ISLANDVIEW
IRVINE CA 92604-3601

470 330 05 00 8
PADUMANE RAVIPRAKASH R & SANDHYA R
305 S PHILO DR
LAFAYETTE LA 70506

302 342 17 00 4
PAPLHAM CLAYTON MICHAEL
P O BOX 10574
COSTA MESA CA 92627

470 322 20 00 2
PAPLHAM TRUST
2474 SHADY OAK DR
GREEN BAY WI 54304-1644

302 325 35 00 1
PENDRAY EDWARD G & CLAIRE A FAMILY TR
2700 TRIMMIER RD APT 6105
KILLEEN TX 76542-6045

470 152 15 00 9
PHELPS JOHN & SHIRLEY
2460 W ROBY AV
PORTERVILLE CA 93257-7718

302 271 39 00 1
PLATINUM DYNAMICS
9844 HELENA AV
MONTCLAIR CA 91763-2723

302 342 23 00 1
PUJOL EMILIO
11128 DEBBY ST
NORTH HOLLYWOOD CA 91606-3710

470 312 05 00 6
RANGEL GILBERTO
18548 FIDALGO ST
ROWLAND HGTS CA 91748

470 312 03 00 0
RAPALO LUIZ JR
7713 COLUMBINE AV
CALIFORNIA CITY CA 93505

470 152 27 00 4
RAPOLE MADHUSUDHAN RAO
2017 SE 240TH AV
SAMMAMISH WA 98075-8171

302 342 25 00 7
REINELT FAMILY TRUST
2701 FORRESTER DR
LOS ANGELES CA 90064

470 322 16 00 1
REISMAN TRUST FUND A 1
603 N CAMDEN DR
BEVERLY HILLS CA 90210-3203

470 370 03 00 4
REITZ KEIKO JEAN
PO BOX 21782
BROOKLYN NY 11202-1782

302 325 51 00 7
REYES JUAN
2075 W 250TH ST
LOMITA CA 90717

302 330 38 00 8
REYES THOR-ALCYONE L & TITA C
13918 BEAL FENCE CT
MOORPARK CA 93021-5022

302 480 13 00 9
RICHARD ADOLPH DAVIS INC
P O BOX 935
RANCHO MIRAGE CA 92270

461 220 24 00 5
RIEGER CHRISTOPHER T & GLENDA O REVOCABLE TR
8142 VENTURA CANYON AV
PANORAMA CITY CA 91402-6141

470 100 08 00 0
RIORDAN B J & TUTTLE D W
27275 DELEMOS
MISSION VIEJO CA 92692

470 380 02 00 4
RIVERA FAMILY TR ET AL
339 AVENIDA MARGARITA
ANAHEIM CA 92807

469 170 01 00 0
RIVERA FAMILY TRUST
2889 EASTVIEW TR
ESCONDIDO CA 92025-7774

470 380 04 00 0
ROBERTO FAMILY TR ET AL
675 HIGLEY WY
OCEANSIDE CA 92057-5050

302 290 21 00 7
ROBERTS STEVEN & DANIEL ET AL
44345 SUNDELL AV
LANCASTER CA 93536

302 030 05 00 5
ROBERTSON CARL W JR
6332 HUNGERFORD ST
LAKEWOOD CA 90713-1259

302 341 33 00 3
ROBILLIARD LIVING TR
1823 61ST AV
GIG HARBOR WA 98335-7565

302 325 23 00 6
ROBL GUENTER H & FLORENCE TRS
P O BOX 2096
PORTERVILLE CA 93258

302 306 16 00 7
ROBLES GILBERTO
5938 N DEL LOMA AV
SAN GABRIEL CA 91775-2514

469 240 27 00 6
ROBLETO OLGA
4037 PHELAN RD # 124
PHELAN CA 92371-8915

469 240 21 00 8
ROCHE JOHN J & ELAINE A TRUST
727 3RD AV
CHULA VISTA CA 91910-5888

470 322 10 00 3
ROPER JERALD DEAN TR
3679 CAMEO LN
SAN DIEGO CA 92111-4044

302 460 05 00 0
ROSS EMERITA F C
3259 ALBRET ST
LANCASTER CA 93536-8388

470 110 06 00 7
ROTHSCHILD RAYMOND ET AL
536 E THOMPSON BL # 9
VENTURA CA 93001-2841

302 325 18 00 2
ROY RICHARD & MARY FAMILY TRUST
3208 WHEAT ST
SAN DIEGO CA 92117-4430

302 306 26 00 6
SABELINO AGUSTIN C & IRENE D
15171 YORKSHIRE LN
HUNTINGTN BCH CA 92647

470 090 01 00 7
SAIDI GHOLAM R & MEIMAN L
735 PLATEAU AV
MONTEREY PARK CA 91755

470 151 06 00 6
SALERNO MARY M
11615 W CROSS SLOPE WY
NAMPA ID 83686-5674

470 151 11 00 0
SALERNO MARY MARTHA
11615 W CROSS SLOPE WY
NAMPA ID 83686-5674

302 290 28 00 8
SAN FILIPPO VINCE & GRACE IRREV TR
220 W PASEO DE CRISTOBAL
SAN CLEMENTE CA 92672-5433

470 302 27 00 7
SANCHEZ OCTAVIANO T & MEDINA BEATRIZ
21124 74TH ST
CALIFORNIA CITY CA 93505-4900

302 381 01 00 2
SANH SE HEN & TAING HENG ZY ET AL
5401 CHATSWORTH LN
KELLER TX 76244

302 324 03 00 1
SARKISIAN ALAN H
3439 W 172ND ST
TORRANCE CA 90504

302 324 02 00 8
SARKISIAN ALAN H LIV TR
16704 FALDA AV
TORRANCE CA 90504-1736

470 151 14 00 9
SATTERFIELD LARRY & DIANA FAMILY TR
13701 ALDERWOOD LN APT 29L
SEAL BEACH CA 90740-3928

470 140 01 00 1
SAVITCH CHARLES S DECEDENTS TRUST
PO BOX 260588
ENCINO CA 91426-0588

470 322 26 00 0
SCHURKE JASON & LIDIA
1400 COLONY DR
KEARNEY MO 64060-8404

470 020 06 00 1
SEIZED PROPERTY
15918 EL CENTRO
HESPERIA CA 92345

470 322 11 00 6
SELLENS MERL EST & F H
3921 LAGUNA BLANCA DR
SANTA BARBARA CA 93110

470 330 13 00 1
SEPEHR ALI
18175 KAREN DR
TARZANA CA 91356

216 010 29 00 1
SEYMOUR ENTERPRISES
P O BOX 6998
BEVERLY HILLS CA 90212

470 330 12 00 8
SHIN FAMILY TRUST
3511 HOLBORO DR
LOS ANGELES CA 90027-1429

302 342 04 00 6
SIDEBOTHAM JAMES & CAROLE TR
32952 TESORO ST
DANA POINT CA 92629

470 152 17 00 5
SIEGELMAN ETHEL M
240 MOSS ST APT 6
LAGUNA BEACH CA 92651-3655

302 303 09 00 6
SIPING BONIFACIO P & SATURNINA
12911 RUBENS AV
LOS ANGELES CA 90066

470 090 14 00 5 **DUP**
SIU ADOLPHE
ADDRESS UNKNOWN

470 090 15 00 8
SIU ALEXIS
2737 ROSEDALE AV
SOQUEL CA 95073-2636

302 342 24 00 4
SKRODINSKY ANDREW L
336 BROWNING RD
VOLGA WV 26238-7422

470 380 05 00 3
SMITH ALVA & BETTY REV LIV TR
9412 GORDON AV
LA HABRA CA 90631-2459

302 020 10 02 4
SMITH JOANNE W
117 TUJUNGA AV
OXNARD CA 93035

470 030 36 00 1
SOBALVARRO FRANCISCO L & DOLORES T
833 GRETTA AV
COVINA CA 91790

470 302 22 00 2
SOGAWA STANLEY T & LINDA K TRUST
849 EBBETTS DR
CAMPBELL CA 95008-5109

469 170 17 00 7
SOLIS JOSE A & HILDA
1215 SUGARBUSH DR
VISTA CA 92084-7463

302 305 09 00 0
SOO-HOO BALDWIN B H & YVONNE
P O BOX 1020
MONTEREY PARK CA 91754

302 341 40 00 3
SORICK ZORA ELLEN LVG TRUST
3295 FAWN DR
SAN JOSE CA 95124-2206

302 322 07 00 9
SPEIGHT ALLISON
6239 DAMASK AV
LOS ANGELES CA 90056-1732

302 290 22 00 0
SPENGLER KLAUS & MUNEK
10639 ROSELLE ST
SAN DIEGO CA 92121-1539

470 321 16 00 4
STADELMANN GEORGE A TR
12017 HILLHURST CI
GROVELAND CA 95321-9549

302 330 37 00 5
STALKNEGT FAMILY TRUST
14916 BURIN AV
LAWNDALE CA 90260

302 010 04 00 6
STATE OF CALIFORNIA
1416 NINTH ST FLR 12
SACRAMENTO CA 95814

302 470 19 00 4
STELLO JOSEPH TRUST
P O BOX 1868
LANCASTER CA 93539-1868

469 030 01 00 9
STELLO KATRINA M TR
P O BOX 1868
LANCASTER CA 93539

302 290 23 00 3
STERLING MARJORIE H TRUST
13267 MONTAGUE ST
ARLETA CA 91331-4724

469 170 05 00 2
STERNFELD JACK & EVELYN
3902 PEACOCK RIDGE RD
AGOURA HILLS CA 91301-5362

302 325 49 00 2
STILLIENS MARVIN E & CAROLYN M
2504 ELLEN LN
SANTA MARIA CA 93455-7417

461 220 27 00 4
SWANSON MAJA S
P O BOX 6205
WOODLAND HLS CA 91365

302 460 02 00 1
TABORA ANTONIO M SEPARATE PROP TRUST
2379 NALIN DR
LOS ANGELES CA 90077-1806

470 301 23 00 8
TAKAYAMA TOMOKATSU ET AL
23232 82ND PL W
EDMONDS WA 98026

470 301 24 00 1
TAKAYAMA TOMOKATSU ET AL
23232 W 82ND PL
EDMONDS WA 98026-8720

470 302 19 00 4
TERADA SHIRLEY M TR
1580 VIREO AV
SUNNYVALE CA 94087-5021

469 170 03 00 6
THELLEND FAMILY TRUST
26520 ATHENA AV
HARBOR CITY CA 90710

302 325 01 00 2
THIELE GARY F
77 SUNSET LN U 234
RIDGEFIELD CT 06877-4694

302 303 14 00 0
TIERNAN JOSEPH W
5817 OAKBROOK ST
LONG BEACH CA 90815

302 325 02 00 5
TINDALL FAMILY TR
6069 ALLANS WY
COULTERVILLE CA 95311

302 325 33 00 5
TREVINO MARIA L
324 MEDFORD HEIGHTS LN
MEDFORD OR 97504-7550

470 360 02 00 8
TRIPLE E DEV CORP
5560 S FORT APACHE RD STE 100
LAS VEGAS NV 89148-7699

470 090 13 00 2 **DUP**
TUMAHAI RONALD & GOODING ELINA
ADDRESS UNKNOWN

302 341 05 00 2
TWOHIG SKYLER
2731 FREMONT LN
COSTA MESA CA 92626-5607

302 325 41 00 8
UCHIDA HARRY W & AMY E TR
1904 ARMACOST ST
W LOS ANGELES CA 90025

302 360 42 00 8
UNION PACIFIC R/R CO
1400 DOUGLAS ST # 1610
OMAHA NE 68179-1610

470 130 14 00 6
UPWARD LOOK INVS
PO BOX 2432
CALIFORNIA CITY CA 93504-0432

302 360 01 00 9
UYETAKE JOE SENICHI & KAZUKO
12304 SANTA MONICA BL STE 305
LOS ANGELES CA 90025

302 325 54 00 6
VALDEZ STANLEY & TERESA L
893 BUENA VISTA WY
CHULA VISTA CA 91910

302 460 18 00 8
VALLEE GUY L & MARLA L
PO BOX 5571
PAHRUMP NV 89041-5571

302 306 25 00 3
VAN DER HEIDE HENDRIK & C G
3431 KENTWATER DR
BUFORD GA 30519-7713

302 290 01 00 9
VARTANIAN TINA V TR
PO BOX 4584
VALLEY VILLAGE CA 91617

302 325 47 00 6
VASQUEZ PEDRO A & RUTH M REV LIVING TRUST
11859 MOUNT CAMBRIDGE CT
RANCHO CUCAMONG CA 91737-7917

302 341 17 00 7
VERNON FAMILY TRUST
35 GRAND MIRAMAR DR
HENDERSON NV 89011-2203

470 322 36 00 9
VON EITZEN WOLFGANG TRUST
501 VIA CASITAS
GREENBRAE CA 94904-1901

302 470 11 00 0
VON WATTENVILLE KARINA
PO BOX 1503
LOS ANGELES CA 90078-1503

470 380 03 00 7
VUONG HUNG
8524 SHARP AV
SUN VALLEY CA 91352

470 152 09 00 2
WAER RICHARD DEAN EST
12 DRAKE AV
RYE NY 10580-1309

302 305 15 00 7
WANG NATHAN & LYNDA S
12523 NEON WY
GRANADA HILLS CA 91344-1342

302 341 21 00 8
WARD CHARLES M & ETHELLEA
828 ROCK LEDGE RD
HEBER SPRINGS AR 72543-7990

461 220 20 00 3
WEISSMAN RICHARD RECEIVER
12121 WILSHIRE BL STE 600
LOS ANGELES CA 90025

302 342 06 00 2
WENZEL LIVING TR
764 CHERRY HILLS LN
RIO VISTA CA 94571

470 350 08 00 3
WEST PALM DEV CO
1875 E CENTURY PK STE 2230
LOS ANGELES CA 90067-2522

302 290 17 00 6 **DUP**
WESTERN PACIFIC ENTERPRISES INC
ADDRESS UNKNOWN

225 264 05 00 8
WHEELER FAMILY TRUST
2107 DEL HOLLOW ST
LAKEWOOD CA 90712

302 303 03 00 8
WHITELOCK LORETTA ET AL
13442 PEPPERDINE CI
WESTMINSTER CA 92683

470 322 24 00 4
WILD FAMILY TRUST
1314 CORTE DE LOS VECINOS
WALNUT CREEK CA 94598-2902

302 325 48 00 9
WILLIAMS JODI
1217 SAN JUAN AV
SAN JOSE CA 95110-1441

470 350 02 00 5
WILLIAMS VIRGINIA
2926 MILLSBRAE AV
OAKLAND CA 94605-1102

470 020 13 00 1
WILLIAMSON LIVING TRUST
P O BOX 2613
CALIFORNIA CITY CA 93504

470 130 16 00 2
WILLIS STEPHEN & MARY 2008 TR
32925 VISTA DE ORO
TEMECULA CA 92591

470 301 22 00 5
WOLFE GLENDA
P O BOX 2016
BEVERLY HILLS CA 90213

470 080 16 00 8
WOLFE JEFFREY
206 S STANLEY DR
BEVERLY HILLS CA 90211-3005

470 152 16 00 2
WOLPERT FAMILY TRUST
835 COLDSTREAM DR
EL CAJON CA 92020-7719

302 341 22 00 1
WOMACK JAMES O
233 TALISMAN DR APT 2
PAGOSA SPGS CO 81147-8202

470 360 04 00 4
WONG ERNEST TRUST
4110 NE 118TH AV
KIRKLAND WA 98033-8745

470 322 30 00 1
WRAY ROBERT W JR & LORRAINE R
1450 SW DELOS AV
PORT SAINT LUCI FL 34953-6138

470 330 10 00 2
WU HELEN
115 MAPLE AV
MORRISTOWN NJ 07960

470 330 15 00 7
YABLONSKI FAMILY TRUST A
35859 BLACK MARLIN DR
LEWES DE 19958-5036

470 370 04 00 7
YEE DANIEL
1080 BUSH # 600
SAN FRANCISCO CA 94109

302 305 07 00 4 **DUP**
YONG AMOS W
ADDRESS UNKNOWN

302 305 01 00 6
YONG AMOS W - BEATRICE - FONG
1373 SUNNYSLOPE DR
MONTEREY PARK CA 91754-4503

302 381 04 00 1
YOON BYUNG YUL
4124 TRACY ST
LOS ANGELES CA 90027

470 350 01 00 2
YOUNT LIV TR
1075 CAMINO RICARDO
SAN JOSE CA 95125-4306

470 140 08 00 2
ZABEL MARILYN O LIV TR
2514 FERNWOOD DR
VIENNA VA 22181-4019

469 170 11 00 9
ZAVALA HERMENEGILDO
8001 FOREST BL
CALIFORNIA CITY CA 93505-4323

470 322 37 00 2 **DUP**
ZHANG XIANZHI
ADDRESS UNKNOWN

302 290 27 00 5
ZONOS FAMILY PROP LLC
223 VIA MALAGA
SAN CLEMENTE CA 92673-6702

461 220 30 00 2
ZSIGMOND FAMILY TRUST
150 LOMBARD ST STE 301
SAN FRANCISCO CA 94111-6219

469 170 22 00 1
ZUNIGA CIRA A
10222 NORMA GARDEN DR # 3
SANTEE CA 92071

469 230 02 00 0
2497 TRUST
3525 DEL MAR HEIGHTS RD APT 934
SAN DIEGO CA 92130-2199

302 290 17 00 6
WESTERN PACIFIC ENTERPRISES INC
MAIL & MORE, BOX #10
BANILAD TOWN CENTER, 2ND FLOOR

470 302 282
ESKANOS IRWIN J
2325 CLAYTON RD
CONCORD CA 94520

302 341 094
SIN SANDY SINUON
11729 BENFIELD AV
NORWALK CA 90650-7706

302 341 201
BISHIP IAN
300 N 11TH AV 436
NASHVILLE TN 37203

302 341 417
CASON BILLY D & ROSE MARIE
4827 GRAYWOOD AV
LONG BEACH CA 90808

302 342 118
POLAN HAROLD E & AUDREY A
10814 DAKOTA RANCH RD
SANTEE CA 92071

302 342 191
KOLLAR JUDITH L
168 N B ST
TUSTIN CA 92780-3111

302 470 042
KING ALAN S & DAVID M
5090 LADY BANK LN
AIKEN SC 29803-1733

302 470 059
LUONG FAMILY TRUST
1002 S 1ST ST
ALHAMBRA CA 91801

469 170 088
VOGL DAVID J & KAREN C
2030 SHADOW CANYON RD
ACTON CA 93510

469 240 303
SUH DAVID MYUNG
4562 PORTER ST
FREMONT CA 94538-2523

470 080 011
BIGGAR PATRICIA TRUST
PO BOX 41268
BAKERSFIELD CA 93384-1268

470 152 018
DHUPAR VANITA
217 TWILIGHT ST
PLACENTIA CA 92870-4933

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Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P. O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # _____

Project Title: Kudu Solar Farm by 69SV 8ME LLC

Lead Agency: Kern County Planning and Natural Resources Department | Contact Person: Ronelle Candia

Mailing Address: 2700 "M" Street Suite 100 | Phone: (661) 862-8997

City: Bakersfield | Zip: 93301 | County: Kern

Project Location: County: Kern | City/Nearest Community: City of California City

Cross Streets: bisected E/W by Washburn Blvd. and N/S by Neuralia Road; 1-mile west of State Route 14 | Zip Code: 93501

Lat. / Long.: 35°10'41.39" N / 118° 00'37.92"W | Total Acres: 2,672.53

Assessor's Parcel No.: Multiple | Section: Multiple | Twp.: 31S, 32S | Range: 37E | Base: SBB&M

Within 2 Miles: State Hwy #: SR 14 | Waterways: Cache Creek

Airports: California City Airport | Railways: Union Pacific | Schools: _____

Document Type:

CEQA: ☒ NOP ☐ Early Cons ☐ Neg Dec ☐ Mit Neg Dec ☐ Draft EIR ☐ Supplement/Subsequent EIR (Prior SCH No.) _____ Other _____

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other _____

Local Action Type:

☐ General Plan Update ☒ General Plan Amendment ☐ General Plan Element ☐ Community Plan
☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan
☒ Rezone ☐ Prezone ☒ Use Permit ☐ Land Division (Subdivision, etc.)
☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☐ Other _____

Development Type:

☐ Residential: Units _____ Acres _____
☐ Office: Sq.ft. _____ Acres _____ Employees _____
☐ Commercial: Sq.ft. _____ Acres _____ Employees _____
☐ Industrial: Sq.ft. _____ Acres _____ Employees _____
☐ Educational _____
☐ Recreational _____
☐ Water Facilities: Type _____ MGD _____
☐ Transportation: Type _____
☐ Mining: Mineral _____
☒ Power: Type Solar PV MW 500
☐ Waste Treatment: Type _____ MGD _____
☐ Hazardous Waste: Type _____
☒ Other: Battery Energy Storage up to 600 MW

Project Issues Discussed in Document:

☒ Aesthetic/Visual ☒ Agricultural Land ☒ Air Quality ☒ Archeological/Historical ☒ Biological Resources ☐ Coastal Zone ☒ Drainage/Absorption ☒ Economic/Jobs
☐ Fiscal ☒ Flood Plain/Flooding ☒ Forest Land/Fire Hazard ☒ Geologic/Seismic ☒ Minerals ☒ Noise ☒ Population/Housing Balance ☒ Public Services/Facilities
☒ Recreation/Parks ☒ Schools/Universities ☒ Septic Systems ☒ Sewer Capacity ☒ Soil Erosion/Compaction/Grading ☒ Solid Waste ☒ Toxic/Hazardous ☒ Traffic/Circulation
☒ Vegetation ☒ Water Quality ☒ Water Supply/Groundwater ☒ Wetland/Riparian ☒ Wildlife ☒ Growth Inducing ☒ Land Use ☒ Cumulative Effects
☒ Other GHG, Wildfire, Tribal Cultural Resources, Energy

Present Land Use/Zoning/General Plan Designation:

Undeveloped Land/*Kern County General Plan: 5.6 (*Min. 2.5 Gross Acres/Unit (Fremont Interim Rural Community Plan), *8.5 (*8.5 - Resource Management, Min. 20 Acre Parcel Size). *Kern County Zoning:* A (Exclusive Agriculture); A-1 (Limited Agriculture); A-1 MH (Limited Agriculture, Mobile Home Combining); PL RS (Platted Lands, Residential Suburban Combining); PL RS MH (Platted Lands, Residential Suburban Combining, Mobile Home Combining). *California City General Plan:* O/RA - Controlled Development, Public Parks & Recreation or Public Schools. *California City Zoning:*O/RA (Open Space/Residential/Agricultural).

Project Description:

The Kudu Solar Farm Project by 69SV 8ME LLC (project proponent), is a proposed photovoltaic solar facility and energy storage system capable of producing up to 500 MW of alternating current power and 600 MW hours of storage capacity on approximately 1,955.13 acres of privately-owned land. The proposed project would be supported by a 230-kV gen-tie overhead and/or underground generation tie-line (gen-tie) from originating from the Eland substation and terminating at the Los Angeles Department of Water and Power's Barren Ridge Substation located approximately two miles to the northwest of the project site, or through an upgraded connection through Eland 1. The proposed project intends to share the Eland 1 Solar Project's gen-tie line and right of way, which will be accomplished by constructing the line conductor capable of supporting both projects. Construction of the gen-tie and substation will be done as part of the Eland 1 Solar Project, consistent with the conditions of approval outlined in that project's CUP(s). If the proposed project cannot share these facilities, a new gen-tie line would be developed within one of the routes previously analyzed in the Eland 1 Solar Supplemental Environmental Impact Report (State Clearinghouse No. 2012011029). The proposed project's permanent facilities would include solar arrays and inverters, service roads, a power collection system, communication cables, overhead and underground electrical switchyards, project substations, energy storage system(s), and operations and maintenance (O&M) facilities.

Implementation of the project as proposed would require: *Kern County*: a) ZCC 14, Map #152; b) CUP 28, Map #152; and c) GPA 10, Map #152. *California City*: a) CUP 19-04

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

S	Air Resources Board		Office of Emergency Services
	Boating & Waterways, Department of		Office of Historic Preservation
S	California Highway Patrol		Office of Public School Construction
	CalFire	S	Parks & Recreation
S	Caltrans District # 6 & 9		Pesticide Regulation, Department of
S	Caltrans Division of Aeronautics	S	Public Utilities Commission
	Caltrans Planning (Headquarters)	S	Regional WQCB # Lahontan
	Central Valley Flood Protection Board		Resources Agency
	Coachella Valley Mountains Conservancy		S.F. Bay Conservation & Development Commission
	Coastal Commission		San Gabriel & Lower L.A. Rivers and Mtns Conservancy
	Colorado River Board		San Joaquin River Conservancy
S	Conservation, Department of		Santa Monica Mountains Conservancy
	Corrections, Department of	S	State Lands Commission
	Delta Protection Commission		SWRCB: Clean Water Grants
	Education, Department of		SWRCB: Water Quality
S	Energy Commission		SWRCB: Water Rights
S	Fish & Game Region # Fresno		Tahoe Regional Planning Agency
S	Food & Agriculture, Department of	S	Toxic Substances Control, Department of
	General Services, Department of	S	Water Resources, Department of
	Health Services, Department of		
	Housing & Community Development		Other _____
S	Integrated Waste Management Board		Other _____
X	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date September 15, 2020 Ending Date October 15, 2020

Lead Agency (Complete if applicable):

Consulting Firm: Michael Baker International
Address: 3760 Kilroy Airport Way, Suite 270
City/State/Zip: Long Beach, CA 90806
Contact: Randy Nichols, Senior Project Manager
Phone: (562) 200-7168

Applicant: 69SV 8ME LLC c/o 8minute Solar Energy
Address: 250 Sutter Street, Suite 600
City/State/Zip: San Francisco, CA 94108
Phone: (415) 818-5103

Signature of Lead Agency Representative: _____ **Date:** 09/15/2020

Ronelle Candia, Supervising Planner

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

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INITIAL STUDY/NOTICE OF PREPARATION

Kudu Solar Farm
by 69SV 8ME LLC

Zone Change Classification No. 14, Map No. 152
Conditional Use Permit No. 28, Map No. 152
General Plan Amendment No. 10, Map No. 152 (Circulation)

(PP20405)

LEAD AGENCY:

Kern County Planning and Natural Resources Department
2700 M Street, Suite 100
Bakersfield, CA 93301-2370
Contact: Ronelle Candia, Supervising Planner
(661) 862-8997
candiar@kerncounty.com

RESPONSIBLE AGENCY:

City of California City Planning Department
21000 Hacienda Boulevard
California City, CA 93505
Contact: Shawn Monk, City Planner/Economic Development Administrator
(760) 373-7141
smonk@californiacity-ca.gov

TECHNICAL ASSISTANCE BY: Michael Baker International

September 2020

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1. Project Description

1.1. Project Location

The proposed Kudu Solar Farm Project (proposed project) is a proposal by 69SV 8ME LLC (project proponent) to construct and operate a photovoltaic (PV) solar facility and associated infrastructure to generate up to 500 megawatts (MW) of renewable electrical energy and up to 600 MW of energy storage on approximately 1,955.13 acres of privately-owned land. The proposed project site is located in portions of unincorporated Kern County and the City of California City, north of the California City Municipal Airport (**Figure 1**, *Regional Vicinity Map*). The Project Area is adjacent to the approved Eland 1 Solar Farm, south of the existing Springbok 1 & 2 Solar Farms and would potentially share infrastructure with the Eland 1 Solar Farm, including, but not limited to , substations and gen-tie lines .The majority of the project site is bisected to the east-west by Washburn Boulevard (which is also the Kern County/California City limit line) and to the north-south by Neuralia Road. State Route 14, a four-lane divided highway located approximately one mile to the west, provides regional access to the project site. Access to the site would be from Phillips Road, Gantt Road, Neuralia Road, Pioneer Road, Sage Street, or through the Eland project site. The proposed project boundaries are illustrated in **Figure 2**, *Project Site Boundaries*.

According to the U.S. Geological Survey (USGS), the project site is located on the California City North and Mojave North East 7.5 minute USGS Quadrangles at Township 31S, Range 37E – portions of Sections 14, 15, 22, 23, 26, 27 , 28, 29, 30, 31, 32, 33, 34, 35 and Township 32S, Range 37E – portions of Sections 1, 2, 3, 4, 9, 10, 11, 12.

As shown on **Figure 4A to 4G**, the project site consists of five sites (Sites 1 through 5) sited on 75 parcels located in unincorporated Kern County and the City of California City. A total of 42 of the project parcels (totaling approximately 673.60 gross acres) are located within unincorporated Kern County, and 33 of the project parcels (totaling approximately 1,281.53 gross acres) are located within the jurisdictional limits of California City. The project is located within the boundaries of the Kern County General Plan, the Fremont Interim Rural Community Plan, and the City of California City General Plan. **Table 1**, *Project Assessor Parcel Numbers and Corresponding Map Codes, Existing and Proposed Zoning, and Acreage*, identifies the 75 individual assessor parcel numbers (APN), their respective acreages, general plan designations, and existing and proposed zoning designations.

TABLE 1. PROJECT ASSESSOR PARCEL NUMBERS AND CORRESPONDING MAP CODES, EXISTING AND PROPOSED ZONING, AND ACREAGE

Site Number	APN	Map Code Designation	Existing Zoning	Proposed Zoning	Acres
Kern County					
1	470-020-19	8.5 (Kern County General Plan)	A	A	4.38
1	470-151-09	8.5 (Kern County General Plan)	A	A	19.62
1	470-151-15	8.5 (Kern County General Plan)	A	A	20.23
1	470-151-16	8.5 (Kern County General Plan)	A	A	20.40
1	470-151-17	8.5 (Kern County General Plan)	A	A	19.98
1	470-152-01	5.6 (Fremont Interim Rural Community Plan)	A-1 MH	A	39.32
1	470-152-18	5.6 (Fremont Interim Rural Community Plan)	A-1 MH	A	10.32
1	470-152-19	5.6 (Fremont Interim Rural Community Plan)	A-1 MH	A	4.93
1	470-330-01	8.5 (Kern County General Plan)	PL RS	A	5.06

TABLE 1, CONTINUED

Site Number	APN	Map Code Designation	Existing Zoning	Proposed Zoning	Acres
1	470-330-02	8.5 (Kern County General Plan)	PL RS	A	4.77
1	470-330-03	8.5 (Kern County General Plan)	A	A	19.86
1	470-330-04	8.5 (Kern County General Plan)	A	A	20.15
1	470-330-06	5.6 (Fremont Interim Rural Community Plan)	A-1	A	9.95
1	470-330-07	5.6 (Fremont Interim Rural Community Plan)	A-2	A	10.02
1	470-330-14	8.5 (Kern County General Plan)	PL RS	A	4.89
1	470-330-15	8.5 (Kern County General Plan)	PL RS	A	5.23
1	470-350-04	8.5 (Kern County General Plan)	A	A	18.65
1	470-350-05	8.5 (Kern County General Plan)	A	A	18.91
1	470-350-06	8.5 (Kern County General Plan)	A	A	18.89
1	470-350-07	8.5 (Kern County General Plan)	A	A	18.57
1	470-350-08	8.5 (Kern County General Plan)	A	A	19.93
1	470-360-01	8.5 (Kern County General Plan)	A	A	18.43
1	470-360-02	8.5 (Kern County General Plan)	A	A	17.85
1	470-360-05	8.5 (Kern County General Plan)	A	A	21.15
1	470-380-01	8.5 (Kern County General Plan)	A	A	19.92
1	470-380-04	8.5 (Kern County General Plan)	A	A	21.35
1	470-380-05	8.5 (Kern County General Plan)	A	A	17.34
1	470-380-06	8.5 (Kern County General Plan)	A	A	19.88
1	470-380-07	8.5 (Kern County General Plan)	A	A	21.95
1	470-020-08	8.5 (Kern County General Plan)	A	A	2.31
2	470-080-15	8.5 (Kern County General Plan)	A	A	20.27
2	470-080-16	8.5 (Kern County General Plan)	PL RS MH	A	10.07
2	470-080-17	8.5 (Kern County General Plan)	PL RS MH	A	10.10
2	470-080-32	8.5 (Kern County General Plan)	PL RS MH	A	10.07
2	470-322-13	5.6 (Kern County General Plan)	A-1 MH	A	2.39
2	470-322-15	5.6 (Kern County General Plan)	A-1	A	9.96
4	470-302-24	8.5 (Kern County General Plan)	PL RS MH	A	2.59
4	470-302-25	8.5 (Kern County General Plan)	PL RS MH	A	2.62
4	470-302-26	8.5 (Kern County General Plan)	PL RS MH	A	2.52
5	470-030-01	8.5 (Kern County General Plan)	A	A	79.22
5	469-170-10	8.5 (Kern County General Plan)	A	A	10.02
5	469-170-18	8.5 (Kern County General Plan)	A	A	39.49
				Subtotal – Kern County	673.60
California City					
2	302-341-29	O/RA (California City General Plan)	O/RA	O/RA	168.79
2	302-342-01	O/RA (California City General Plan)	O/RA	O/RA	40.23
2	302-342-11	O/RA (California City General Plan)	O/RA	O/RA	2.67
2	302-342-12	O/RA (California City General Plan)	O/RA	O/RA	2.66
2	302-342-19	O/RA (California City General Plan)	O/RA	O/RA	29.69
2	302-342-25	O/RA (California City General Plan)	O/RA	O/RA	40.77
2	302-342-26	O/RA (California City General Plan)	O/RA	O/RA	39.89
2	302-342-27	O/RA (California City General Plan)	O/RA	O/RA	40.29
2	302-342-28	O/RA (California City General Plan)	O/RA	O/RA	40.68
2	302-290-03	O/RA (California City General Plan)	O/RA	O/RA	83.58
2	302-020-08	O/RA (California City General Plan)	O/RA	O/RA	40.17
2	302-020-09	O/RA (California City General Plan)	O/RA	O/RA	80.09

TABLE 1, CONTINUED

Site Number	APN	Map Code Designation	Existing Zoning	Proposed Zoning	Acres
2	302-020-11	O/RA (California City General Plan)	O/RA	O/RA	163.68
2	302-020-14	O/RA (California City General Plan)	O/RA	O/RA	40.99
2	302-020-15	O/RA (California City General Plan)	O/RA	O/RA	10.52
2	302-020-16	O/RA (California City General Plan)	O/RA	O/RA	10.15
2	302-020-17	O/RA (California City General Plan)	O/RA	O/RA	9.59
2	302-020-18	O/RA (California City General Plan)	O/RA	O/RA	9.98
2	302-470-14	O/RA (California City General Plan)	O/RA	O/RA	20.20
3	302-321-01	O/RA (California City General Plan)	O/RA	O/RA	160.93
3	302-322-01	O/RA (California City General Plan)	O/RA	O/RA	10.10
3	302-322-02	O/RA (California City General Plan)	O/RA	O/RA	10.09
3	302-322-04	O/RA (California City General Plan)	O/RA	O/RA	10.24
3	302-322-05	O/RA (California City General Plan)	O/RA	O/RA	10.28
3	302-322-06	O/RA (California City General Plan)	O/RA	O/RA	40.04
3	302-322-08	O/RA (California City General Plan)	O/RA	O/RA	10.33
3	302-322-09	O/RA (California City General Plan)	O/RA	O/RA	40.50
3	302-322-10	O/RA (California City General Plan)	O/RA	O/RA	10.27
3	302-322-11	O/RA (California City General Plan)	O/RA	O/RA	10.29
3	302-325-49	O/RA (California City General Plan)	O/RA	O/RA	9.74
3	302-330-33	O/RA (California City General Plan)	O/RA	O/RA	20.21
3	302-330-37	O/RA (California City General Plan)	O/RA	O/RA	20.38
3	302-305-15	O/RA (California City General Plan)	O/RA	O/RA	43.54
				Subtotal – California City	1,281.53
				Total	1,955.13

Kern County General Plan Map Code Designation:
8.5 (Resource Management, Min. 20 Acre Parcel Size)

Fremont Interim Rural Community Plan Map Code Designation:
5.6 (Min. 2.5 Gross Acres/Unit).

Kern County Zoning District:
A (Exclusive Agriculture); A-1 (Limited Agriculture); A-1 MH (Limited Agriculture, Mobile Home Combining); PL RS (Platted Lands, Residential Suburban Combining); and, PL RS MH (Platted Lands, Residential Suburban Combining, Mobile Home Combining).

California City General Plan Designation:
O/RA = Controlled Development, Public Parks and Recreation or Public Schools

California City Zoning District:
O/RA = Open Space/Residential/Agricultural

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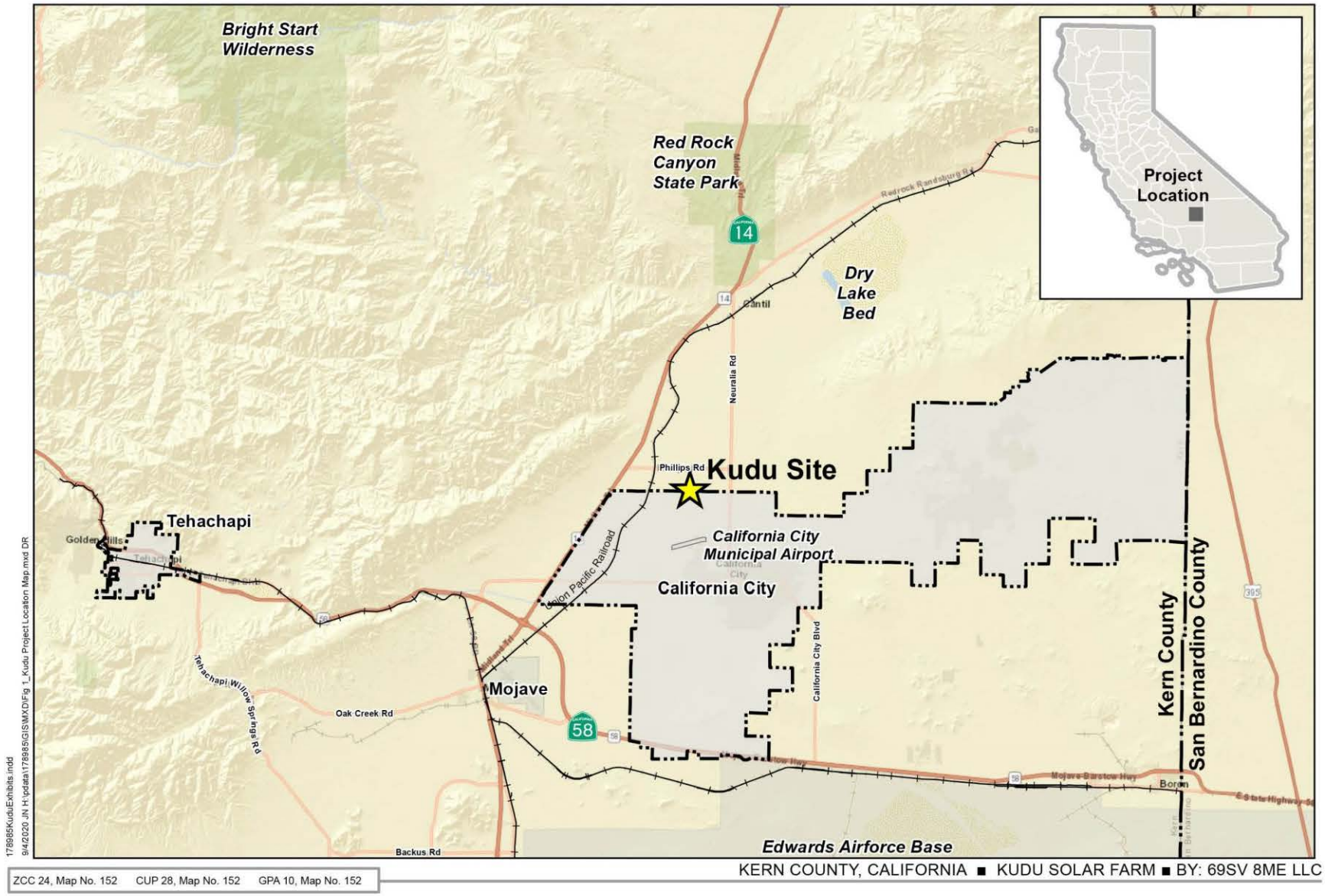
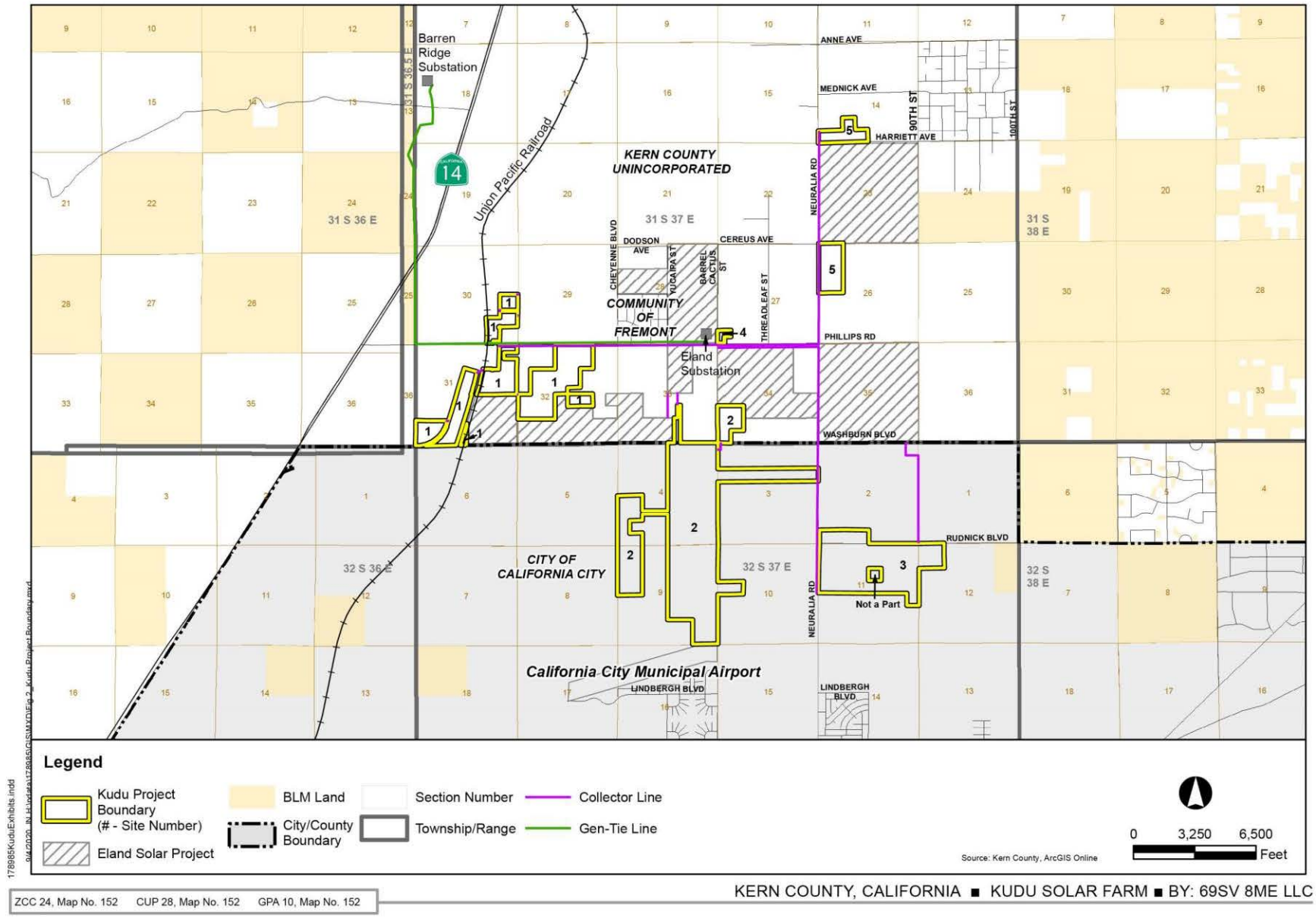


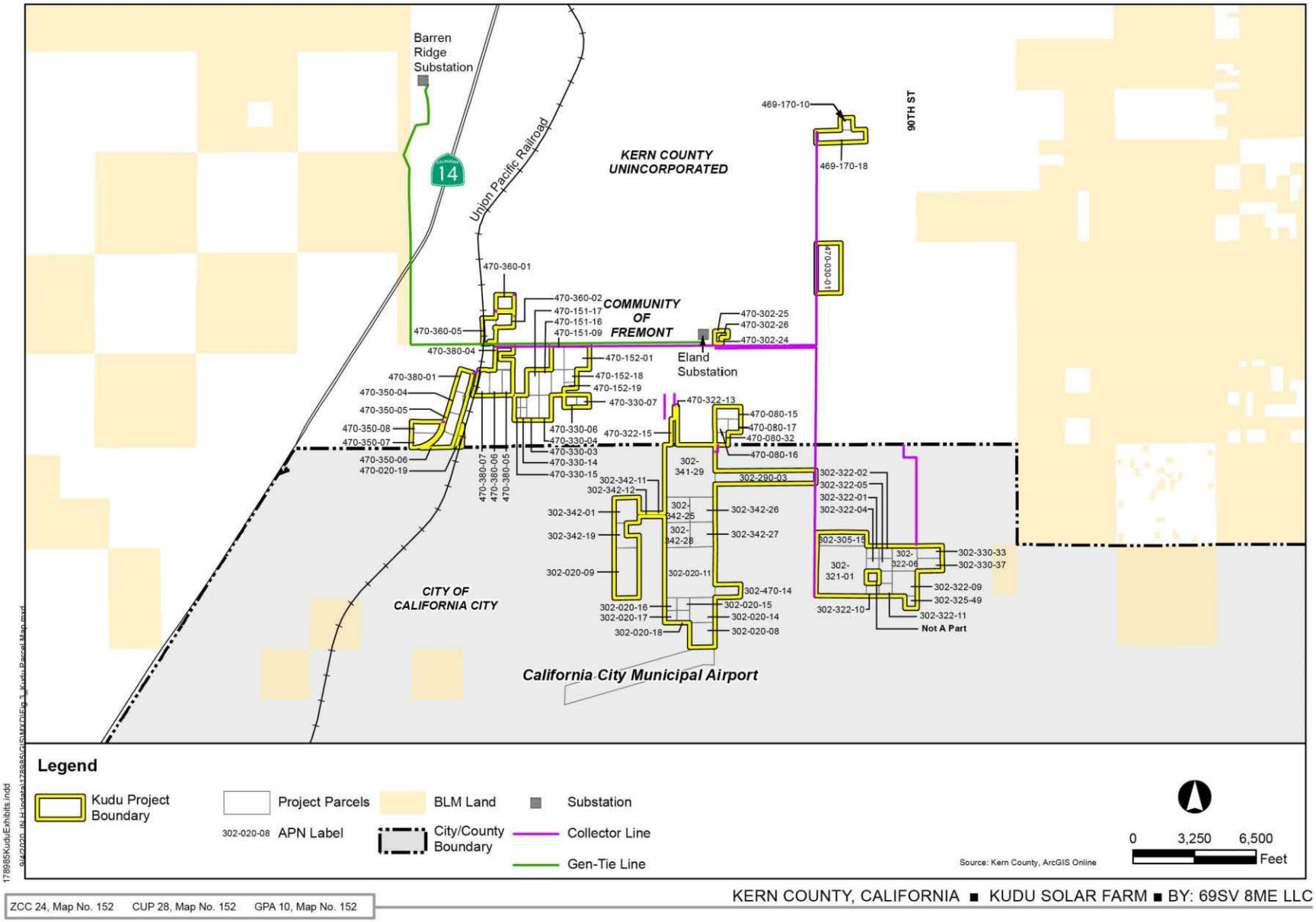
FIGURE 1
REGIONAL VICINITY MAP



ZCC 24, Map No. 152 CUP 28, Map No. 152 GPA 10, Map No. 152

KERN COUNTY, CALIFORNIA ■ KUDU SOLAR FARM ■ BY: 69SV 8ME LLC

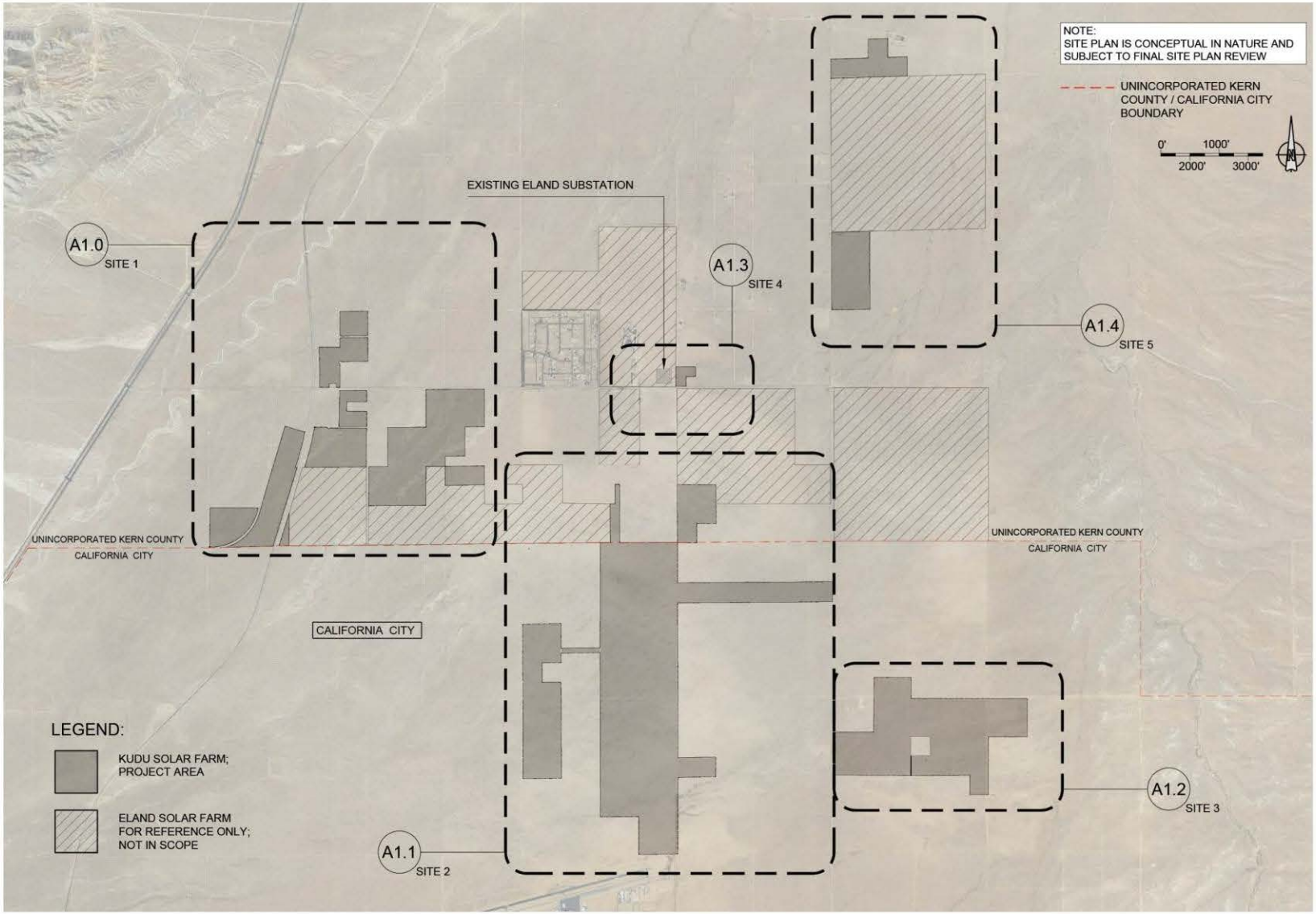
FIGURE 2
PROJECT SITE BOUNDARIES



ZCC 24, Map No. 152 CUP 28, Map No. 152 GPA 10, Map No. 152

KERN COUNTY, CALIFORNIA ■ KUDU SOLAR FARM ■ BY: 69SV 8ME LLC

FIGURE 3
PARCEL MAP



ZCC 24, Map No. 152 CUP 28, Map No. 152 GPA 10, Map No. 152

KERN COUNTY, CALIFORNIA ■ KUDU SOLAR FARM ■ BY: 69SV 8ME LLC

FIGURE 4A
OVERALL SITE PLAN

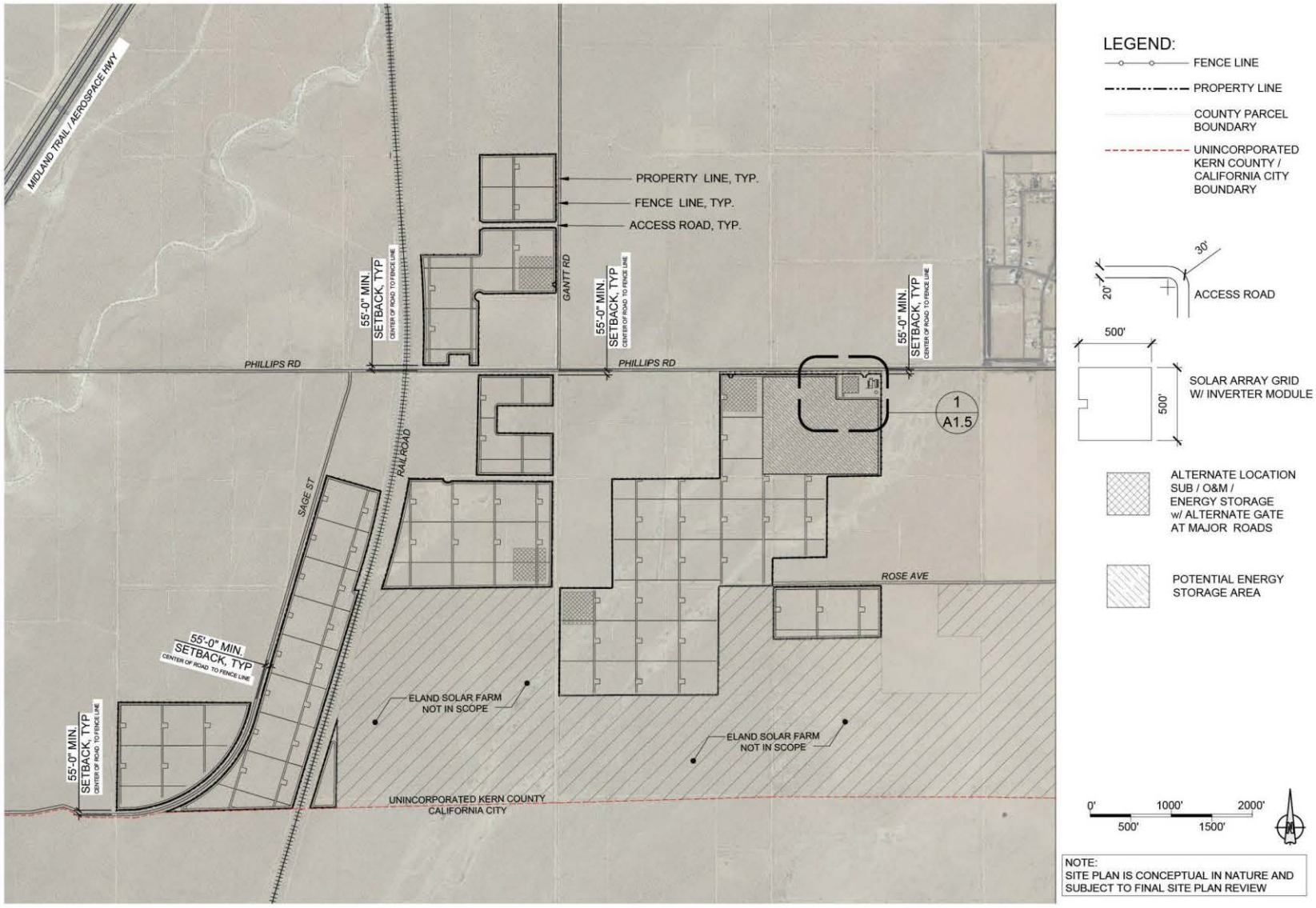
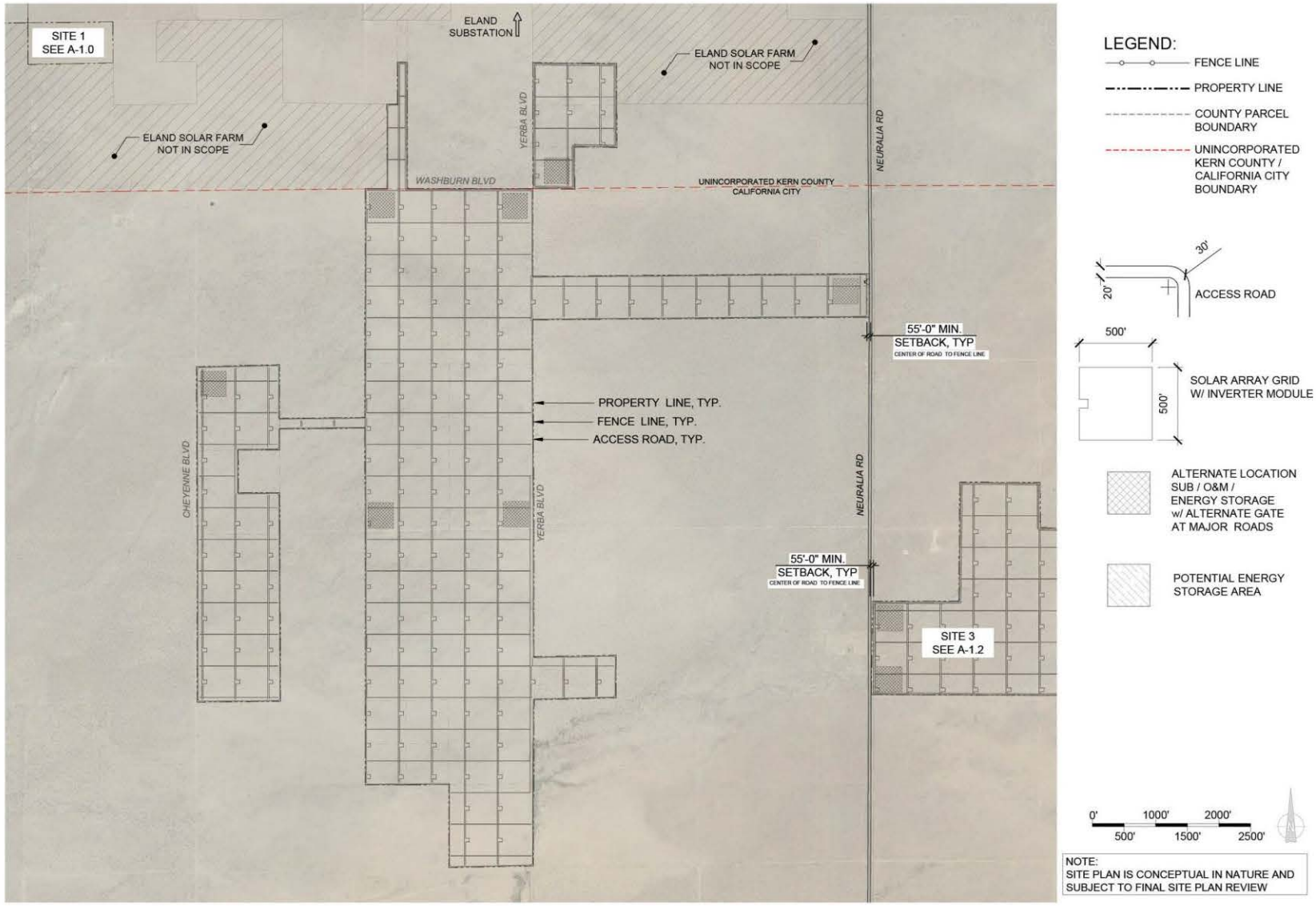


FIGURE 4B
PLAN VIEW – SITE 1



178985KuduExhibits.indd

ZCC 24, Map No. 152 CUP 28, Map No. 152 GPA 10, Map No. 152

KERN COUNTY, CALIFORNIA ■ KUDU SOLAR FARM ■ BY: 69SV 8ME LLC

FIGURE 4C
PLAN VIEW – SITE 2

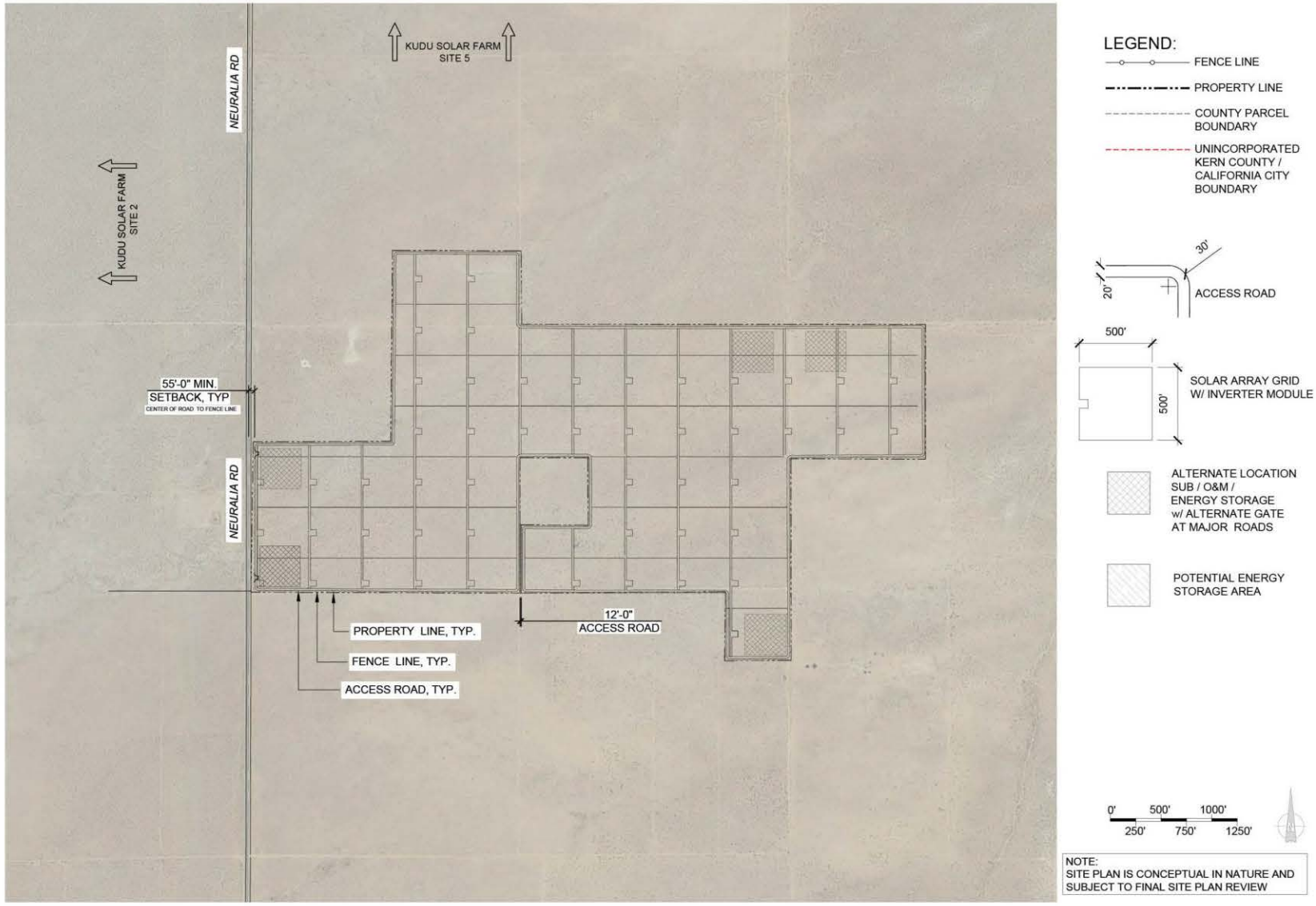


FIGURE 4D
PLAN VIEW – SITE 3

178985KuduExhibits.indd

ZCC 24, Map No. 152 CUP 28, Map No. 152 GPA 10, Map No. 152

KERN COUNTY, CALIFORNIA ■ KUDU SOLAR FARM ■ BY: 69SV 8ME LLC

FIGURE 4E
PLAN VIEW – SITE 4

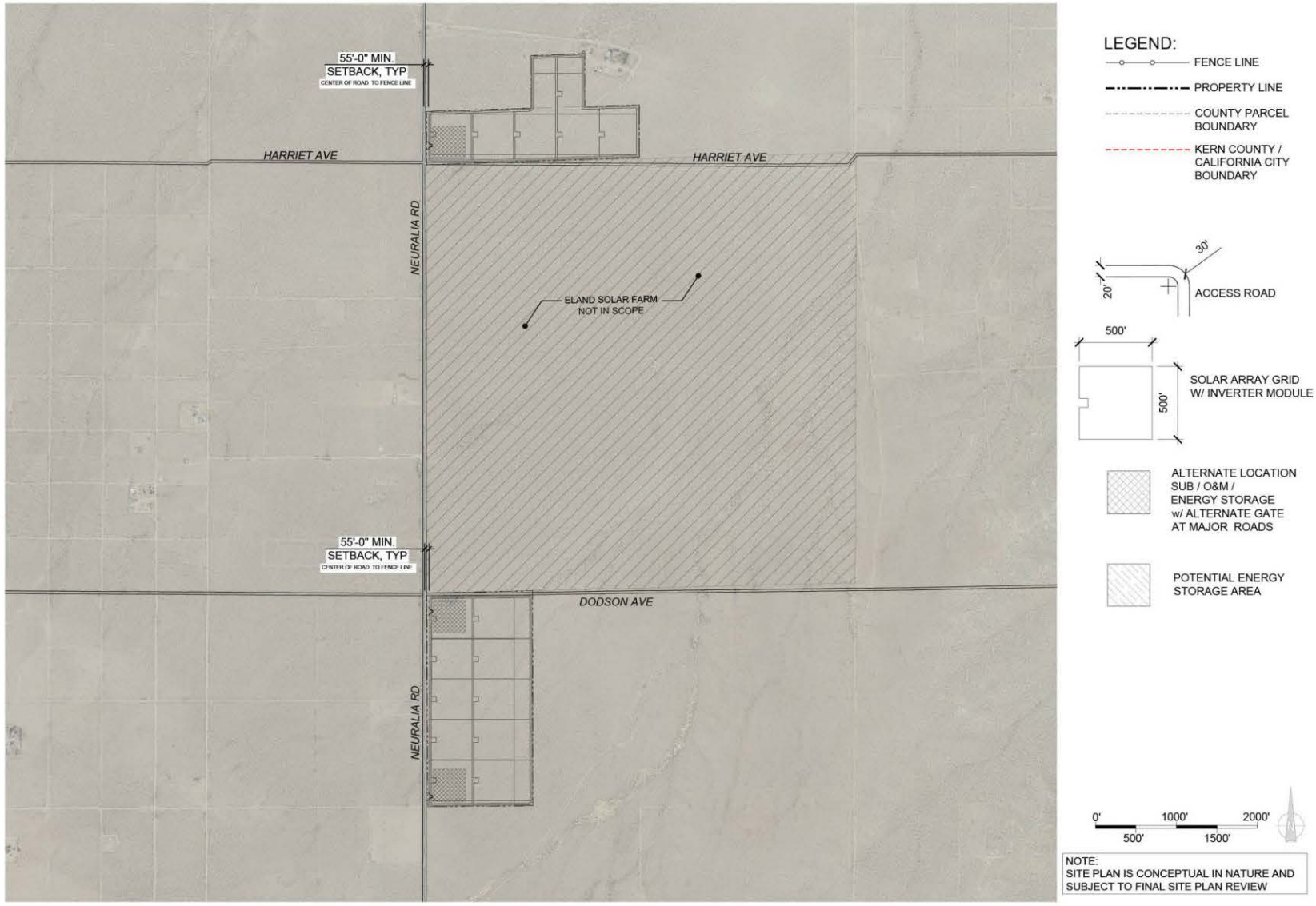


FIGURE 4F
PLAN VIEW – SITE 5

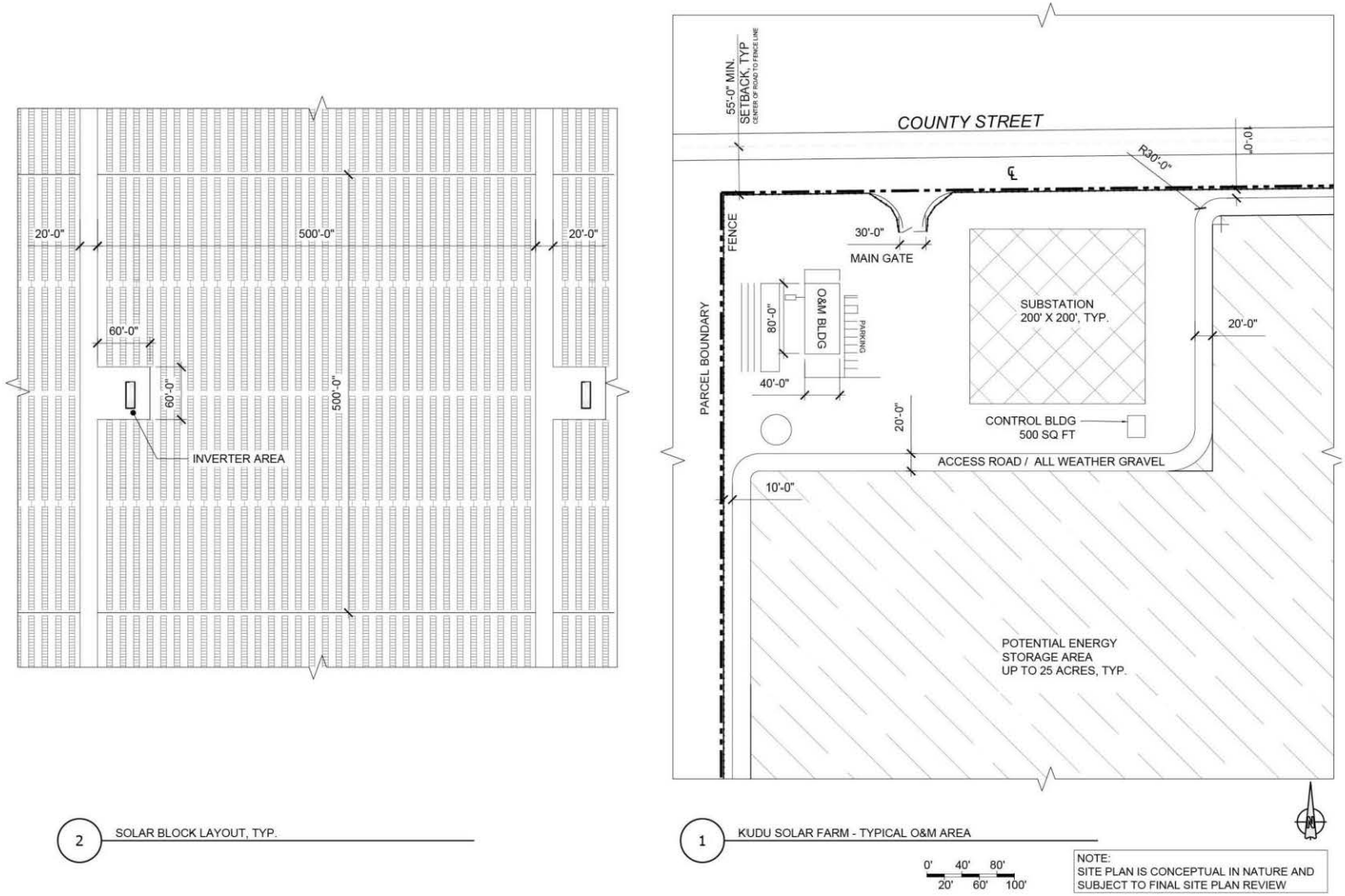


FIGURE 4G
TYPICAL SOLAR ARRAY AND O&M AREAS

1.2. Environmental Setting

The project site is located within the Fremont Valley, southwest of Koehn Dry Lake in the western portion of the Mojave Desert. The project site is transected by the east-west traversing Washburn Road and the Southern Pacific Railroad on its western boundary. The project site is adjacent to the approved Eland Solar Farm, south of the existing Springbok 1 and 2 Solar Farms, and southeast of the Los Angeles Department of Water and Power Beacon solar facility (refer to **Figure 1**, *Regional Vicinity Map*, and **Figure 5**, *Aerial Photograph*).

The Fremont Rural Community is located east of Site 1, north of Site 2, and west of Site 4 and consists predominantly of rural residential dwellings. A few miles north of the project site is the Honda Proving Ground, which is a 3,840-acre testing site for Honda and Acura new automobile and powersports products. To the west is State Route 14 and the Cinco Solar Farm and the Sierra Nevada Mountains farther to the west. To the south is the City of California City's airport and the developed portions of California City. To the east is the Eland Solar Farm, and at its closest point, Site 5 is located approximately one-mile west of the Desert Tortoise Research Natural Area (DTRNA).

Approximate elevations within the project site range from 2,174 feet above mean sea level (amsl) at the northeastern portion of the site, to roughly 2,460 feet amsl at the southeast portion of the project site. The project site is relatively flat and features numerous ephemeral desert drainages trending to the northeast, which ultimately drain into Koehn Dry Lake located to the northeast of the project site.

Landforms in the Fremont Valley include granite-derived alluvial fans and plains, low hills, washes, and an alkaline basin. The entire area drains in a northeasterly direction to Koehn Lake. Native vegetation onsite is typical of that found throughout the Mojave Desert, dominated by creosote bush and white bursage on slopes and plains and saltbush scrub in the alkaline basin. Many of the project parcels have been previously disturbed and/or cultivated. Currently, these areas include fallow agricultural fields and cleared parcels that were never put into agricultural production. Much of this fallowed land is still barren of native shrub cover and has been colonized by rubber rabbitbrush.

The Federal Emergency Management Agency (FEMA) delineates flood hazard areas on its Flood Insurance Rate Maps (FIRMs). Based on a review of the FIRMs for the project area, portions of the solar facility's Sites 2 and 3 and gen-tie line are mapped in 100-year (Zone A) floodplains. Zone A is defined as areas subject to inundation by the 1-percent-annual-chance flood event, generally determined using approximate methodologies. The rest of the project site is mapped as Zone X, which is defined as areas of minimal flood hazard that are outside of the Special Flood Hazard Area and beyond the limits of the 0.2-percent-annual-chance (500-year) flood (refer to **Figure 6,** *FEMA Map*).

The project site is not designated by the California Department of Conservation (DOC) as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland. Sites 1 through 5 are undeveloped with natural vegetation. There are no active agricultural lands or lands designated as important farmland located adjacent to or in the vicinity of the project site. Additionally, no lands affected by the project are subject to a Williamson Act Land Use contract, nor are they located within a Kern County Agricultural Preserve.

The project site is not within a mineral recovery area or within a designated mineral and petroleum resource site designated by the Kern County General Plan, nor is it identified as a mineral resource zone by the Department of Conservation's California Geologic Energy Management Division (CalGEM). The project site is not located within the County's NR (Natural Resources) or PE (Petroleum Extraction) Zone Districts.

The Kern County Fire Department and California City Fire Department would provide fire suppression and emergency medical services to the project area. The portion of the project site within unincorporated Kern County would be served by Station #14, located at 1773-1999 Mojave-Barstow Highway in the unincorporated community of Mojave. The portion of the project site within California City would be served by Station #85, located at 20890 Hacienda Boulevard in California City.

Law enforcement services in the project area are provided by the Kern County Sheriff's Department and California City Police Department. The portion of the project site within unincorporated Kern County would be served by the Mojave Substation, located at 1771 Highway 58 in Mojave. The portion of the project site within California City would be served by the police station located at 21130 Hacienda Boulevard in California City.

As shown on **Figure 7**, *Existing General Plan Designations – Kern County*, the southern portion of the project site is located within an area covered by the Kern County Airport Land Use Compatibility Plan (ALUCP) for the California City Municipal Airport. Site 2 of the project site is located immediately north of the California City Municipal Airport. Specifically, the southernmost portion of Site 2 is in "Compatibility Zone B1 – Approach/Departure Zone and Adjacent to Runway" (APN No. 302-020-08) and "Compatibility Zone C – Common Traffic Pattern." (APN No. 302-020-08, -09, -11, -14, -15, -16, -17, -18, and 302-470-14). Zone B1 is subject to substantial risk and substantial noise, and Compatibility Zone C is subject to limited risk and frequent noise intrusion.

As shown on **Figure 2**, *Project Site* Boundaries, Washburn Boulevard delineates the northern limits of the City of California City. The portion of the project site located north of Washburn Boulevard is within unincorporated territory and is governed by the Kern County General Plan. As shown on **Figure 7**, *Existing General Plan Designations – Kern County*, below, the project parcels located in unincorporated Kern County are designated by the Kern County General Plan as Map Code 8.5 (Resource Management, Min. 20 Acre Parcel Size) and by the Fremont Interim Rural Community Plan as Map Code 5.6 (Min. 2.5 Gross Acres/Unit). As Interim Rural Community Plans, including the Fremont Interim Rural Community Plan, are not official planning documents until formal Specific Plans have been adopted, projects within Interim Rural Community Plans are governed by the goals and policies of the Kern County General Plan that pertain to the area in question. As shown on **Figure 8A**, *Existing Zoning – Kern County*, below, the project parcels located in unincorporated Kern County have a zone classification of A (Exclusive Agriculture); A-1 (Limited Agriculture); A-1 MH (Limited Agriculture, Mobile Home Combining); PL RS (Platted Lands, Residential Suburban Combining); and, PL RS MH (Platted Lands, Residential Suburban Combining, Mobile Home Combining).

The portion of the project site located south of Washburn Boulevard is within the California City General Plan area. As shown on **Figure 10**, *Existing General Plan Designations – California City*, below, the project parcels in California City are designated by the General Plan as O/RA (Controlled Development, Public Parks & Recreation or Public Schools). As shown on **Figure 11**, *Existing Zoning – California City*, below, all of the project parcels in California City have a zone classification of RA (Residential/Agriculture).

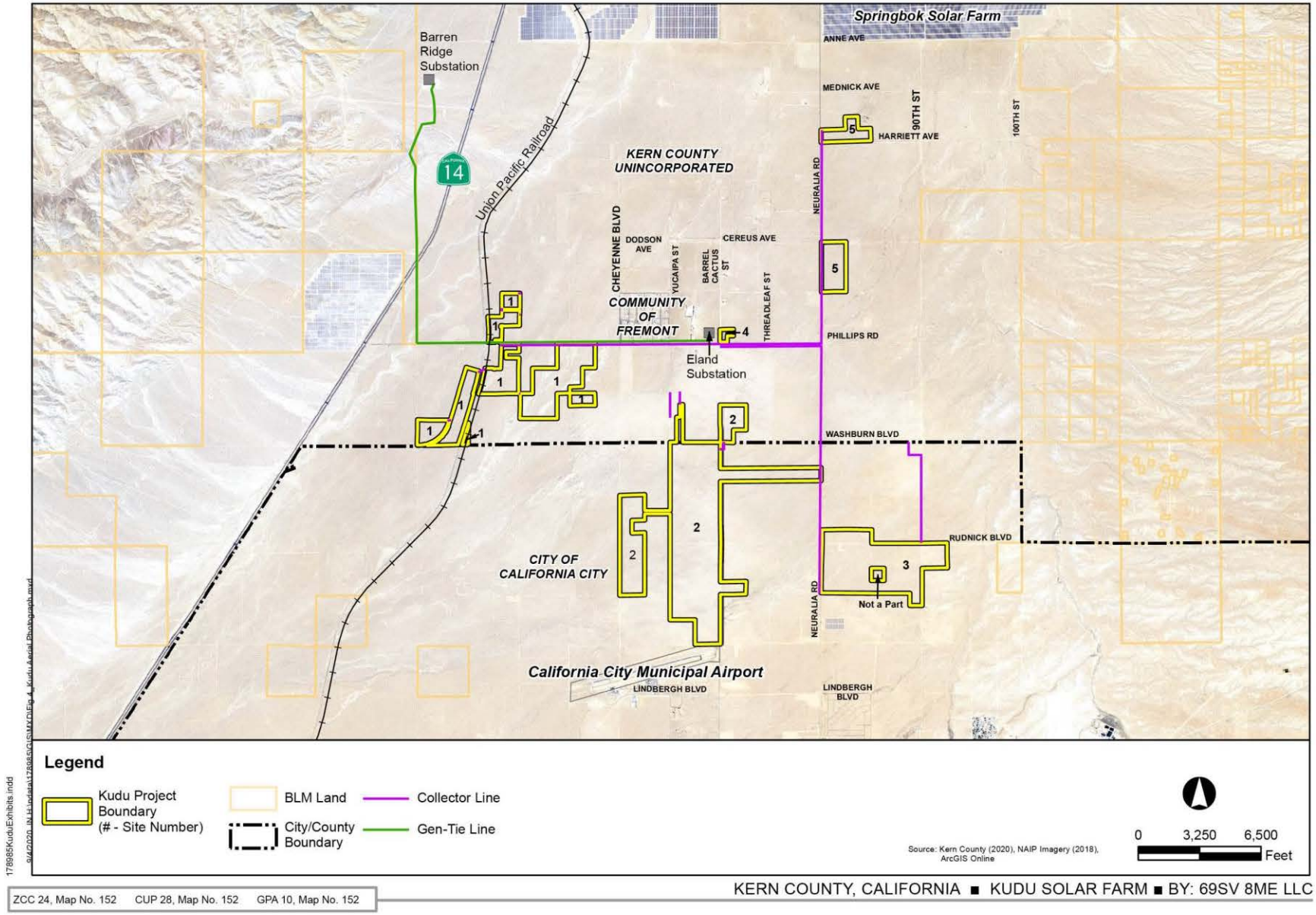


FIGURE 5
AERIAL PHOTOGRAPH

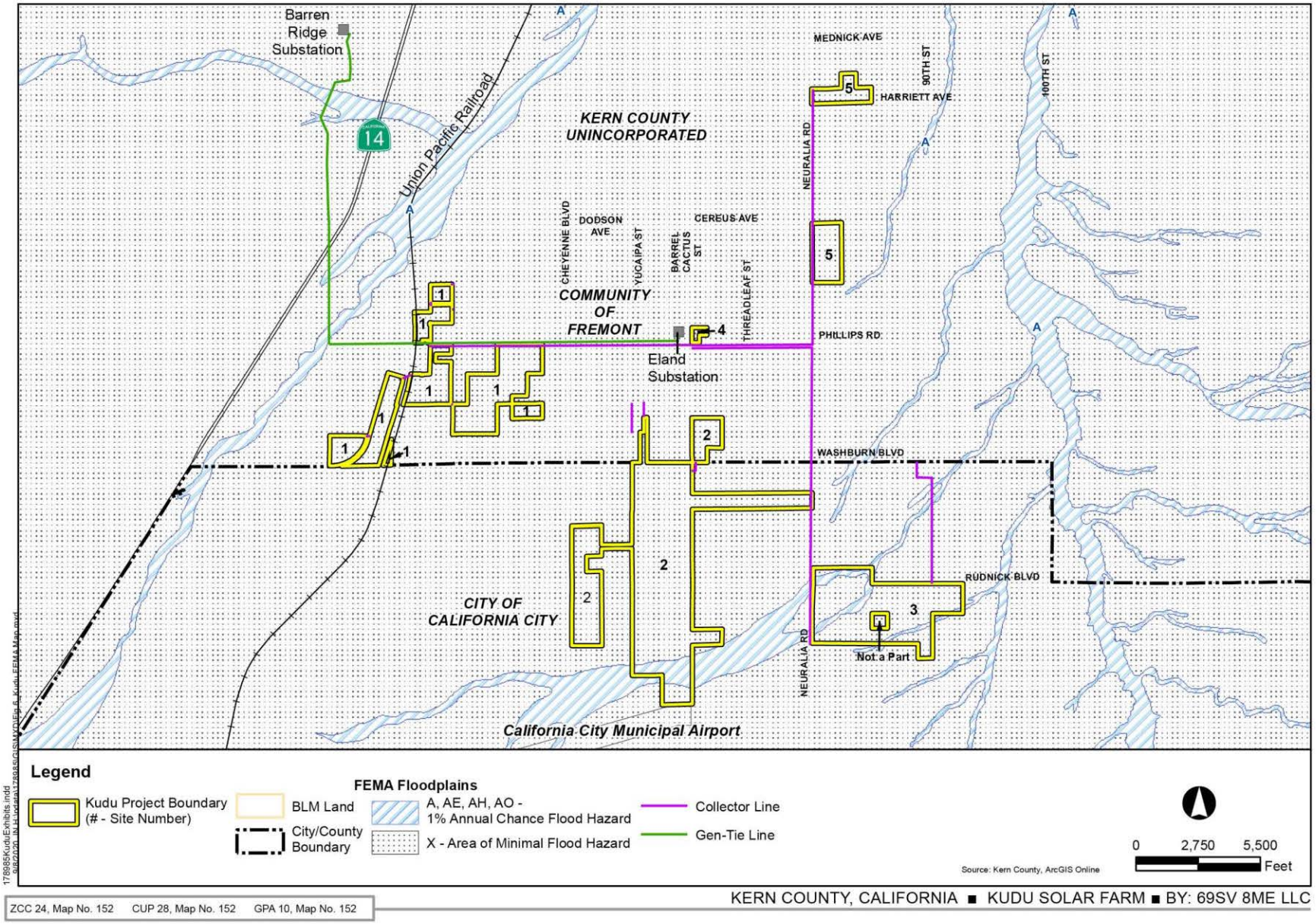


FIGURE 6
FEMA MAP

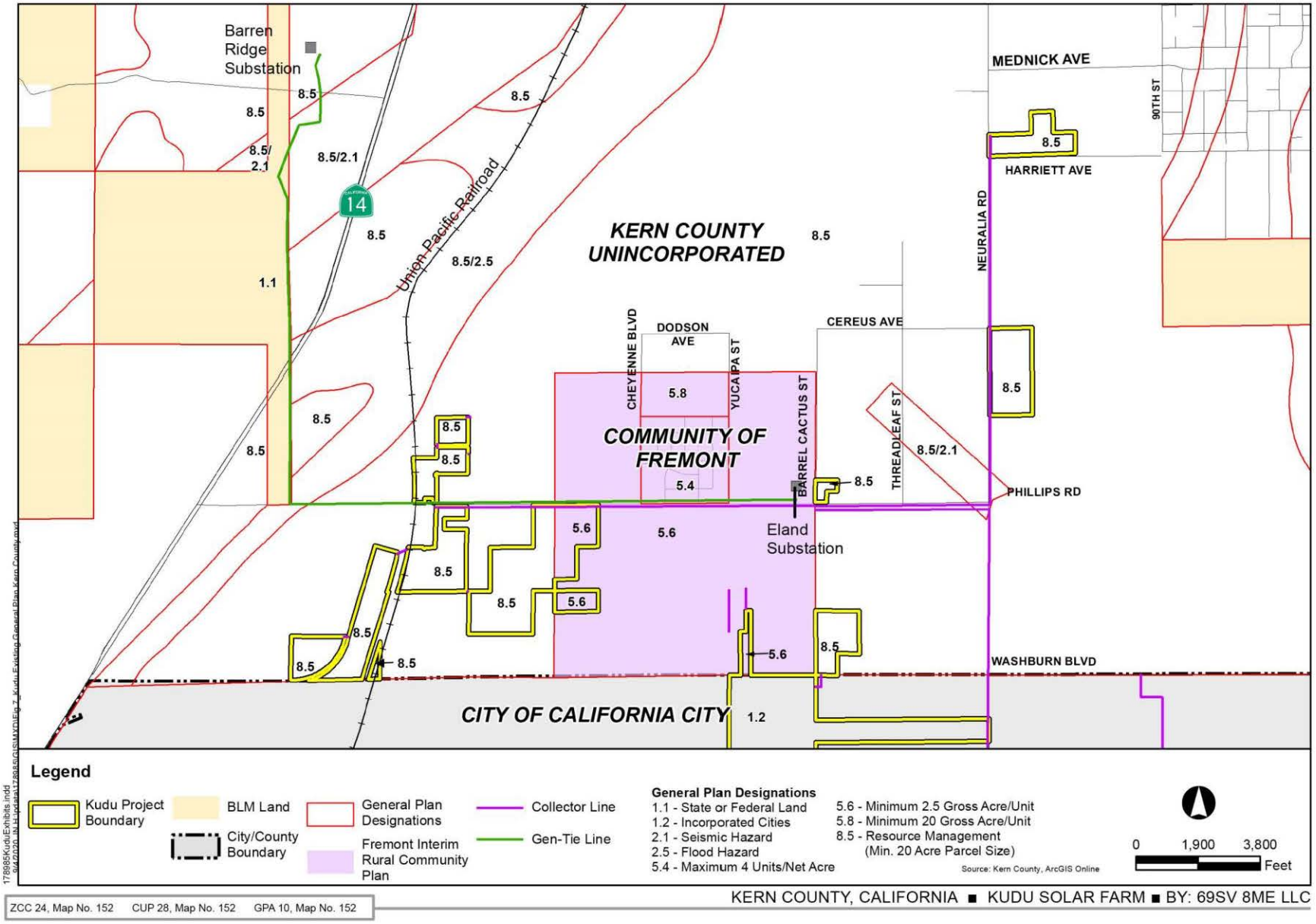


FIGURE 7
EXISTING GENERAL PLAN DESIGNATIONS – KERN COUNTY

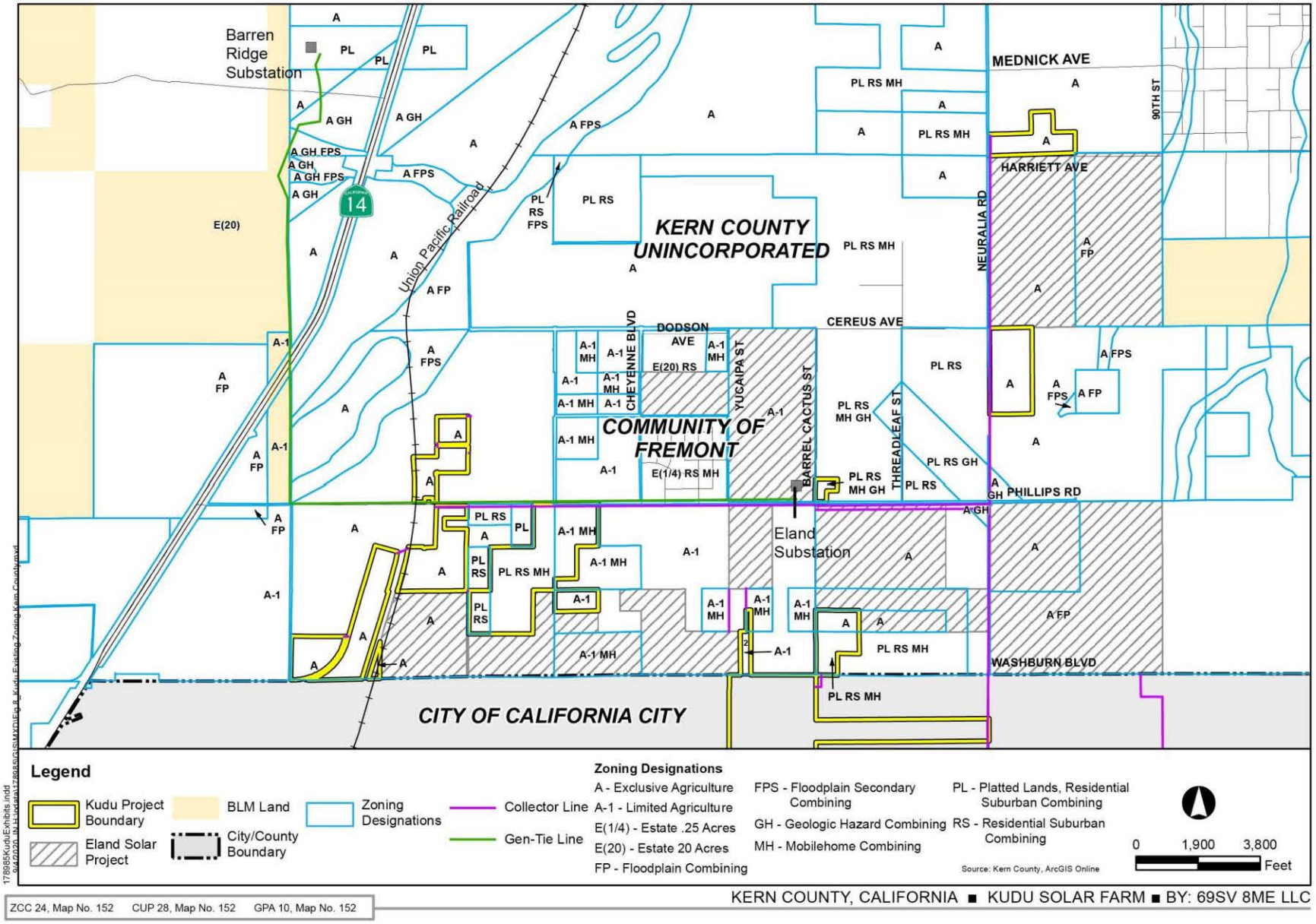


FIGURE 8A
EXISTING ZONING – KERN COUNTY

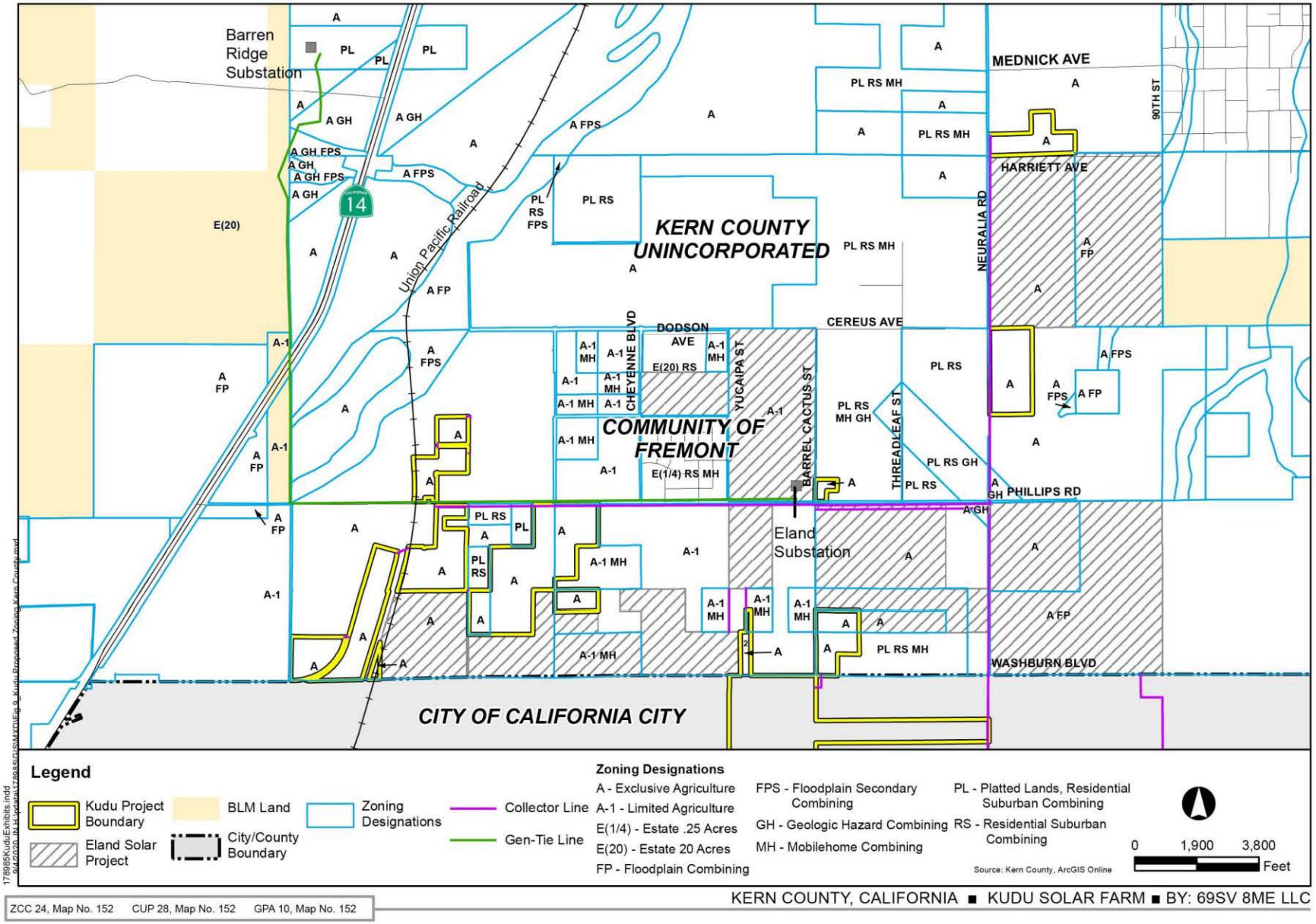


FIGURE 8B
PROPOSED ZONING – KERN COUNTY

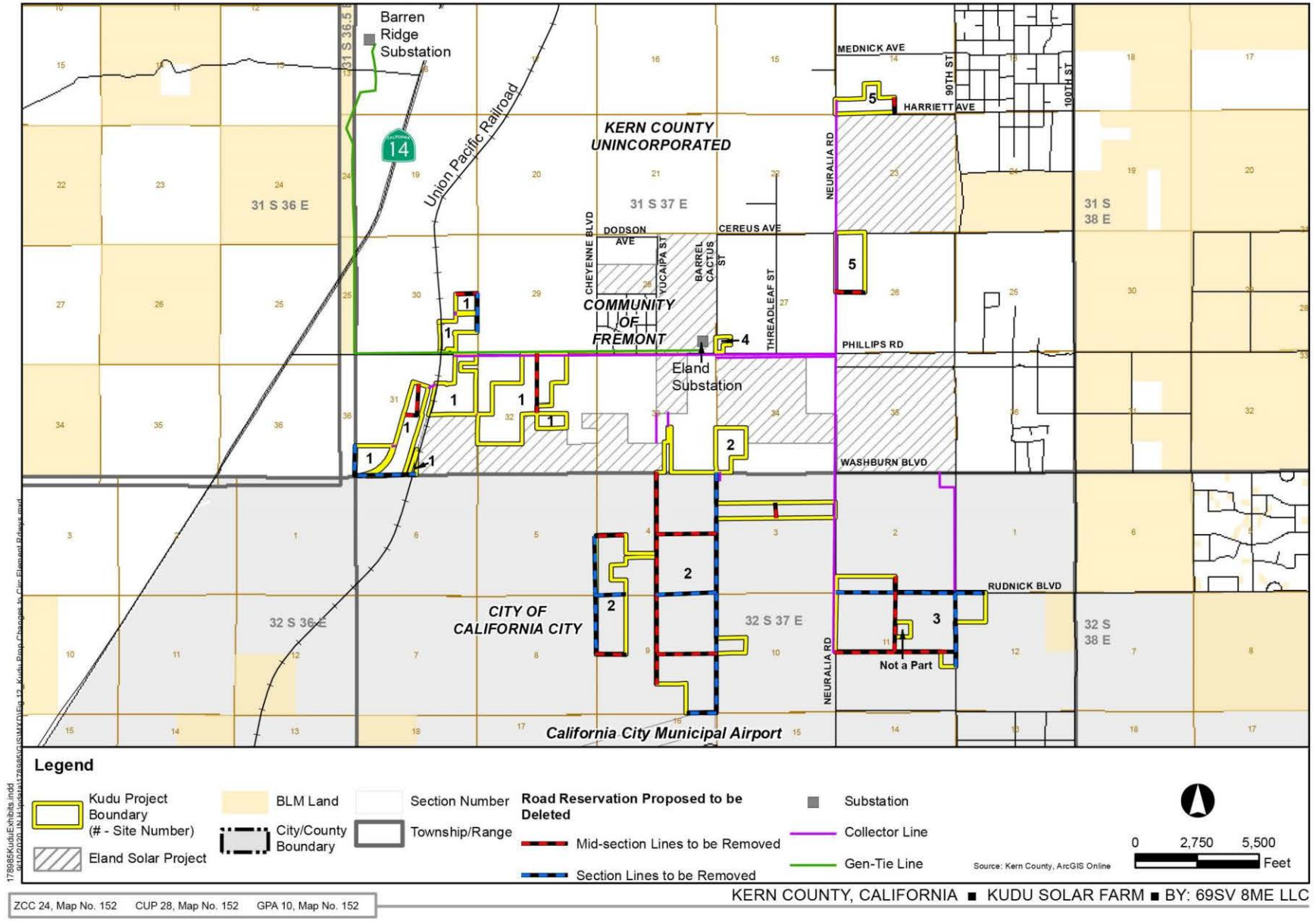


FIGURE 9
FUTURE ROAD RESERVATIONS TO BE DELETED

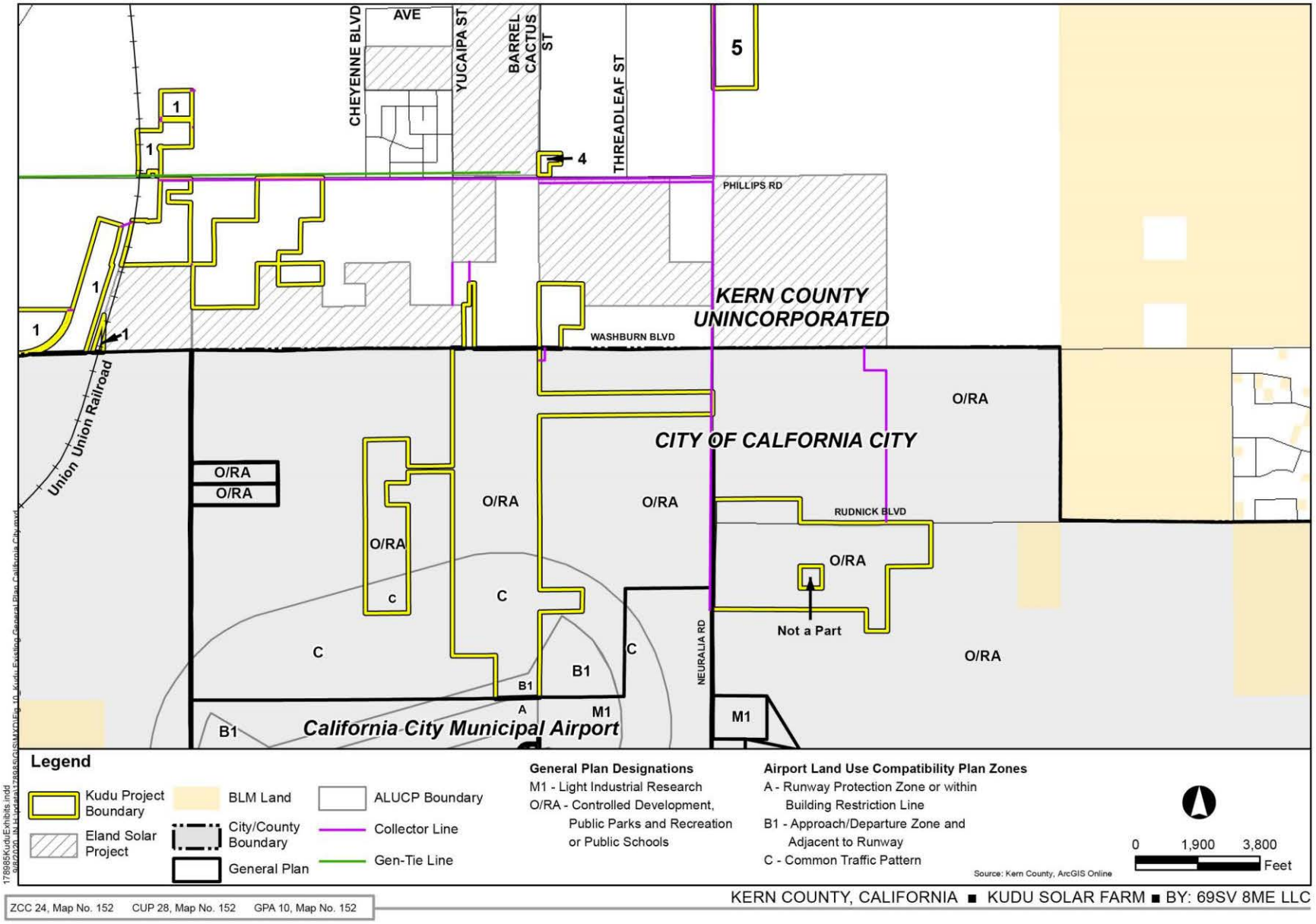


FIGURE 10
EXISTING GENERAL PLAN DESIGNATIONS – CALIFORNIA CITY

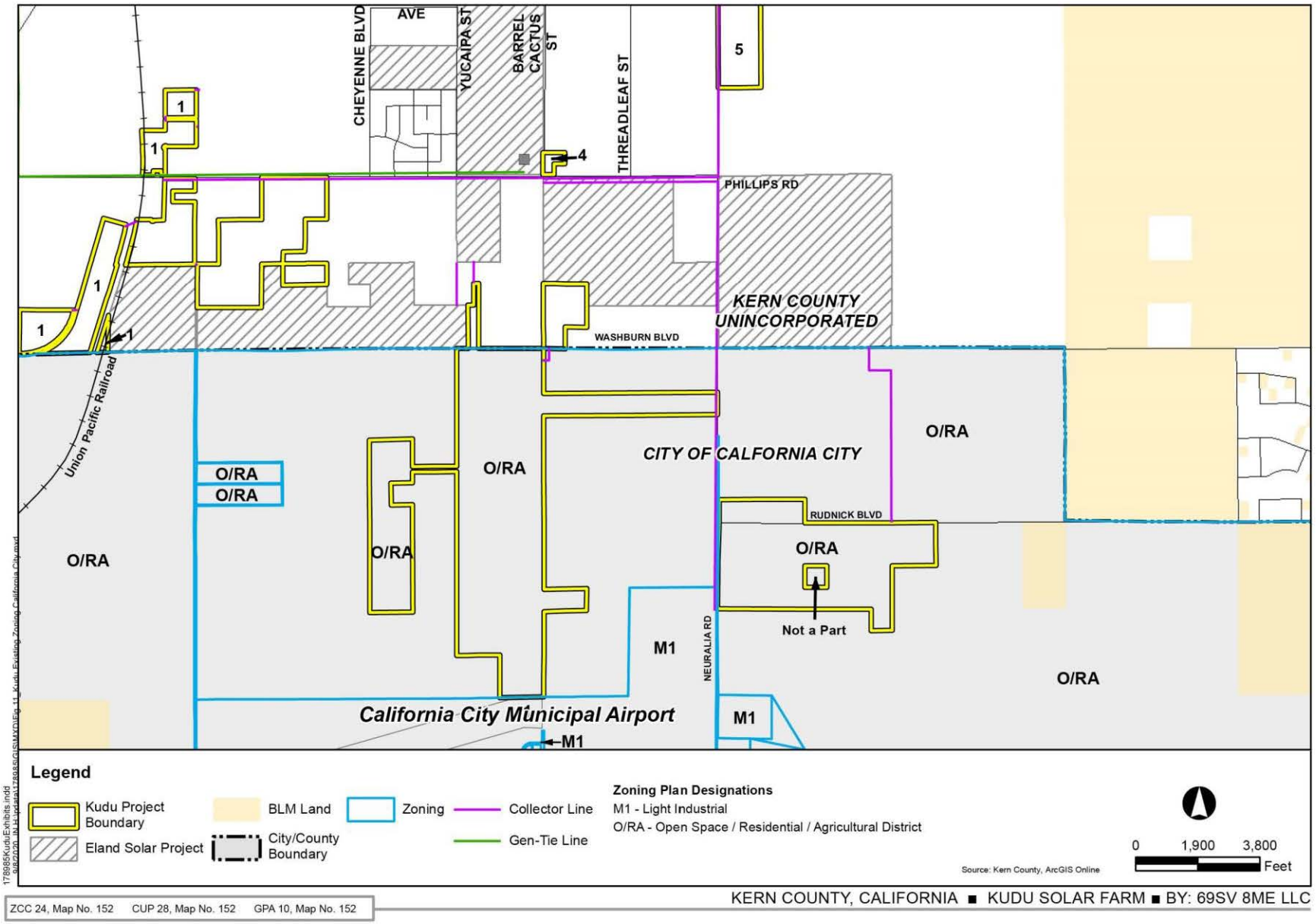


FIGURE 11
EXISTING ZONING – CALIFORNIA CITY

Surrounding Land Uses

Existing land uses in the surrounding area are primarily undeveloped. **Table 2**, *Existing On- and Off-site Land Use, General Plan Map Code Designations, and Zoning*, identifies the project site and surrounding land uses. The Fremont Rural Community is located east of Site 1, north of Site 2, and west of Site 4 and consists predominantly of rural residential dwellings. The northernmost project parcel (APN No. 469-170-10), located near the intersection of Neuralia Road and Harriet Avenue, is located immediately adjacent to a rural residential dwelling. The project site is adjacent to the approved constructed Eland Solar Farm, south of the existing Springbok 1 and 2 Solar Farms and southeast of the Los Angeles Department of Water and Power Beacon solar facility.

TABLE 2. EXISTING ON- AND OFF-SITE LAND USE, GENERAL AND INTERIM PLAN MAP CODE DESIGNATIONS, AND ZONING

Location	Existing Land Use	Map Code Designations	Existing Zoning
Kern County			
Project Site	Undeveloped	5.6 - Min. 2.5 Gross Acres/Unit (Fremont Interim Rural Community Plan) 8.5 - Resource Management, Min. 20 Acre Parcel Size (Kern County General Plan)	A (Exclusive Agriculture); A-1 (Limited Agriculture); A-1 MH (Limited Agriculture, Mobile Home Combining); PL RS (Platted Lands, Residential Suburban Combining); PL RS MH (Platted Lands, Residential Suburban Combining, Mobile Home Combining)
North	Undeveloped, sparse rural residential dwellings	5.4 - Min. 4 Units/Net Acre (Fremont Interim Rural Community Plan) 5.6 - Min. 2.5 Gross Acres/Unit (Fremont Interim Rural Community Plan) 5.8 - Min. 20 Gross Acres/Unit (Fremont Interim Rural Community Plan) 8.5 - Resource Management, Min. 20 Acre Parcel Size (Kern County General Plan) 8.5/2.1 - Resource Management, Min. 20 Acre Parcel Size/Seismic Hazard (Kern County General Plan) 8.5/2.5 - Resource Management, Min. 20 Acre Parcel Size/Flood Hazard (Kern County General Plan)	A (Exclusive Agriculture); FPS (Floodplain Secondary Combining); A-1 (Limited Agriculture); PL RS (Platted Lands, Residential Suburban Combining); FP (Floodplain Combining); MH (Mobile Home Combining); E(20) (Estate 20 Acres); GH (Geologic Hazard Combining)

TABLE 2, CONTINUED

Location	Existing Land Use	Map Code Designations	Existing Zoning
East	Undeveloped, sparse rural residential dwellings, BLM-Administered Land	8.5 - Resource Management, Min. 20 Acre Parcel Size (Kern County General Plan)	A (Exclusive Agriculture); FP (Floodplain Combining); FPS (Floodplain Secondary Combining; PL RS (Platted Lands, Residential Suburban Combining); MH (Mobile Home Combining); GH (Geologic Hazard Combining)
South	Undeveloped, California City Airport	1.2 - Incorporated Cities (Kern County General Plan)	California City
West	Undeveloped, State Route 14, BLM-Administered Land; Union Pacific Railroad	1.1 – State and Federal Land (Kern County General Plan) 1.2 - Incorporated Cities (Kern County General Plan) 8.5 - Resource Management, Min. 20 Acre Parcel Size (Kern County General Plan) 8.5/2.5 - Resource Management, Min. 20 Acre Parcel Size/Flood Hazard (Kern County General Plan)	A (Exclusive Agriculture); FP (Floodplain Combining); FPS (Floodplain Secondary Combining; A-1 (Limited Agriculture); E(20) (Estate 20 Acres); PL (Platted Lands); GH (Geologic Hazard Combining)
California City			
Project Site	Undeveloped	O/RA - Controlled Development, Public Parks & Recreation or Public Schools (California City General Plan)	O/RA (Open Space/Residential/Agricultural)
North	Undeveloped, sparse rural residential dwellings	O/RA - Controlled Development, Public Parks & Recreation or Public Schools (California City General Plan)	O/RA (Open Space/Residential/Agricultural); Kern County
East	Undeveloped, BLM-Administered Land	O/RA - Controlled Development, Public Parks & Recreation or Public Schools (California City General Plan)	O/RA (Open Space/Residential/Agricultural)
South	Undeveloped, California City Airport, scattered Industrial Development	O/RA - Controlled Development, Public Parks & Recreation or Public Schools (California City General Plan) M1 - Light Industrial and Research (California City General Plan)	O/RA (Open Space/Residential/Agricultural) M1 - Light Industrial
West	Undeveloped State Route 14, BLM-Administered Land	O/RA - Controlled Development, Public Parks & Recreation or Public Schools (California City General Plan)	O/RA (Open Space/Residential/Agricultural)

1.3. Project Description

Project Overview

The Kudu Solar Farm Project by 69SV 8ME LLC (project proponent), is a proposed photovoltaic solar facility and energy storage system capable of producing up to 500 MW of alternating current power and 600 MW hours of storage capacity on approximately 1,955.13 acres of privately owned land. The proposed project would be supported by a 230-kV gen-tie overhead and/or underground generation tie-line (gen-tie) from originating from the Eland substation and terminating at the Los Angeles Department of Water and Power's Barren Ridge Substation located approximately two miles to the northwest of the project site, or through an upgraded connection through Eland 1. The proposed project intends to share the Eland 1 Solar Project's gen-tie line and ROW, which will be accomplished by constructing the line conductor capable of supporting both projects. Construction of the gen-tie and substation will be done as part of the Eland 1 Solar Project, consistent with the conditions of approval outlined in that project's CUP(s). If the proposed project cannot share these facilities, a new gen-tie line would be developed within one of the routes previously analyzed in the Eland 1 Solar Supplemental Environmental Impact Report (State Clearinghouse No. 2012011029). The proposed project's permanent facilities would include solar arrays and inverters, service roads, a power collection system, communication cables, overhead and underground electrical switchyards, project substations, energy storage system(s), and operations and maintenance (O&M) facilities.

Implementation of the project as proposed includes the following requests. Refer to **Figure 7**, *Existing General Plan Designations – Kern County*; **Figure 8A**, *Existing Zoning – Kern County*; **Figure 8B**, *Proposed Zoning – Kern County*; **Figure 9,** *Future Road Reservations To Be Deleted*, **Figure 10**, *Existing General Plan Designations – California City*, and **Figure 11**, *Existing Zoning – California City*.

- Kern County
    - Zone Change Case No. 14, Map No. 152 as follows:
        - From A-1 (Limited Agriculture) to A (Exclusive Agriculture) for approximately 164.76 acres;
        - From A-1 MH (Limited Agriculture, Mobile Home Combining) to A for approximately 2.39 acres;
        - From PL RS (Platted Lands, Residential Suburban Combining) to A for approximately 10.29 acres; and
        - From PL RS MH (Platted Lands, Residential Suburban Combining, Mobile Home Combining) to A for approximately 7.73 acres.
    - Issuance of Conditional Use Permit No. 28, Map No. 152 to allow for the construction and operation , within the A (Exclusive Agriculture) pursuant to Section 19.12.030G of the Kern County Zoning Ordinance, of a 673.60-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 500 MW of alternating current power and 600 MW hours of storage capacity within the A (Exclusive Agriculture) pursuant to Section 19.12.030G of the Kern County Zoning Ordinance.

- General Plan Amendment No. 10, Map No. 152 to the Circulation Element of the Kern County General Plan to remove road reservations on section and mid-section lines within the Kern County project boundaries.

- City of California City (Responsible Agency)

  The City of California City is a Responsible Agency under CEQA. For the parcels within California City city limits, the City is will require that the applicant complete a Conditional Use Project (CUP) from the City to allow for the construction and operation of a solar facility, in the O/RA (Openspace/Residential Agricultural) zone (CUP 19-04)., of a 1,281.53-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 500 MW of alternating current power and 600 MW hours of storage capacity (CUP 19-04). At present, solar facilities are considered to be a permitted use only in industrial zoned areas in California City. The City is in the process of updating its zoning code to designate solar facilities as a compatible/permitted use in O/RA zoned districts. If deemed necessary by the City of California City, the project proponent may request a zone change from O/RA to M-1 (Light Industrial) for the portion of the facility located in California City. The project proponent has requested to remove the future section and mid-section lines for the portion of the project within the City of California City's jurisdiction. The City will determine during the CUP process (Sec. 9-2-2501 of the California City Municipal Code) what section lines will be required to be preserved and what ones will be removed.

As shown on **Figure 8B**, *Proposed Zoning – Kern County*, the project proponent has requested a change in zone classifications from A-1, A-1 MH, PL RS, and PL RS MH to A for 17 parcels, totaling approximately 185.17 acres. of the proposed project within Kern County. According to Kern County Zoning Ordinance 19.12.030G, solar energy electrical facilities are permitted within the A Zone District with the approval of a CUP.

The power generated on the project site would assist the State in complying with the Renewables Portfolio Standard under Senate Bill 350, which requires that by December 31, 2030, 50 percent of all electricity sold in California shall be generated from renewable energy sources. The power generated on the project site would be sold to California investor-owned utilities, municipalities, community choice aggregators, or other purchasers in furtherance of the goals of the California Renewable Energy Portfolio Standard. The proposed project has an anticipated operational life of up to 35 years. At the end of the proposed project's operational term, the project proponent would determine whether the project site should be decommissioned and deconstructed or if it would seek an extension of its CUP. If any portion of the project site is decommissioned, it would be converted to other uses in accordance with the applicable land use regulations in effect at that time.

1.4. Project Facilities, Construction, and Operations

Project Facilities

The combined project facilities would include the following main components, which are described in greater detail thereafter:

- PV Module Configuration
- Inverter Stations
- Energy Storage System
- Onsite Meteorological Station
- Operations and Maintenance Building
- Substation(s)
- Transmission Line
- Water Storage Tank(s)
- Project Site Security and Fencing
- Project Site Lighting

Solar PV Module Configuration

The proposed project would utilize photovoltaic panels or modules (including but not limited to concentrated photovoltaic technology) on mounting frameworks to convert sunlight directly into electricity. Individual panels would be installed on either fixed-tilt or tracker mount systems (single- or dual-axis, using galvanized steel or aluminum). If the panels are configured for fixed-tilt, the panels would be oriented toward the south. For tracking configurations, the panels would rotate to follow the sun over the course of the day. Although the panels could stand up to 20 feet high, depending on the mounting system used and on County building codes, panels are expected to remain between 6 and 8 feet high. The foundations for the mounting structures can extend up to 10 feet below ground, depending on the structure, soil conditions, and wind loads, and may be encased in concrete or utilize small concrete footings. Final solar panel layout and spacing would be optimized for project area characteristics and the desired energy production profile.

The solar array fields would be arranged in groups called “blocks” with inverter stations generally located centrally within the blocks. Blocks would produce direct electrical current (DC), which is converted to alternating electrical current (AC) at the inverter stations. DC current produced at the blocks would be transmitted to the inverters via electrical cables/conductors. Internal access road would be provided (within each block) to facilitate maintenance work.

Collection, Inverter, and Transformer Systems

Photovoltaic energy is delivered via cable to inverter stations, generally located near the center of each block of solar panels. Inverter stations are typically comprised of one or more inverter modules with a rated power of up to 7.5 MW each, a unit transformer, and voltage switch gear. The unit transformer and voltage

switch gear are housed in steel enclosures, while the inverter module(s) are housed in cabinets. Depending on the vendor selected, the inverter station may lie within an enclosed or canopied metal structure, typically on a skid or concrete mounted pad.

Energy Storage System

The proposed project may include one or more Energy Storage Systems (ESS), located at or near a substation/switchyard (onsite or shared) and/or at the inverter stations, but possibly elsewhere onsite. Such large-scale ESSs would be up to 600 MW-AC in capacity and up to 25 acres in total area. ESS consist of modular and scalable battery packs and battery control systems that conform to U.S. national safety standards.

The ESS modules, which could include commercially available lithium or flow batteries, typically consist of standard International Organization for Standardization containers (approximately 40 feet in length by 8 feet in width by 8 feet in height) housed in pad- or post-mounted, stackable metal structures, but may also be housed in a dedicated building(s) in compliance with applicable regulations. The maximum height of a dedicated structure is not expected to exceed 25 feet. The actual dimensions and number of energy storage modules and structures vary depending on the application, supplier, and configuration chosen, as well as on offtaker/power purchase agreement requirements and on County building standards. The proposed project may share an ESS with one or more nearby solar projects or may operate one or more standalone ESS facilities within the project site.

The ESS would be unmanned, remotely controlled containers and periodically inspected for maintenance purposes. The ESS would have a fire rating in conformance with Kern County and national ESS fire standard NFPA 855 and specialized fire suppression systems would be installed for each of the battery compartments, where required by NFPA 855 and UL9540A standards.

Onsite Meteorological Station

A solar meteorological station would be located on-site, the location of which would be determined at final project design. The meteorological station would include solar energy (irradiance) meters, in addition to an air temperature sensor and wind anemometer. It is anticipated that the maximum height of this equipment would be up to 20 feet.

Operations and Maintenance (O&M) Building

The proposed project may include an O&M building of approximately 40 feet by 80 feet in size, up to 15 feet high, with associated, unpaved on-site parking. The O&M building would be steel framed, with metal siding and roof panels. The O&M building may include the following:

- Office
- Repair building/parts storage
- Control room
- Restroom

Septic tank and leach field, roads, driveways, and parking lot entrances would be constructed in accordance with Kern County and California City improvement standards. Parking spaces and walkways would be constructed in accordance with all California Accessibility Regulations.

The proposed project may share O&M facilities with one or more nearby solar projects in the area and/or may be remotely operated. Any unused O&M areas onsite may be covered by solar panels.

Substation(s)

Output from the inverter stations would be transferred via electrical conduits and electrical conductor wires to the Eland Substation. The proposed project and any associated ESS would have their own dedicated substation equipment located either within the Eland Substation footprint, as described in the Eland 1 EIR. Dedicated equipment may incorporate several components, including auxiliary power transformers, distribution cabinets, revenue metering systems, microwave transmission tower, and voltage switch gear. Each substation would occupy an area of approximately five acres, secured separately by a chain-link fence. The final location(s) would be determined before issuance of building permits.

Substations typically include a small control building (roughly 500 square feet) standing approximately 10 feet tall. The building is either prefabricated concrete or steel housing with rooms for the voltage switch gear and the metering equipment, a room for the station supply transformer, and a separate control technology room in which the main computer, the intrusion detection system, and the main distribution equipment are housed. Components of this building (e.g., control technology room and intrusion detection system) may alternatively be located at the O&M building(s).

Generation-Transmission Line

From the proposed project's substation(s), power would be transmitted to the Los Angeles Department of Water and Power's Barren Ridge Substation via a 230-kV overhead and/or underground gen-tie line. The proposed project intends to share the Eland gen-tie line and right of way (ROW), which may require stringing additional line on the Eland transmission structures or increasing the capacity of the Eland gen-tie by reconductoring the line with thicker cable. As needed, the Eland 1 gen-tie will be sized to accommodate the proposed project. If the proposed project cannot share these facilities, a new gen-tie line would be developed within one of the routes previously analyzed in the Eland Solar Project Supplemental Environmental Impact Report (State Clearinghouse No. 2012011029).

Site Access

Construction and operation traffic would access the project site from Phillips Road, Gantt Road, and Neuralia Road, or through the Eland project site. The proposed project would require driveway improvements, to be designed and constructed per County and City code and regulations. Any off-site roadway improvements would be constructed in conformance with Caltrans and/or County and/or City code and regulations, as necessary and applicable.

Water Storage Tank(s)

One or more aboveground water storage tanks with a total capacity of up to 50,000 gallons, may be placed onsite near the O&M building. The storage tank(s) would be constructed of a concrete pad and plastic structure and would have the appropriate fire department connections to be used for fire suppression purposes.

Project Site Security and Fencing

The project site(s) would be enclosed within a chain-link fence, with barbed wire, measuring up to 8 feet in height (from finished grade). An intrusion alarm system comprised of sensor cables integrated into the perimeter fence, intrusion detection cabinets placed approximately every 1,500 feet along the perimeter fence, and an intrusions control unit, located either in the substation control room or at the O&M building, or similar technology, may be installed. Additionally, the proposed project may include additional security measures including, but not limited to, barbed wire, low voltage fencing with warning reflective signage, controlled access points, security alarms, security camera systems, sensor lights, and security guard vehicle patrols to deter trespassing and/or unauthorized activities that could interfere with operation of the proposed project.

Controlled access gates would be maintained at the main entrances to the project site. Project access would be provided to offsite emergency response teams that respond in the event of an "after-hours" emergency. Enclosure gates would be manually operated with a key provided in an identified key box location.

Project Site Lighting

Lighting used onsite would be minimal and is anticipated to be installed at the access gates, substation(s), O&M building(s), and inverters to allow for access and emergency maintenance. Site lighting may include motion sensor lights for security purposes. All project site lighting would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties as required by Kern County Ordinance (Chapter 19.81) – Outdoor Lighting – Dark Skies requirements. Lighting used onsite would be of the lowest intensity foot-candle level, in compliance with any applicable regulations, measured at the property line after dark.

Construction Activities

The construction period for the proposed project from site preparation through construction and testing is expected to commence as early as 4th quarter 2021 and would last for approximately 12 to 18 months.

Construction of the proposed project would include the following activities:

- Site preparation
- Access and internal circulation roads
- Grading and earthwork
- Concrete foundations
- Structural steel work
- Panel installation
- Electrical/instrumentation work
- Collector line installation
- Stormwater management facilities

- Architecture and landscaping, if required
- Gen-tie line(s)

Construction traffic would access the project site from Philips Road, Gantt Road, and Neuralia Road, or through the Eland project site. It is estimated that up to 1,000 workers per day (during peak construction periods) and an as yet undetermined number of large trucks per day would be required during construction of the proposed project. At this time, it has not been determined whether construction workers would commute individually to one or more parking areas within the project site or whether some form of a shuttle system to transport larger groups of workers to dedicated drop-off areas would be provided. All staging of equipment and personnel would occur within the project footprint.

Construction activities would comply with Kern County and California City noise ordinances. Heavy construction is expected to occur between 6:00 am and 5:00 pm, Monday through Friday. If weekend work is required, construction will occur between 8:00 am and 9:00 pm. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Low-level noise activities may potentially occur between the hours of 10:00 pm and 7:00 am as long as the noise is below County and City noise standards. Nighttime activities could potentially include, but are not limited to, refueling equipment, staging material for the following day's construction activities, quality assurance/control, and commissioning.

Materials and supplies would be delivered to the project site by truck. Truck deliveries would normally occur during daylight hours; however, there could be offloading and/or transporting to the project site on weekends and during evening hours.

Earthmoving activities are expected to be limited to the construction of the access roads, O&M building(s), substation(s), water storage tank, construction of solar panel foundation supports, ESS, and stormwater protection or storage (detention) facilities. Final grading may include revegetation with low-lying grass or applying earth-binding materials to disturbed areas.

Construction Water Use

During construction, water would be required for common construction-related purposes, including but not limited to dust suppression, soil compaction, and grading. Total water usage during construction is not expected to exceed 400 acre-feet. Water demand would be the same during normal or dry years. It is anticipated that water would be obtained from new or existing on-site wells. Alternatively, water may be obtained from one or more off-site source(s) and delivered to the project site via truck. If off-site water is used, it would likely be obtained from one of the nearby Springbok projects, the Eland Project, or from a commercial source. Temporary, portable water tanks may be placed on site to store water for construction purposes. If the Applicant determines that off-site water would be used, the Applicant would submit evidence of an agreement to provide sufficient water quantities from the proposed off-site water purveyor(s). Portable restroom facilities would be provided to the workers during construction.

Project Operations and Maintenance Activities

Once the Project is constructed, operations and maintenance would generally be limited to the following:

- Cleaning of PV panels
- Monitoring electricity generation

- Providing site security
- Facility maintenance - replacing or repairing inverters, wiring, PV modules, fences, roads, and gen-tie facilities

The facility would operate seven days a week, 24 hours a day, generating electricity during normal daylight hours when the solar energy is available. Maintenance activities may occur seven days a week, 24 hours a day to ensure PV panel output when solar energy is available.

Work Force

It is expected that the Project would require an operational staff of approximately 20 full-time employees. Typically, the majority of the staff would work during the day shift (sunrise to sunset) and the remainder during the night shifts and weekend. Each employee shift would consist of approximately 5 persons, stationed at the O&M Building. As noted earlier, it is possible that the Project would share O&M, substation, ESS, and/or transmission facilities with one or more nearby projects (such as Eland 1). In such a scenario, the projects would share personnel, thereby potentially reducing the Project's on-site staff.

Water Usage

Water demand for panel washing and O&M domestic use (i.e. sinks and lavatories, and facilities maintenance) is not expected to exceed 50 acre-feet per year. It is anticipated that water would be obtained from new or existing on-site wells. Alternatively, water may be obtained from one or more off-site source(s) and delivered to the project site via truck. If off-site water is used, it would likely be obtained from one of the nearby Springbok projects, the Eland Project, or from a commercial source. If the Applicant determines that off-site water would be used, the Applicant would submit evidence of an agreement to provide sufficient water quantities from the proposed off-site water purveyor(s). A small water treatment system, consisting of a small filtration or reverse osmosis system, may be installed adjacent to the O&M Building to provide deionized water for panel washing.

Project Features and Best Management Practices

The following sections describe standard project features and best management practices that would be applied during construction and long-term operation of the project to maintain safety and minimize or avoid environmental impacts.

Waste and Hazardous Materials Management

The proposed project would have minimal levels of materials on-site that have been defined as hazardous under 40 CFR, Part 261. The following materials are expected to be used during the construction, operation, and long-term maintenance of the proposed project:

- Insulating oil – used for electrical equipment
- Lubricating oil – used for maintenance vehicles
- Various solvents/detergents – equipment cleaning
- Gasoline – used for maintenance vehicles

Hazardous materials and wastes will be managed, used, handled, stored, and transported in accordance with applicable local and State regulations. All hazardous wastes will be maintained at quantities below the threshold requiring a Hazardous Material Management Program (HMMP) (one 55-gallon drum). Though not expected, should any on-site storage of hazardous materials exceed one 55-gallon drum, an HMMP would be prepared and implemented.

Spill Prevention and Containment

During construction, above ground storage tanks will be used as temporary fueling stations. Temporary tanks will have double containment, less than 55 gallons of hazardous materials would be stored on-site during operations. Spill prevention and containment for construction and operation of the proposed project will adhere to the Environmental Protection Agency's (EPA) guidance on Spill Prevention Control and Countermeasures (SPCC).

Wastewater/Septic System

During construction, portable toilets and washing stations will be used based on the number of employees onsite. These units will be regularly serviced. During operations, an on-site septic tank and leach field would be used at the O&M building to dispose of sanitary wastewater, designed to meet operation and maintenance guidelines required by local laws, ordinances, regulations, and standards.

Inert Solids

Inert solid wastes resulting from construction activities may include recyclable items such as paper, cardboard, solid concrete and block, metals, wire, glass, type 1-4 plastics, drywall, wood, and lubricating oils. Non-recyclable items include insulation, other plastics, food waste, vinyl flooring and base, carpeting, paint containers, packing materials, and other construction wastes. A Construction Waste Management Plan will be prepared for review by the County. Consistent with local regulations and the California Green Building Code, the Plan would provide for diversion of a minimum of 50 percent of construction waste from landfills.

Chemical storage tanks (if any) would be designed and installed to meet applicable local and state regulations. Any wastes classified as hazardous such as solvents, degreasing agents, concrete curing compounds, paints, adhesives, chemicals, or chemical containers will be stored (in an approved storage facility/shed/structure) and disposed of as required by local and state regulations. Hazardous wastes exceeding threshold quantities (one 55 gallon drum) are not expected.

Health and Safety

Safety precautions and emergency systems will be implemented as part of the design and construction of the proposed project to ensure safe and reliable operation. Administrative controls will include classroom and hands-on training in operating and maintenance procedures, general safety items, and a planned maintenance program. These will work with the system design and monitoring features to enhance safety and reliability.

The proposed project will have an Emergency Response Plan (ERP). The ERP will address potential emergencies including chemical releases, fires, and injuries. All employees will be provided with communication devices, cell phones, or walkie-talkies, to provide aid in the event of an emergency.

Decommissioning

Solar equipment typically has a lifespan of over 30 years. The proposed project expects to sell the renewable energy produced by the project under the terms of a long-term Power Purchase Agreement (PPA) with a utility or other power off taker. Upon completion of the PPA term, the project operator may, at its discretion, choose to sell power in the open market, enter into a subsequent PPA or decommission and remove the system and its components. Upon decommissioning, the solar facility could be converted to other uses in accordance with applicable land use regulations in effect at that time.

It is anticipated that, during project decommissioning, project structures that would not be needed for subsequent use would be removed from the project site. Above-ground equipment that may be removed would include module posts and support structures, on-site transmission poles that are not shared with third parties and the overhead collection system within the project site, inverters, substation(s), transformers, electrical wiring, equipment on the inverter pads, and related equipment and concrete pads.

Equipment would be de-energized prior to removal, salvaged (where possible), and shipped off-site to be recycled or disposed of at an appropriately licensed disposal facility. Once the solar modules are removed, the racks would be disassembled, and the structures supporting the racks would be removed. Site infrastructure would be removed, including fences, and concrete pads that may support the inverters, transformers and related equipment. The demolition debris and removed equipment may be cut or dismantled into pieces that can be safely lifted or carried by standard construction equipment. The fencing and gates would be removed, and all materials would be recycled to the extent practical. Project roads would be restored to their pre-construction condition unless they may be used for subsequent land use. The area would be thoroughly cleaned and all debris removed. Materials would be recycled to the extent feasible, with the remainder disposed of in landfills in compliance with all applicable laws.

1.5. Project Objectives

The project objectives are to:

- Construct and operate a solar energy facility capable of producing up to 500 MW of electricity and up to 600 MW of energy storage to assist the State of California in achieving its 50 percent renewable portfolio standard by 2030.
- Provide energy to the electric grid to meet increasing demand for in-state generation.
- Integrate operating facilities with other existing solar projects in the vicinity to maximize economies of scale.
- Assist the County in achieving the goal in the Energy Element of its General Plan to develop large scale solar energy development as a major energy source in the County.
- Site and design the project is an environmentally responsible manner consistent with current Kern County and City of California City guidelines.
- Promote economic development and bring living-wage jobs to the region throughout the life of the proposed project.

- Support California's efforts to reduce greenhouse gas (GHG) emissions consistent with the timeline established in 2006 under California Assembly Bill 32, the Global Warming Solutions Act of 2006, which requires the California Air Resources Board to reduce statewide emissions of GHGs to at least the 1990 emissions level by 2020. This timeline was updated in 2016 under SB 32, which requires that statewide GHG emissions are reduced to at least 40 percent below the statewide GHG emissions limit by 2030.

- Support California's aggressive RPS Program consistent with the timeline established by SB 100 (De León, also known as the "California Renewables Portfolio Standard Program: emissions of greenhouse gases") as approved by the California Legislature and signed by Governor Brown in September 2018, which established a 50 percent RPS goal by December 31, 2026, 60 percent by December 31, 2030, and a goal that 100 percent of electric retail sales to end-use customers be provided by renewable energy and zero-carbon resources by 2045.

1.6. Proposed Discretionary Actions/Required Approvals

The anticipated approvals needed for the project include changes in zone classification, adoption of conditional use permits, and general plan amendments to the Circulation Element of the Kern County General Plan. Construction and operation of the proposed solar energy facility may require additional local, State, and federal entitlements; as well as discretionary and ministerial actions and approvals including, but not limited to, those listed below:

Kern County (Lead Agency)

- Consideration and certification of Final EIR
- Adoption of 15091 Findings of Fact and 15093 Statement of Overriding Considerations
- Adoption of proposed Mitigation Measure Monitoring Program
- Approval by the Kern County Board of Supervisors for proposed changes in zone classification
- Approval by the Kern County Board of Supervisors for proposed conditional use permits for the project site
- Approval by the Kern County Board of Supervisors for proposed General Plan Amendments to the Circulation Element
- Kern County grading and building permits
- Kern County encroachment permits
- Kern County Franchise Agreements
- Kern County public road(s) and easement(s) vacation(s) (if required)
- Kern County Fire Safety Plan

California City (Responsible Agency)

- Consideration and certification of Final EIR
- Adoption of 15091 Findings of Fact and 15093 Statement of Overriding Considerations

- Adoption of proposed Mitigation Measure Monitoring Program
- Approval by the Planning Commission for proposed changes in zone classification (if required)
- Approval by the Planning Commission for proposed conditional use permits for the project site
- California City grading and building permits
- California City Franchise Agreements
- California City encroachment permit
- California City public road(s) and easement(s) vacation(s) (if required)
- California City Fire Strategic Plan

Other Responsible Agency Approvals

- U.S. Fish and Wildlife Service Habitat Conservation Plan (if required).
- California Department of Fish and Wildlife (CDFW), Lake and Streambed Alteration Agreement or Incidental Take Permit or Habitat Conservation Plan (if required)
- State Water Resources Control Board, National Pollutant Discharge Elimination System Construction General Permit
- California Department of Transportation Right-of-Way Encroachment Permit, and Permit for Transport of Oversized Loads, if required
- Eastern Kern County Air Pollution Control District, Authority to Construct/Permit to Operate/Fugitive Dust Control Plan

The preceding discretionary actions/approvals are potentially required and do not necessarily represent a comprehensive list of all possible discretionary permits/approvals required. Other additional permits or approvals from responsible agencies may be required for the proposed project.

2. Kern County Environmental Checklist Form

2.1. Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "potentially significant impact" as indicated by the Kern County Environmental Checklist on the following pages. The Checklist is consistent with California City's checklist.

☒ Aesthetics	☒ Agricultural and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Energy
☒ Geology and Soils	☒ Greenhouse Gas Emissions	☒ Hazards and Hazardous Materials
☒ Hydrology and Water Quality	☒ Land Use and Planning	☐ Mineral Resources
☒ Noise	☐ Population and Housing	☒ Public Services
☐ Recreation	☒ Transportation and Traffic	☒ Tribal Cultural Resources
☒ Utilities/Service Systems	☒ Wildfire	☒ Mandatory Findings of Significance

2.2. Determination

(To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☒ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (a) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (b) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENT IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	9/15/2020 Date
Ronelle Candia Printed Name	Supervising Planner Title

3. Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4. Negative Declaration: "Less than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less-than-Significant Impact." The lead agency must describe the mitigation measure and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).

5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration, Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

    a. Earlier Analysis Used. Identify and state where they are available for review.

    b. Impacts Adequately Addressed. Identify which effects from the above checklist where within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

    c. Mitigation Measures. For effects that are "Less than Significant with Mitigation Incorporated," describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9. The explanation of each issue should identify:

    a. The significance criteria or threshold, if any, used to evaluate each question; and

    b. The mitigation measure identified, if any, to reduce the impact to a less than significant level.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

I. Aesthetics

Would the project:

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.	In nonurbanized areas, substantially degrade the existing visual character or quality of the site and its surroundings? (Public views are those that are experienced from public accessible vantage points) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☒	☐	☐	☐
d.	Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

RESPONSES:

(a) According to the California Department of Transportation (Caltrans) California Scenic Highway Mapping System, SR 14 is considered an eligible scenic highway from its junction with SR 58 to its merge with SR 395. From the western project boundary, the project site is located less than one-mile from SR 14. The aesthetic features of the existing visual environment in the project area are relatively uniform, with broad, dry, flat landscapes. The project is generally surrounded by undeveloped desert land with low scenic qualities. The project is also located adjacent to the approved Eland solar project (not yet constructed), the Cinco Solar project, and the Springbok solar complex. Views of the proposed project would be visible from the residences located in the Fremont rural community. The northernmost project parcel (APN No. 469-170-10), located near the intersection of Neuralia Road and Harriet Avenue, is located immediately adjacent to a rural residential dwelling. Scenic vistas are potentially visible from SR 14 as well as hiking trails in local hills which occasionally provide expansive views of the flatlands below. Since the proposed project is located within these viewsheds, potentially significant impacts to scenic vistas may occur. Therefore, this issue will be evaluated in the EIR.

(b) As described in (a) above, SR 14 is considered an eligible scenic highway from its junction with SR 58 to its merge with SR 395. From the western project boundary, the project site is located less than one-mile from SR 14. Therefore, the proposed changes in the landscape could result in significant impacts to views from SR 14. Further review is required to determine if there are scenic resources on

site that could be eliminated or substantially altered. This is considered a potentially significant impact and will be evaluated in the EIR.

(c) Refer to Response (a), above, for a description of the existing landscape character. The proposed project is located in non-urbanized areas of the City of California City and unincorporated Kern County. The aesthetic features of the existing visual environment in the project area are relatively uniform, with broad, dry, flat landscapes. The project is generally surrounded by undeveloped desert land with low scenic qualities. The project is also located adjacent to the approved Eland solar project (not yet constructed), the Cinco Solar project, and the Springbok complex. Placement of PV solar panels and associated structures on the project site would substantially alter the undeveloped, open space character of the area. There is a potential that the proposed project would substantially change views from SR 14 and other public roads located in the surrounding area. Changes in the visual character of the project site may be experienced by persons traveling along nearby roads such as Washburn Boulevard, Philips Road, and Neuralia Road. Views of the proposed project would also be available from the residences located in the Fremont Rural Community. The northernmost project parcel (APN No. 469-170-10), located near the intersection of Neuralia Road and Harriet Avenue, is located immediately adjacent to a rural residential dwelling. Changes to the visual quality and character of the project site are potentially significant; therefore, impacts will be further evaluated in the EIR.

(d) The project site is generally undeveloped desert land and does not generate a source of light or glare. The Fremont Rural Community is located in the project vicinity and consists predominantly of rural residential dwellings. The existing residences in the project vicinity generate a minimal to moderate amount of light, primarily from building or outdoor lighting. The PV modules are designed to absorb sunlight to maximize electrical output; therefore, they are not expected to create significant reflective surfaces or the potential for glint/glare during the day. The proposed solar facility lighting would be designed to provide the minimum illumination needed to achieve safety and security objectives and would be directed downward and shielded to focus illumination on the desired areas only and minimize light trespass. All lighting at the proposed solar facility would be designed to meet Kern County Zoning Ordinance Chapter 19.81 - Outdoor Lighting - Dark Skies requirements. Additionally, the project would comply with California City's lighting standards. However, further analysis of the potential effects of the project's outdoor lighting fixtures and potential for day or night glare effects from project facilities will be provided in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

II. Agriculture and Forest Resources

Would the project:

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 nonagricultural use?	☐	☐	☐	☒
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 conversion of forest land to non-forest use?	☐	☐	☐	☒
f.	Result in the cancellation of an open space contract made pursuant to the California Land Conservation Act of 1965 or Farmland Security Zone Contract for any parcel of 100 or more acres (Section 15205(b)(3) Public Resources Code)?	☐	☐	☐	☒

RESPONSES:

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and the forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board.

(a) According to the California Department of Conservation (DOC), California Important Farmland Finder Map, there are no agricultural lands designated as Prime Farmland, Unique Farmland, Unique Farmland, or Farmland of Statewide Importance located within the project site. The project site is designated as nonagricultural and natural vegetation by the DOC (DOC 2018). There are no important farmlands located adjacent to or in the vicinity of the project site. Therefore, construction and/or operation of the proposed project would not result in the conversion of designated Farmland to a nonagricultural use. No further evaluation is required in the EIR.

(b) The project site does not contain lands that are subject to Williamson Act contracts, either active on in nonrenewal. There are no lands under Williamson Act contracts adjacent to or in the vicinity of the project site. As such, there would be no impacts to Williamson Act lands.

The portions of the project site and surrounding area located within Kern County includes land that is zoned as A (Exclusive Agriculture) and A-1 (Limited Agriculture), and land within California City is zoned as O/RA (Open Space/Residential/Agricultural). Solar facilities are considered a compatible use with Kern County designations with a Conditional Use Permit. At present, solar facilities are considered to be a permitted use only in industrial zoned areas in California City. The City is in the process of updating its zoning code to designate solar facilities as a compatible/permitted use in O/RA zoned districts. If deemed necessary by the City of California City, the project proponent may request a zone change from O/RA to M-1 (Light Industrial) for the portion of the facility located in California City. No active agricultural lands would be affected by the proposed project. If rezoning is required for the portion of the project within California City, impacts could be potentially significant. Impacts will be discussed further in the EIR.

(c) The project site is not situated on forest or timberland with areas that are currently under production. There is no land in the vicinity of the project site that is zoned as forest land, timberland, or lands zoned for timberland production. Therefore, there would be no impacts related to the rezoning of forest land, timberland, or timberland zoned for timberland production and no further analysis is warranted in the EIR.

(d) Refer to response (c) above. Implementation of the proposed project would not directly or indirectly result in the loss of forest land or conversion of forest land to non-forest use. No further evaluation is required in the EIR.

(e) As mentioned in response (a) above, the project site is not classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, and there are no active farmlands located in the project vicinity. The proposed project would not have direct or indirect impacts to the existing environment that would affect agricultural uses. The project site is not designated as forest land and forest land or timber lands do not occur in the project vicinity. Therefore, the project would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use. As such, there would be no conversion of forest land. No further evaluation is required in the EIR.

(f) The project site is not subject to an open space contract made pursuant to the California Land Conservation Act of 1965 or the Farmland Security Zone Contract. As stated above, the project site is not under a Williamson Act Contract. The project would therefore not result in the cancellation of an open space contract made pursuant to the California Land Conservation Act of 1965 or Farmland Security Zone Contract for any parcel of 100 or more acres (Section 15205(b)(3) Public Resources Code. No impacts would occur and no further evaluation is required in the EIR.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

III. Air Quality

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

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 region is in nonattainment under an applicable federal or state ambient air quality standard? Specifically, would implementation of the project exceed any of the following adopted thresholds:				
	i. San Joaquin Valley Air Pollution Control District:				
	Operational and Area Sources Reactive organic gases (ROG): 10 tons per year.	☐	☐	☒	☐
	Oxides of nitrogen (NO_X): 10 tons per year.	☐	☐	☒	☐
	Particulate matter (PM_{10}): 15 tons per year.	☐	☐	☒	☐
	Stationary Sources - as Determined by District Rules Severe nonattainment: 25 tons per year.	☐	☐	☒	☐
	Extreme nonattainment: 10 tons per year.	☐	☐	☒	☐
	ii. Eastern Kern Air Pollution Control District.				
	Operational and Area Sources Reactive organic gases (ROG): 25 tons per year.	☒	☐	☐	☐
	Oxides of nitrogen (NO_X): 25 tons per year.	☒	☐	☐	☐
	Particulate matter (PM_{10}): 15 tons per year.	☒	☐	☐	☐
	Stationary Sources – as Determined by District Rules 25 tons per year.	☒	☐	☐	☐
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?	☐	☐	☒	☐

RESPONSES:

(a) The project site is located entirely within the jurisdiction of the Eastern Kern Air Pollution Control District (EKAPCD), in the Mojave Desert Air Basin (MDAB). EKAPCD is designated as a nonattainment area for both the state and federal ozone standards and the state particulate matter (PM_{10}) standard. Project construction would generate emissions of reactive organic gases (ROG) and oxides of nitrogen (NO_X), both of which are known as ozone precursors, and PM_{10} that could result in significant impacts to air quality in the area.

EKAPCD's most recently adopted air quality management plan is its Ozone Air Quality Attainment Plan (AQAP) (EKAPCD 2005). As the proposed project would generate gaseous emissions of ozone precursors and PM_{10} during construction, the proposed project could potentially conflict with EKAPCD's Ozone AQAP or thresholds for emissions of other criteria pollutants. The fully built and operational project would not include any stationary sources of air pollutants and the regular employee commuting traffic would generate minor exhaust emissions. As such, no significant long-term air quality impacts are anticipated that could result in a conflict with the AQAP. Further analysis of the project's air quality impacts is warranted to determine whether the proposed project would conflict with or obstruct implementation of EKAPCD's applicable air quality plan for attainment and, if so, to determine the reasonable and feasible mitigation measures that could be imposed. These issues will be evaluated in the EIR.

(b) The proposed project is not located within the San Joaquin Valley Air Pollution Control District and, therefore, its adopted thresholds do not apply. However, as noted in Response (a) above, the project is located within the MDAB, which is designated as a nonattainment area for the state and federal ozone standards and the state PM_{10} standard. As such, the emissions of ozone precursors (ROG and NOx) and PM_{10} during construction and operation of the project could result in a cumulatively considerable net increase of these criteria pollutants in the MDAB. Thus, the project's contribution to cumulative air quality impacts in the MDAB could be potentially significant. The project's contribution of construction and operational emissions to the MDAB will be analyzed in the EIR.

(c) Sensitive receptors located in the project area consist predominantly of rural residential dwellings located at varying distances from the project site. The Fremont Rural Community is located northeast of Sites 1 and 2 and west of Site 4 and consists predominantly of rural residential dwellings. The northernmost project parcel (APN No. 469-170-10), located near the intersection of Neuralia Road and Harriet Avenue, is located immediately adjacent to a rural residential dwelling. Nearby sensitive receptors could be exposed to pollutant emissions during construction of the proposed project. The proposed project's construction-related activities would result in diesel exhaust emissions and dust (also known as PM_{10}) that could adversely affect air quality for the nearest sensitive receptors. The fully operational project would not include any stationary sources of air pollutant emissions and the small number of employees working a particular shift would generate low traffic volumes that would not result in significant levels of vehicular exhaust emissions. There would be less than significant concentrations of emissions from project operations, and a corresponding less than significant impact on the nearest sensitive receptors.

Additionally, exposure to Valley Fever and COVID-19 concerns from fugitive dust generated during construction is a potentially significant impact. There is the potential that cocci spores could be stirred up during excavation, grading, and earth-moving activities, exposing construction workers and nearby sensitive receptors to these spores and thereby to the possibility of contracting Valley Fever

and/or exacerbate health concerns related to COVID-19. Thus, impacts to sensitive receptors via exposure to substantial construction-related pollutant concentrations are considered potentially significant and will be evaluated further in the EIR.

(d) The project would not have any stationary sources or equipment located on-site that would generate objectionable odors. During construction activities, only short-term, temporary odors from vehicle exhaust and construction equipment engines would occur. However, these odors would be temporary and would be dispersed rapidly. Therefore, project impacts are expected to be less than significant. Nonetheless, this issue will be further evaluated in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
IV. Biological Resources					
Would the project:					
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 Game 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 Game or U.S. Fish and Wildlife Service?	☒	☐	☐	☐
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, 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?	☐	☐	☐	☒

RESPONSES:

(a) The project site contains large areas of undeveloped desert land with native vegetation. Native vegetation is typical of that found throughout the Mojave Desert, dominated by creosote bush and white bursage on slopes and plains and saltbush scrub in the alkaline basin. Many of the project parcels have been previously disturbed and/or cultivated. Currently, these areas include fallow agricultural fields and cleared parcels that were never put into agricultural production. Much of this fallowed land is still barren of native shrub cover and has been colonized by rubber rabbitbrush. There is a potential for candidate, sensitive, or special-status plants and wildlife species to be present onsite or in the proposed project vicinity. The findings of field surveys for the presence of candidate, sensitive, or special-status plant and animal species will be included in the EIR. Native desert plants, such as the Joshua tree, silver cholla, and beavertail cactus, are protected under the California Desert

Native Plant Act. Since the species located on-site are unknown, construction of the proposed project may directly or indirectly impact a protected species. Indirect impacts include dust and soil compaction leading to habitat degradation. Impacts to biological resources and sensitive plant communities are potentially significant and will be analyzed in the EIR.

(b) The project site contains large areas of undeveloped desert land with native vegetation. Field surveys for riparian or other sensitive natural communities will be completed for the proposed project, and the results will be included in the EIR. Impacts to riparian or other sensitive natural communities are potentially significant and will be analyzed in the EIR.

(c) Potential federal or state-protected water-based resources such as streams and washes could be present on the project site and might be impacted by project construction activities. Field surveys will be conducted to determine whether the project site contains features that are protected under federal or state regulations will be conducted as part of the EIR. Impacts to protected wetlands would be considered potentially significant. Further analysis of this issue will be included in the EIR.

(d) The project site and surrounding area may be used for land-based migration or dispersal by native wildlife species, such as migratory birds, (e.g., burrowing owl) and desert tortoise. There are no water bodies or water courses that could provide migratory habitat for fish or wildlife species. Project construction and operation could also remove foraging habitat. Lighting from the project site could potentially affect movement of wildlife around the project site. Impacts to migration of protected wildlife species are considered potentially significant and will be further evaluated in the EIR.

(e) Joshua trees (Yucca brevifolia) are protected under the California Desert Native Plants Act (CDNPA) and have been documented within the project site. Kern County (County) administers the permit program for removal of any species covered by this state act. Specifically, the CDNPA prohibits the harvesting of native desert plants, including Joshua trees, or any parts thereof, except when a permit from the Kern County Agricultural Commissioner is obtained and a fee for removal and/or relocation is submitted. Furthermore, the Open Space and Conservation Element of the California City General Plan includes the following policy:

- Encourage the preservation of Joshua trees, known wildflower displays, or other biologically sensitive flora determined during biological surveys.

Implementation of the proposed project has the potential to impact Joshua trees; therefore, this impact is potentially significant and will be further evaluated in the EIR.

(f) . The project site is located within the Desert Renewable Energy Conservation Plan (DRECP) Development Focus area, which means that the area is expected to support fewer sensitive status species than areas identified with conservation potential and is therefore more likely to be appropriate for renewable energy development. However, the DRECP at this time only applies to public lands managed by the Bureau of Land Management and is not an adopted Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP). The proposed project would be located on private land and therefore is not subject to the DRECP. There are no other adopted conservation plans for protection of biological resources governing the project area. No impact would occur as the proposed project would not conflict with the provisions of an adopted habitat conservation plan. No further analysis in the EIR is warranted.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
V. Cultural Resources					
Would the project:					
a.	Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5?	☒	☐	☐	☐
b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	☒	☐	☐	☐
c.	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

RESPONSES:

(a) The project site consists of undeveloped desert land. It is possible that surface or subsurface deposits of historic resources may occur somewhere on the project site, as there are established historic era settlements in this area, i.e., California City and the Rural Community of Fremont. Development of the proposed project would require ground disturbance for grading, installation of the solar arrays, gen-tie line, and placement of underground electrical and communications lines. Such earth-disturbing activities could potentially impact historical resources. A cultural resources survey will be conducted for the proposed project as part of the EIR. Further evaluation in the EIR is warranted to identify potential impacts to historical resources and to formulate avoidance or mitigation measures, if applicable.

(b) As discussed under (a) above, development of the proposed project would require ground disturbance for grading, installation of the solar arrays, gen-tie line, and placement of underground electrical and communications lines. The proposed project could potentially impact unknown archaeological resources during earth disturbing construction activities. A cultural resources survey will be conducted for the proposed project as part of the EIR. Further evaluation in the EIR is warranted to identify potential impacts to archaeological resources and to formulate avoidance or mitigation measures, if applicable.

(c) There is no evidence that the project site is located within an area likely to contain human remains, and discovery of human remains during project earthmoving activities is not anticipated. Therefore, impacts to human remains are anticipated to be less than significant. However, this issue will be further evaluated in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
VI. Energy					
Would the project:					
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?	☐	☐	☒	☐

RESPONSES:

(a) Construction of the proposed project would involve on-site energy demand and consumption related to use of oil in the form of gasoline and diesel fuel for construction worker vehicle trips, hauling and materials delivery truck trips, and operation of off-road construction equipment. In addition, diesel-fueled portable generators may be necessary to provide additional electricity demands for temporary on-site lighting, welding, and for supplying energy to areas of the sites where energy supply cannot be met via a hookup to the existing electricity grid.

Energy use associated with operation of the proposed project would be typical of a solar facility. Operation and maintenance facilities associated with the project would require electricity for interior and exterior building lighting, heating, ventilation, and air conditioning (HVAC), electronic equipment, machinery, appliances, security systems, etc. Electrical energy for operations would be provided by the solar energy produced and/or stored by the proposed project, or back fed by power obtained from Barron Ridge/LADWP. Maintenance activities during operations could involve the use of electric or gas-powered equipment. In addition to on-site energy use, the proposed project would result in transportation fuel consumption associated with employee vehicle trips generated by the proposed project. Further analysis of the project's energy use will be conducted in the EIR to determine if there could be wasteful or inefficient energy consumption.

(b) Operation of the proposed project would lead to an overall increase in the County's renewable energy portfolio and would align with the stated General Plan policy to encourage the development of renewable energy within Kern County. This project would also align with and implement statewide objectives to expand the amount of electricity generated from renewable sources, such as SB 350, which requires that by December 31, 2030, 50 percent of all electricity sold in the state shall be generated from renewable energy sources. Impacts are considered to be beneficial. However, further discussion is warranted in the EIR, to provide a broader assessment of the project's beneficial effects in terms of implementing important State, County and City objectives for renewable energy.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

VII. Geology and Soils

Would the project:

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? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
	ii. Strong seismic ground shaking?	☐	☐	☒	☐
	iii. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
	iv. Landslides?	☐	☐	☐	☒
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 offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d.	Be located on expansive soil, as defined in 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 in areas 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?	☒	☐	☐	☐

RESPONSES:

(a)(i) According to the California Geologic Study's Alquist-Priolo Special Studies Fault Map, the project site is not located within a currently mapped Alquist-Priolo Special Studies Fault Zone. The nearest

fault is the Garlock Fault that is located approximately one-mile west of the project (CGS 2020). As such, a rupture of an on-site fault is not anticipated. Construction of the project would have no effect on potential movement along the Garlock Fault or any other regional fault systems. In addition, although the project does not include any habitable structures, construction of the project would be subject to all applicable ordinances of the Kern County Building Code (Chapter 17.08) pertaining to mitigation of seismic hazards. Kern County and California City have adopted the California Building Standards Code (CBC), which imposes substantially the same seismic safety requirements as the International Building Code (IBC). Adherence to all applicable regulations would mitigate any potential impacts at the project site due to rupture along the Garlock Fault or other regional faults. Nonetheless, a geotechnical investigation will be conducted to confirm the absence of on-site fault indications, and further discussion will be provided in the EIR to explain how the project will be designed to align with applicable Kern County and California City regulations.

(a)(ii) Due to the location of active faults in the general region, strong seismic ground shaking could occur at the project site, resulting in damage to above and below ground structures and other site improvements, if not properly designed to withstand strong ground shaking. As discussed is (a)(i) above, adherence to applicable regulations would minimize the potential impacts associated with the proposed project. Although potential impacts are anticipated to be less than significant, further discussion in the EIR will be provided.

(a)(iii) Seismically induced liquefaction occurs when loose, water-saturated sediments of relatively low density are subjected to cyclic shaking that causes soils to lose strength or stiffness because of increased pore water pressure. Liquefaction generally occurs when the depth to groundwater is less than 50 feet. A production well on the eastern end of the project indicates that the depth to groundwater is approximately 255 feet below the ground surface (DWR 2010). Thus, the potential for liquefaction at the surface is low. Furthermore, the project is not located within a current, mapped California Liquefaction Hazard Zone. Structures constructed as part of the project would be required by state law to be constructed in accordance with all applicable IBC and CBC earthquake construction standards, including those relating to soil characteristics. Nonetheless, the potential for substantial adverse effects to the project due to seismic-related ground failure, including liquefaction, will be examined in the EIR. A geotechnical investigation will be conducted to determine the subsurface conditions and relevant soil properties at the project site to support that analysis.

(a)(iv) The project site is located in a relatively flat-lying plain, where landslides are not likely. Impacts related to landslides are not anticipated to occur or pose a hazard to the project or surrounding area. Further analysis of this issue is not warranted in the EIR.

(b) Grading and/or excavation would be required for solar panel array and some building foundations at the site, and some trenching would be required for the installation of underground cables and circuits. Project construction would have the potential to result in erosion, sedimentation, and discharge of construction debris from the site. Clearing of vegetation and grading activities, for example, could lead to exposed or stockpiled soils susceptible to peak storm water runoff flows and wind forces. The compaction of soils by heavy equipment may minimally reduce the infiltration capacity of soils (exposed during construction) and increase runoff and erosion potential. The project proponent would be required to obtain coverage under the National Pollution Discharge Elimination System (NPDES) Construction General Permit (CGP), because the proposed project would disturb greater than one acre of land. In order to conform to the requirements of the CGP, a storm water pollution prevention plan (SWPPP) would need to be prepared that outlines specific best management practices (BMPs)

to prevent construction pollutants, including eroded soils (such as topsoil), from moving off-site. Post construction BMPs would also be implemented to address any long-term effects involving soil erosion or loss of topsoil associated with operations and maintenance of the proposed project. Impacts are anticipated to be less than significant with implementation of the above requirements. However, this issue will be further evaluated in the EIR.

(c) A geotechnical investigation of the project site is to be conducted to determine the physical characteristics of the underlying soils and geologic formations and to identify any unstable conditions that could be exacerbated by proposed construction activities. The results of these investigations will be provided in the EIR.

(d) Expansive soils are fine-grained soils (generally high plasticity clays) that can undergo a significant increase in volume with an increase in water content and a significant decrease in volume with a decrease in water content. Changes in the water content of a highly expansive soil can result in severe distress to structures constructed on or against the soil. A geotechnical investigation will be conducted to determine the subsurface conditions and relevant soil properties at the project site. The proposed project would be designed to comply with applicable building codes and structural improvement requirements to withstand the effects of expansive soils, if warranted. Impacts are anticipated to be less than significant; however, this issue will be further evaluated in the EIR.

(e) The project may include an O&M facility to serve O&M employees. This facility may include development of a septic tank and associated disposal field, the impacts of which are potentially significant. Therefore, the EIR will further evaluate whether on-site soils are capable of supporting the use of septic tanks.

(f) Kern County is rich in paleontological resources. If sensitive paleontological formations are located underground on the project site, ground disturbance could result in impacts to paleontological resources. A paleontological study will be conducted to determine the underlying formations and potential for fossil discoveries throughout the project site. This analysis will be provided in the EIR to identify potential impacts and to formulate avoidance or mitigation measures, if applicable.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
VIII. Greenhouse Gas Emissions					
Would the project:					
a.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b.	Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

RESPONSES:

(a) Greenhouse gas (GHG) emissions emitted by human activity are implicated in global climate change or global warming. The principal GHGs are CO_2, methane (CH_4), NO_X, ozone, water vapor, and fluorinated gases. The project's temporary construction activities, which would involve operation of heavy off-road equipment, on-road trucks (for deliveries and hauling), and construction worker commute trips, would generate GHGs. As a solar power generation facility, however, the proposed project would displace traditional sources of electricity production that involves combustion energy sources (e.g., burning coal, fuel oil, or natural gas). As such, the provision of solar energy by the proposed project would produce GHG-free electricity anticipated to offset GHGs otherwise generated by traditional fuel combustion sources. The project's GHG emissions generated during construction of the project and the potential GHG offsets resulting from operation of the project will be quantified in the EIR. Potential for significant environmental impacts will be examined through the project's consistency with GHG reduction plans, programs or regulations, as outlined in the next response.

(b) California has passed several bills and the governor has signed at least three executive orders regarding GHGs. Assembly Bill (AB) 32 (Global Warming Solutions Act), passed by the California legislature on August 31, 2006, requires the State's global warming emissions to be reduced to 1990 levels by 2020. The reduction will be accomplished through an enforceable statewide cap on GHG emissions that was phased-in starting in 2012.

In 2002, California established its Renewable Portfolio Standards (RPS) Program, with the goal of increasing the percentage of renewable energy in the State's electricity mix to 20 percent renewable energy by 2017. In 2006, under SB 107, the RPS Program codified the 20 percent goal. The RPS Program requires electric utilities and providers to increase procurement from eligible renewable energy resources by at least one percent of their retail sales annually until they reach 20 percent by 2017. On November 17, 2008, the governor signed Executive Order S-14-08, requiring California utilities to reach the 33 percent renewable goal by 2020. In 2015, SB 350 was enacted to increase the RPS to 50 percent and reduce greenhouse gas emissions by 40 percent below 1990 levels by the year 2030 and to 80 percent below 1990 levels by 2050.

The proposed project is intended to: (1) reduce generation and importation of power from fossil fuel power plants and (2) contribute to a reduction in GHGs associated with energy consumption by

residential and business consumers. Heavy equipment operation, truck deliveries, and construction worker commute trips associated with construction of the proposed project would temporarily generate GHGs; however, operation of the project would offset GHGs generated by traditional fuel combustion sources of electricity. The project's potential GHG impacts and the potential GHG offsets resulting from operation of the project will be examined in the EIR, with respect to the objectives of statewide programs to reduce GHGs associated with energy generation.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

IX. Hazards and Hazardous Materials

Would the project:

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 involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d.	Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e.	For a project located within the adopted Kern County Airport Land Use Compatibility Plan, would the project result in a safety hazard or excessive noise for people residing 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, directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☒	☐
h.	Would implementation of the project generate vectors (flies, mosquitoes, rodents, etc.) or have a component that includes agricultural waste? Specifically, would the project exceed the following qualitative threshold: The presence of domestic flies, mosquitoes, cockroaches, rodents, and/or any other vectors associated with the project is significant when the applicable enforcement agency determines that any of the vectors:				

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
i. Occur as immature stages and adults in numbers considerably in excess of those found in the surrounding environment; and	☐	☐	☒	☐
ii. Are associated with design, layout, and management of project operations; and	☐	☐	☒	☐
iii. Disseminate widely from the property; and	☐	☐	☒	☐
iv. Cause detrimental effects on the public health or well-being of the majority of the surrounding population.	☐	☐	☒	☐

RESPONSES:

(a) Wastes to be generated during construction of the proposed project would be non-hazardous, and would consist of cardboard, wood pallets, copper wire, scrap steel, common trash, and wood wire spools. Although field equipment used during construction activities could contain various hazardous materials (i.e., hydraulic oil, diesel fuel, grease, lubricants, solvents, adhesives, paints, etc.), these materials are not considered to be acutely hazardous and would be used in accordance with the manufacturer's specifications and all applicable regulations. In addition, hazardous fuels and lubricants used on field equipment would be subject to a Construction Waste Management Plan and, if required, a Spill Prevention, Containment and Countermeasure Plan.

The fully operating project would not involve the routine transport, use, or disposal of hazardous materials as defined by the Hazardous Materials Transportation Uniform Safety Act. During construction, the proposed project would include the transport of general construction materials (i.e., concrete, wood, metal, fuel, etc.) as well as materials necessary to construct the proposed PV arrays. Impacts resulting from the transport, use or disposal of hazardous materials during construction of the proposed project would be less than significant; however, the EIR will include an evaluation of potential hazardous materials impacts.

Project-related infrastructure would not generate hazardous emissions or be constructed of acutely hazardous materials or substances that could adversely impact the public, the environment, or on-site workers. The proposed project would be subject to all local, state, and federal laws pertaining to the use of hazardous materials on-site and would be subject to review by the Kern County Environmental Health Services Division and California City's Community Development Department. Through the review process, the project would be required to submit a complete list of all hazardous materials used on-site, how the materials would be transported and stored, and in what form they would be used to maintain safety and prevent possible environmental contamination or worker exposure. During construction of the proposed project, Safety Data Sheets (SDS) for all applicable materials present at the site would be made readily available to on-site personnel. During construction of the facility, human waste would be managed using portable toilets located at reasonably accessible on-site locations.

The PV panels may include solid materials that are considered to be hazardous, such as cadmium telluride. The project would use the manufacturer's collection and recycling program to ensure the proper collection and recycling of PV panels, as needed. Solar panels are in a solid and non-leachable state; broken PV panels would be quickly replaced, which would avoid a potential source of pollution to storm water. Dust palliative and herbicides, if used, may be transported to and stored at the project site. These materials would be stored in appropriate containers that would prevent their accidental release at the site.

SR 14 and SR 58 are designated routes for the transport of hazardous materials. These roadways are equipped to handle the transport of hazardous materials and both SR 14 and SR 58 would provide regional access to the project. Impacts resulting from the transport, use or disposal of hazardous materials during construction and operation of the proposed project are not expected to be significant; however, this will be evaluated further in the EIR.

(b) Construction and operation of the proposed project may include the accidental release of hazardous substances, such as cleaning fluids and petroleum products including lubricants, fuels, and solvents. Electrical transformer equipment that would be installed as part of the proposed project may include various hazardous substances, including polychlorinated biphenyls. The toxicity and potential release of these materials would depend on the quantity, type of storage container, safety protocols used on the site, location and/or proximity to schools and residences, frequency and duration of spills or storage leaks, and the reactivity of hazardous substances with other materials. In addition, the proposed project could also include an Energy Storage Systems (ESS). The ESS would be composed of battery storage modules placed in multiple prefabricated enclosures or containers near the on-site substation(s). Potentials hazards associated with ESS include increased potential for electrical shock and chemical release associated with the batteries used.

The proposed project would be subject to all local, state, and federal laws pertaining to the use of hazardous materials onsite and would be subject to review by the Kern County Environmental Health Services Division California City's Community Development Department. Through the review process, the project proponent would be required to submit a complete list of all materials used on-site, how the materials would be transported and stored, and in what form they would be used. This would be recorded to maintain safety and prevent possible environmental contamination or worker exposure. This would include submission of MSDS for all applicable materials present at the site, and the MSDS would be made readily available to on-site personnel. It is anticipated that adherence to regulations and standard protocols during the storage, transportation, and usage of any hazardous materials would avoid significant impacts. Nonetheless, potential impacts will be evaluated in the EIR.

(c) There are no existing or proposed schools located within one-quarter mile of the project site. The nearest school is California City High School located approximately three miles southeast from Site 2 at 8567 Raven Way in California City. Furthermore, the fully functional solar farm would not generate air emissions from any stationary sources, and occasional emissions from combustion engine powered maintenance machinery and automobile traffic from on-site workers would not result in hazardous emissions. Consequently, the project would not generate hazardous emissions or involve handling hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school. No impacts are anticipated; therefore, further analysis of this issue is not warranted in the EIR.

(d) The project site is not identified in any of the California hazardous materials databases. Searches were completed for the subject parcels in the following hazardous materials lists: California Environmental Protection Agency's (CalEPA) Cortese List including the California Department of Toxic Substances and Control's EnviroStor database of hazardous substances release sites; and GeoTracker, the California database of leaking underground storage tanks. Finally, as provided by CalEPA, there are no active Cease and Desist Orders or Clean Up and Abatement Orders for hazardous materials/facilities in the immediate project vicinity of the project site. Therefore, no impacts are anticipated, and further analysis is not warranted in the EIR.

(e) The southern portion of the project site is located within an area covered by the Kern County ALUCP for the California City Municipal Airport. The project site is located immediately north of the California City Municipal Airport. Specifically, the southernmost portion of the project site is located in "Compatibility Zone B1 – Approach/Departure Zone and Adjacent to Runway" (APN No. 302-020-08) and "Compatibility Zone C – Common Traffic Pattern" (APN No. 302-020-08, -09, -11, -14, -15, -16, -17, -18, and 302-470-14). According to Table 2A – Compatibility Criteria of the Kern County ALUCP, Compatibility Zone B1 is subject to substantial risk and substantial noise, and Compatibility Zone C is subject to limited risk and frequent noise intrusion. Based on these locational factors, the proposed project has the potential to result in a safety hazard or excessive noise for people working in the project area. Further analysis of this issue will be discussed in the EIR.

(f) The project site is located in an area with several alternative access roads allowing access in the event of an emergency. As required by routine and standard construction specifications administered by Kern County and California City, emergency access would be maintained throughout construction and operation, and appropriate detours would be provided in the event of potential road closures.

The project site is located in an area with several alternative roadways allowing access in the event of an emergency. As required by routine and standard construction specifications administered by Kern County, access would be maintained throughout construction, and appropriate detours would be provided in the event of potential road closures. Therefore, no significant impacts related to impairment of the implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan would occur during construction.

The small size of the operational work force would not generate significant traffic volumes during an emergency evacuation scenario that could complicate area-wide emergency evacuation efforts. Driveways built to connect to existing local roads for direct site access would not affect designated emergency evacuation routes, as these are small local streets and the driveways would not conflict with potential evacuation routes for surrounding land uses. Proposed amendments to the County General Plan Circulation Element to remove section and mid-section line road reservations would not affect any existing roadways or any existing or planned evacuation routes. California City will determine what section and mid-section line road reservations to be preserved and what ones will be removed during the CUP process (Sec. 9-2-2501 of the California City Municipal Code). Although impacts are anticipated to be less than significant, further analysis of this issue will be discussed in the EIR.

(g) The project would not increase the potential for wildland fires or expose people or structures to a significant risk of loss, injury, or death involving wildland fires. According to the California Department of Forestry and Fire Protection (CalFire), Kern County Fire Hazards Severity Zone Maps for the Local Responsible Areas, the project site is classified as Local Responsibility Area (LRA)

Moderate. Moderate zones are typically wildland supporting areas of low fire frequency and relatively modest fire behavior. The proposed project would comply with all applicable wildland fire management plans and policies established by CalFire, Kern County Fire Department, and California City Fire Department. Accordingly, the project is not expected to expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Nonetheless, potential impacts involving wildfires will be discussed in the EIR--please refer to the responses to the Checklist topic concerning Wildfire, later in this Initial Study.

(h) Project-related infrastructure is not expected to result in features or conditions that could potentially provide habitat for vectors such as mosquitoes, flies, cockroaches, or rodents. During construction and operation, workers would generate small quantities of solid waste (i.e., trash, food containers, etc.) that would be stored on site in fully enclosed containers, then transported to and disposed of at approved disposal facilities. Project-related infrastructure is not expected to result in features or conditions (such as standing water, agricultural products, agricultural waste, or human waste) that would provide habitat for vectors such as mosquitoes, flies, cockroaches or rodents. Construction workers would generate only small quantities of solid waste (i.e. trash) that would be appropriately stored for permanent disposal offsite. Therefore, potential impacts would be negligible, and no further analysis is warranted.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
X. Hydrology and Water Quality				
Would the project:				
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater 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 flood hazard, tsunami, seiche zones, risk release of pollutants due to project inundation?	☒	☐	☐	☐
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☒	☐	☐	☐

RESPONSES:

(a) Construction of the project would be subject to County, State, and Federal Water quality regulations. The project site is within the Lahontan Regional Water Quality Control Board (RWQCB) jurisdiction. Project construction activities have the potential to result in erosion, sedimentation, and discharge of construction debris, and could result in the discharge of wastewater and urban runoff at

the project site. If not properly managed, this wastewater could violate the water quality standards or waste discharge requirements of the RWQCB, or otherwise degrade surface or ground water quality. It is anticipated that appropriate BMPs and compliance with applicable regulations, including the NPDES Construction General Permit (CGP), would reduce potential water quality impacts to a less than significant level. Soil stabilization measures would be used to prevent soil erosion caused by storm water runoff. The proposed project contractor(s) would apply for coverage under the state's General Construction Permit for stormwater discharges from construction activities and would prepare a SWPPP that would include implementation of BMP erosion-control measures to control stormwater runoff. Site-specific BMPs would be designed by the contractor in compliance with regulations and permit conditions. Potential water quality impacts resulting from the developed site conditions will require further analysis. No waste discharge permits are anticipated for this project. A comprehensive hydrology and water quality impact analysis will be included in the EIR.

(b) During construction, potable water would be brought to the site for drinking and domestic needs. Non-potable water usage during construction, primarily for dust-suppression purposes, is not expected to exceed 400 acre-feet over the 12-18 month construction phase. Water demand for panel washing and O&M domestic use (lavatories, sinks, general maintenance) is not expected to exceed 50 acre-feet per year. Water is anticipated to be obtained from on-site wells. Alternatively, water may be obtained from one or more off-site source(s) and delivered to the project site via truck. If off-site water is used, it would likely be obtained from one of the nearby Springbok projects, the Eland Project, or from a commercial source. A water supply assessment will be completed for the project to analyze potential impacts to groundwater. Potential impacts will be addressed in the EIR.

(c)(i) Construction of the concrete pads for the switchyard, inverters, transformers, O&M building(s), etc., as well as foundational supports for panel installation, soil compaction, and any grading may alter the existing drainage pattern of the project site. A hydrologic study will be prepared for the project in accordance with Kern County requirements, and potentially significant impacts to existing drainage patterns and effects involving sedimentation and erosion on/off the project site will be analyzed in the EIR.

(c)(ii) Construction of new impervious surfaces and alterations of existing drainage patterns could result in an increase in the rate or amount of surface runoff and may potentially affect flooding conditions. A hydrologic study will be prepared for the project in accordance with Kern County requirements, and potentially significant impacts will be analyzed in the EIR.

(c)(iii) During construction and following installation of the solar arrays, the vast majority of the site would remain as pervious surfaces. The design of the solar arrays would preserve most of the ground area beneath the panels such that storm water infiltration would occur similar to existing conditions. There would be new impervious surfaces and compacted areas that could potentially increase the rate and amount of site runoff, and alter the composition of site runoff, compared to existing conditions; however, the project would not discharge any runoff into a municipal storm drainage facility or system. Further analysis of the project's proposed storm drainage improvements and change in surface hydrology is required in the EIR, to determine whether changes in site runoff in the developed condition could result in a substantial source of polluted runoff that is not properly managed. Potential impacts will be further discussed in the EIR.

(c)(iv) Based on a review of the FEMA's Flood Insurance Rate Maps, portions of the solar facility's Sites 2 and 3 and gen-tie line are mapped in 100-year (Zone A) floodplains. Zone A is defined as areas

subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. The remainder of the project is in an area designated as having a minimal flood hazard. The proposed project would be reviewed by the Kern County Public Works Department- Floodplain for adherence to all floodplain management standards. Further analysis is required in the EIR to determine whether the proposed project could exacerbate flood hazards on or off site and to identify appropriate mitigation/design measures to reduce potentially significant impacts from potential flooding.

(d) The project is not located near an ocean or enclosed body of water, and therefore would not be subject to inundation by seiche or tsunami. Mudflows are a type of mass wasting or landslide, where earth and surface materials are rapidly transported downhill under the force of gravity, and are often triggered by heavy rainfall and soil that is not able to sufficiently drain or absorb water and the super-saturation results in soil and rock materials to become unstable and slide away. Due to the relatively flat topography of the project and surrounding area, the potential to be inundated by mudflow is considered remote.

Based on a review of the FEMA's Flood Insurance Rate Maps, portions of the project Sites 2 and 3 and gen-tie line are mapped as 100-year (Zone A) floodplains. The project would be reviewed by the Kern County Public Works Department for adherence to all applicable floodplain management standards. Further analysis is required in the EIR to determine whether the project could generate increased pollutants that could be released during flooding conditions.

(e) The project site is located within the Fremont Valley Groundwater Basin. A water supply assessment will be completed for the project to analyze potential impacts to groundwater in that basin. Results of this assessment will be provided in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
XI. Land Use and Planning					
Would the project:					
a.	Physically divide an established community?	☐	☐	☐	☒
b.	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation for the purpose of avoiding or mitigating an environmental effect?	☒	☐	☐	☐

RESPONSES:

(a) The project site is located on undeveloped desert land. As shown on **Figure 7**, *Existing General Plan Designations – Kern County*, portions of Sites 1 and 2 are located within the Fremont Interim Rural Community Plan area and approximately 0.25 miles southwest of approximately 40 rural residential dwellings within the community. Sites 2 and 3 are approximately 1-mile north of the nearest subdivision within California City. No new roadways or other linear elements are proposed that would have the potential to restrict existing access or movement within or otherwise physically divide the Fremont community or within California City. Further assessment of this issue, therefore, is not required.

(b) The project is located within the boundaries of the Kern County General Plan, the Fremont Interim Rural Community Plan, and the City of California City General Plan. The Freemont Interim Rural Community Plan Map is in effect until a formal Specific Plan can be adopted for the community. Therefore, since no formal text plans have yet been adopted, the goals and policies of the Kern County General Plan shall be the governing tool for any development within the Community Plan area. The portion of the project site located north of Washburn Boulevard is within the Kern County General Plan area. As shown on **Figure 7**, *Existing General Plan Designations – Kern County*, the project parcels located in unincorporated Kern County are designated by the Kern County General Plan as Map Code 8.5 (Resource Management, Min. 20 Acre Parcel Size) and the parcels located within the Fremont Interim Rural Community Plan are designated as 5.6 (Min. 2.5 Gross Acres/Unit). As shown on **Figure 8A**, *Existing Zoning – Kern County*, the project parcels located in unincorporated Kern County have a zone classification of A (Exclusive Agriculture); A-1 (Limited Agriculture); A-1 MH (Limited Agriculture, Mobile Home Combining); PL RS (Platted Lands, Residential Suburban Combining); and, PL RS MH (Platted Lands, Residential Suburban Combining, Mobile Home Combining). No change to the existing land use designations is required or proposed with project implementation. Further analysis is required, however, to determine whether the proposed project could conflict with any land use plan or policy for the purpose of avoiding or mitigating an environmental effect, including protection of sensitive biological resources (see earlier response to IV.e).

As shown on **Figure 8A**, *Existing Zoning – Kern County*, the project parcels located in unincorporated Kern County have a zone classification of A (Exclusive Agriculture); A-1 (Limited

Agriculture); A-1 MH (Limited Agriculture, Mobile Home Combining); PL RS (Platted Lands, Residential Suburban Combining); and, PL RS MH (Platted Lands, Residential Suburban Combining, Mobile Home Combining)..

As shown in **Figure 8B**, *Proposed Zoning – Kern County*, the project proponent has requested a change in the zone classifications for the project parcels located in unincorporated Kern County to A (Exclusive Agriculture). According to Kern County Zoning Ordinance 19.12.030, solar energy electrical facilities are permitted within the A Zone District with the approval of a CUP. The project proponent is requesting a CUP to allow for the construction and operation of a solar facility and battery energy storage system. With approval of the zone change classifications and CUP, the proposed solar project would be an allowable use within the A Zone District.

Additionally, the project proponent is requesting a General Plan Amendment to amend the Circulation Element of the Kern County General Plan to remove sections and midsection line road reservations, as shown on **Figure 9**, *Future Road Reservations To Be Deleted***.** Those reservations are not required to support any existing or approved land use plans or to achieve any specific Circulation Element objectives associated with performance of the roadway network. This map-only change would not conflict with any of the County's land use policies related to avoiding or mitigation an environmental impact or conserving important natural resources or habitat. California City will determine what section and mid-section line road reservations to be preserved and what ones will be removed during the CUP process (Sec. 9-2-2501 of the California City Municipal Code).

The portion of the project site located south of Washburn Boulevard is within the California City General Plan area. As shown on **Figure 10**, *Existing General Plan Designations – California City*, the project parcels located in California City are designated by the General Plan as O/RA (Controlled Development, Public Parks & Recreation or Public Schools. As shown on **Figure 11**, *Existing Zoning – California City*, the project parcels located in California City have a zone classification of O/RA (Open Space/Residential/Agricultural). The project proponent is also requesting a CUP from California City to allow for the construction and operation of a solar facility in the O/RA (Open Space/Residential/Agricultural) zone. At present, solar facilities are considered to be a permitted use only in industrial zoned areas in California City. The City is in the process of updating its zoning code to designate solar facilities as a compatible/permitted use in O/RA zoned districts. If deemed necessary by the City of California City, the project proponent may request a zone change from O/RA to M-1 (Light Industrial) for the portion of the facility located in California City. No change to the existing land use designations is required or proposed with project implementation within California City, and therefore, the project would not cause a significant environmental impact due to a conflict with any land use plan or policy for the purpose of avoiding or mitigating an environmental effect in this regard.

With approval of the requested CUPs, zone change classifications, and General Plan amendments, the proposed project would not have the potential to conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect. At the end of the project's operational term, the project proponent would determine whether the project site should be decommissioned and deconstructed or if it would seek an extension of its CUP. If any portion of the project site is decommissioned, it would be converted to other uses in accordance with the applicable land use regulations in effect at that time. Further evaluation will be provided in the EIR.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

XII. Mineral Resources

Would the project:

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?	☐	☐	☐	☒

RESPONSES:

(a) The project site is not designated as a mineral recovery area or within a designated mineral and petroleum resource site by the Kern County General Plan, nor is it identified as a mineral resource zone by CalGEMDivision (DOC 1999). There are no existing or abandoned mineral recover activities or facilities within the project site. Construction and operation of the proposed project would not interfere with mineral extraction and processing and would not result in a loss of mineral resources known to be of value in this region. Therefore, there would be no impact and no further analysis is warranted in the EIR.

(b) As mentioned previously, the project site is not located within a designated mineral and petroleum resource site within the Kern County General Plan. The project site is not located within the NR (Natural Resources) or PE (Petroleum Extraction) zoned districts. Therefore, the installation of the solar facilities would not result in the loss of a locally important mineral resource recover site. There would be no impact and no further analysis is warranted in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
XIII. Noise					
Would the project result in:					
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 a local general plan or noise ordinance or applicable standards of other agencies?	☒	☐	☐	☐
b.	Generation of excessive groundborne vibration or groundborne noise levels?	☒	☐	☐	☐
c.	A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project	☐	☐	☒	☐
d.	For a project located within the vicinity of a private airstrip or Kern County Airport Land Use Compatibility Plan, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

RESPONSES:

(a) Land uses determined to be "sensitive" to noise as defined by the Kern County General Plan include residential areas, schools, convalescent and acute care hospitals, parks and recreational areas, and churches. The Kern County and California City General Plan Noise Elements set a 65 dBA (A-weighted decibels) Day-Night noise level (L_{dn}) limit on exterior noise levels for stationary sources (i.e., non-transportation) at sensitive receptors. Sensitive receptors located in the project area consist predominantly of rural residential dwellings located at varying distances from the project site. The Fremont rural community is located northeast of Sites 1 and 2 and west of Site 4 and consists predominantly of rural residential dwellings. The northernmost project parcel (APN No. 469-170-10), located near the intersection of Neuralia Road and Harriet Avenue, is located immediately adjacent to a rural residential dwelling. Noise associated with construction and project operations has the potential to affect these nearby sensitive receptors.

Noise generated by the proposed project would occur primarily during the construction phase; whereas as the long-term operation of the solar facility would be relatively quiet, since no substantial noise-generating equipment would be located at the project site during operations and there would be minor traffic generating by on-site employees, who would work mainly indoors, within the O & M Building. No substantial noise-generating equipment would be located at the project site during operations. There would be periodic noise from routine outdoor maintenance activities and minor traffic from workers arriving/departing the site. The project proponent would be required to adhere to the provisions outlined in the Kern County Ordinance Code and California City Municipal Code

with respect to permitted days and hours of permitted construction activities. Potential noise impacts during project construction or operations will be further analyzed in the EIR

(b) Groundborne vibration and groundborne noise could originate from the operation of heavy off-road equipment and heavy duty trucks delivering materials and machinery during the construction phase of the project. Erection of the solar arrays would include support structures that may potentially need to be driven into the soil using pneumatic techniques, which could generate groundborne noise that could be audible to sensitive receptors in the area. Given the proximity to existing homes in the Fremont community, there is a potential for groundborne vibration impacts from panel foundation construction. Further analysis of groundborne noise and vibration impacts during construction will be provided in the EIR. The analysis will address both Kern County and City of California City thresholds.

Operation of the proposed project is anticipated to emit minimal groundborne vibration and/or noise because operation activities primarily consist of low intensity activities such as routine maintenance, panel washing, and security patrols. The project would not include any activities or machinery that would induce ground vibrations or noise. Nonetheless, further analysis of groundborne vibration and groundborne noise during project operations will be included in the EIR. The analysis will address both Kern County and City of California City thresholds

(c) Heavy equipment use during construction would cause a temporary or periodic increase in ambient noise levels. Temporary or periodic increases in ambient noise levels caused by construction activities could be reduced with the incorporation of mitigation measures. Project-related construction noise levels will be quantified and evaluated in the EIR.

Operation of the project would generate very little noise. The solar facility would use limited staff during operation. Traffic on the access road for the solar facility would be routine access and maintenance activities and would primarily consist of personal vehicles. Nevertheless, a noise analysis will be included in the EIR to determine the project's consistency with the applicable provisions of the Kern County General Plan Noise Element and Kern County Zoning Ordinance, and Article 4, Noise and Vibration, of California City's Municipal Code. Thus, further analysis of ambient noise levels and the project's potential impact on those levels will be included in the EIR.

(d) The southern portion of the project site is located within an area covered by the Kern County ALUCP. The southern portion of Site 2, within California City, is located immediately north of the California City Municipal Airport. Specifically, the project site is located in "Compatibility Zone B1 – Approach/Departure Zone and Adjacent to Runway" (APN No. 302-020-08) and "Compatibility Zone C – Common Traffic Pattern" (APN No. 302-020-08, -09, -11, -14, -15, -16, -17, -18, and 302-470-14). According to Table 2A – Compatibility Criteria of the Kern County ALUCP, Compatibility Zone B1 is subject to substantial noise levels and Compatibility Zone C is subject to frequent noise intrusion. Noise from occasional aircraft flyovers would not have a significant effect on the small workforce on-site, who would normally be working indoors, except when outdoor maintenance or repair activities are required. The proposed solar farm would not generate any impacts that could worsen the levels of aircraft noise. However, further analysis of this issue will be provided in the EIR.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

XIV. Population and Housing

Would the project:

a.	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b.	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

RESPONSES:

(a) Although the proposed project would provide new employment consistent with the adopted Kern County and California City General Plan goals, plans, and policies, long-term employment opportunities would be minimal.

It is estimated that up to 1,000 workers per day (during peak construction periods) would be required during construction of the proposed project. The entire construction process is estimated to take 12 to 18 months. Construction workers are expected to travel to the site from various local communities and locations throughout Southern California, and few, if any workers expected to relocate to the surrounding area because of these temporary jobs. If temporary housing should be necessary, it is expected that accommodations (i.e., extended stay hotels, apartments, RV parks, homes for rent or sale) would be available in the nearby communities of Mojave, California City, Rosamond, Tehachapi, or Lancaster. Therefore, the project is not anticipated to directly or indirectly induce the development of any new housing or businesses.

During the operational phase, the project would have approximately 20 full-time equivalent (FTE) personnel, who would commute to the site. Due to the small number of full-time employees, it is anticipated that the local housing stock would be adequate to accommodate operations personnel should they relocate to the area, without requiring the need for the construction of new housing. The project would not directly or indirectly induce substantial unplanned population growth and further analysis in the EIR is not warranted.

(b) The project site is currently undeveloped and does not contain any existing housing units. The proposed project would therefore not displace any existing people or housing, necessitating the construction of replacement housing elsewhere. No further evaluation of this topic is required in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

XV. Public Services

Would the project:

a.	Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services:				
i.	Fire protection?	☒	☐	☐	☐
ii.	Police protection?	☒	☐	☐	☐
iii.	Schools?	☐	☐	☐	☒
iv.	Parks?	☐	☐	☐	☒
v.	Other public facilities?	☐	☐	☐	☒

RESPONSES:

(a)(i) **Fire Protection.** The Kern County Fire Department and California City Fire Department provides fire suppression and emergency medical services to the project area. The portion of the project site located within unincorporated Kern County would be served by Station #14 located at 1773-1999 Mojave-Barstow Highway in Mojave. The portion of the project site located within California City would be served by Station #85, located at 20890 Hacienda Boulevard in California City. Given the location of the project in the rural environment and the fire departments' obligation to respond to construction site or structural fires in their jurisdiction, the project may have the potential to affect fire-fighting capacity, which might result in a need for additional firefighting personnel and facilities in the area. Therefore, the potential impact on fire services from construction and operation of the project is considered potentially significant and will be further evaluated in the EIR.

(a)(ii) **Police Protection.** Law enforcement and public safety services in the project area are provided by the Kern County Sheriff's Department and California City Police Department. The portion of the project site located within unincorporated Kern County would be served by the Mojave Substation located at 1771 Highway 58. The portion of the project site located within California City would be served by the station located at 21130 Hacienda Boulevard. On-site security measures (i.e., on-site monitoring equipment, gated access, motion sensor lighting) would be provided and access to the project site during construction and operation would be restricted, thereby minimizing the need for local Sheriff surveillance Nonetheless, the proposed project's impacts on sheriff and police services are considered potentially significant and will be evaluated in the EIR.

(a)(iii) **Schools.** During project construction, a relatively large number of construction workers would be required. It is expected that most of these workers would live in the broader region and commute to the project site from surrounding communities where their children are already enrolled in school and where their contribution to local taxes, including funds for schools, is assessed locally. The proposed project would not require employees or their children to relocate to the project area. Therefore, substantial temporary increases in population that would adversely affect local school populations are not expected. Likewise, the operational workforce is small (approximately 20 full-time positions) and not expected to generate a permanent increase in population that would impact school populations. Therefore, no significant impacts to schools are anticipated to occur and further analysis is not warranted in the EIR.

(a)(iv) **Parks.** The population increase that would be experienced during the construction phase of the proposed project would be temporary and limited to construction workers at the project site and would not result in additional demand for parks or other recreational facilities. The up to 20 full-time workers would not result in construction of numerous new housing units that could significantly increase the local population and related demand for public parkland. Therefore, no significant impacts to parks are anticipated to occur, and further analysis of this issue is not warranted in the EIR.

(a)(v) **Other Public Facilities.** During project construction, a relatively large number of construction workers would be required. However, it is expected that most of these workers would commute to the project site from surrounding communities. Therefore, this temporary population would not adversely affect local public facilities, such as post office, courthouse, and library services.

Likewise, the operational workforce for the project is anticipated to be an estimated 20 persons on a daily basis and would not generate a permanent increase in population that would impact other public facilities. The proposed project would not require the appreciable use of other public facilities—such as libraries, courts, or other Kern County or California City services—that would result in a significant impact. Therefore, no significant impacts to other public facilities are anticipated to occur, and further analysis of this issue is not warranted in the EIR.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

XVI. Recreation

Would the project:

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.	Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

RESPONSES:

(a) It is estimated that up to 1,000 workers per day (during peak construction periods) would be required during construction of the proposed project. These workers would not have time to visit any local parks or recreation facilities during the workday. Further, few workers are expected to relocate to this area temporarily while the construction is underway and there would be little or no impact on local recreational resources after work hours.

Operation of the project would require employees for maintenance and monitoring activities, but they would likely be drawn from the local or sub-regional labor force and would commute from their existing permanent residences to the project site during those times. However, even if the maintenance/monitoring employees were hired from out of the area and relocated to eastern Kern County, the resulting addition of families to this area would be small in number and would not result in a substantial increase in the number of users at local parks. As a result, there would not be a detectable increase in the use of parks or other recreational facilities. Adverse impacts would not occur, and further analysis is not warranted in the EIR.

(b) The proposed project does not include or require the construction of new or expansion of existing recreational facilities, and there are no recreational facilities on the project site that would be affected. No impact would result and no further analysis in the EIR is warranted.

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

RESPONSES:

(a). The project proponent is requesting a General Plan Amendment to amend the Circulation Element of the Kern County General Plan to remove sections and midsection line road reservations. This would have no effect on the performance of the roadway network, since there are no existing roadways along any of these sections and midsection line road reservations. California City will determine what section and mid-section line road reservations to be preserved and what ones will be removed during the CUP process (Sec. 9-2-2501 of the California City Municipal Code).

There are no dedicated pedestrian or bicycle facilities in the immediate vicinity of the project site or along the surrounding roadways. Due to the rural nature of the project area, pedestrian and bicycle traffic is limited. The project is not located along an existing bus route and few bus stops exist on the roadways likely to be used during construction and operation. The project would not house residents or employees, and therefore, would not have characteristics that would influence alternative means of transportation. Therefore, impacts in this regard would be less than significant.

It is estimated that up to 1,000 workers per day (during peak construction periods) would be required during the construction of the proposed project. An undetermined volume of large truck trips would also be generated, with varying numbers depending on the phase of construction. Further analysis in the EIR is required to determine whether construction traffic could disrupt normal traffic flows or otherwise conflict with the County's roadway performance policies and programs.

Once constructed, the solar facility would have approximately 20 full-time employees, with daylight and overnight shifts. This equates to approximately 50 trips per day for the full facility based on an average trip rate of 2.5 trips per employee. It is anticipated that employees would drive themselves to/from the project site on a daily basis using local roadways that can accommodate such vehicle traffic. Ongoing maintenance and periodic repair are also anticipated to produce negligible results in

terms of traffic impact. These potential impacts on the local roadway system from construction related vehicle trips and project's operational traffic on the area roadway system will be further evaluated in the EIR.

(b) CEQA Guidelines section 15064.3, subdivision (b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the CEQA Guidelines criteria for determining the significance of transportation impacts are primarily focused on projects within transit priority areas, and shifts the focus from driver delay to reduction of vehicular greenhouse gas emissions through creation of multimodal networks, and creation of a mix of land uses that can facilitate fewer and shorter vehicle trips. Vehicle miles traveled (VMT) is a measure of the total number of miles driven for various purposes and is sometimes expressed as an average per trip or per person. Construction traffic would be temporary and would not permanently affect VMT characteristics in this part of Kern County or elsewhere. Long-term, operational traffic would be limited, with a small work force of approximately 20 full-time equivalent employees, translating into approximately 50 trips per day. It is not known where the employees would live or how long their commuting trips would be. According to technical guidance issued by the Office of Planning and Research, projects generating less than 110 or fewer daily vehicle trips may be presumed to have a less than significant impact involving VMT. Further analysis of the operational VMT characteristics of the project is required to determine whether the project is considered a "low-VMT" project due to small daily traffic volumes alone, or whether more extensive analysis is warranted. An assessment of the project's VMT characteristics will be provided in the EIR.

(c) The project proposes access from existing roads that currently provide access to the various parcels affected. During construction, especially during peak periods of heavy truck traffic and peak levels of construction workers, there is a potential for conflicts between construction traffic and normal traffic flows, especially at intersections where queuing could occur. This requires further analysis in the EIR. Beyond maintenance to existing roads, driveway, and related access improvements; no off-site roadway improvements are required for the solar PV fields. Proposed driveway connections to existing roadways are being evaluated and will be identified in the EIR. No new roadway design or features (i.e., sharp curves, dangerous intersections, or other hazardous features) would be required that could result in transportation-related hazards or safety concerns. All new driveways connecting to existing adjacent streets must be designed in accordance with the County and City street standards that assure safe ingress/egress. The project buildings and other structures would be set back from adjacent access roadways as required by the Kern County and California City Zoning Ordinance. Given these considerations, significant impacts related to increased hazards are not anticipated to occur, and further analysis of the specific access design features and geometries is not warranted.

(d) The project site and vicinity are accessible via a number of existing roads, with alternative access roads allowing convenient access in the event of an emergency. Emergency vehicle access must be maintained at all times throughout construction activities, in accordance with the County's and City's routine/standard construction specifications. County and City building inspectors would conduct periodic site inspections to confirm there are adequate provisions in place to maintain emergency access for fire, emergency medical and Sheriff response units. Further, construction activities would not be permitted to impede emergency access to any local roadways or surrounding properties.

Operations of the project would not adversely affect emergency access as the number of daily trips would have a minimal effect on traffic volumes and overrides of project site access gates for emergency access to the facility would be installed. Although no significant impacts related to emergency access are anticipated to occur, further analysis of this issue will be provided in the EIR.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact

XVIII. Tribal Cultural Resources

Would the project:

a.	Would the 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 or 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 Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☒	☐	☐	☐

RESPONSES:

(ai, aii) The proposed project has the potential to impact presently unknown surface or subsurface tribal cultural resources during site clearance and earthmoving activities. A cultural survey will be conducted for the proposed project. All tribes with possible cultural affiliation and interest within the project area were notified pursuant to Assembly Bill 52 and consultation with the potentially affected tribes will occur, as appropriate, between the County, the City of California City, and the tribes. Further evaluation in the EIR is warranted to identify potential impacts to tribal cultural resources and to formulate avoidance or mitigation measures, if applicable.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
XIX. Utilities and Service Systems					
Would the project:					
a.	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water 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 that 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 management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

RESPONSES:

(a) **Wastewater Facilities.** The project would generate a minimal volume of wastewater during construction. During construction activities, wastewater would be contained within portable toilet facilities and disposed of at an approved site. During operations, wastewater generated by the project would be disposed on-site by a septic system associated with any O&M facilities. Soil suitability for a septic tank leach field and any related environmental impacts will be addressed in the response to the topic of Geology and Soils, threshold e). The proposed project would not require or result in the relocation or construction of new or expanded municipal wastewater facilities. Further analysis of impacts to wastewater facilities will be provided in the EIR.

Storm Water Facilities. The proposed project does not require expanded or new municipal storm drainage facilities because there are no municipal drainage facilities within or adjacent to any sites and the proposed solar facility would not generate a significant increase in the amount of impervious surfaces that would increase runoff during storm events. Water from solar panel washing would continue to percolate through the ground, as a majority of the surfaces within the project site would

remain pervious. Any storm drainage/detention facilities that may be required would be minor in scale and located within the project site. Potential impacts from such facilities will be addressed in the response to the topic of Hydrology and Water Quality, threshold c). Impacts are considered to be less than significant; however, further analysis in the EIR will be provided.

Water Facilities. The proposed project is not anticipated to result in a significant increase in water demand/use; however, water will be needed for solar panel washing and dust suppression. Water is anticipated to be obtained from on-site wells, which might require installation of a water treatment system. No municipal water supply or distribution infrastructure would be built or impacted. Potential impacts to groundwater resources resulting from on-site well production will be addressed in the response to the topic of Hydrology and Water Quality, threshold b). Alternatively, water may be obtained from one or more off-site source(s) and delivered to the project site via truck. If off-site water is trucked in, it would likely be obtained from one of the nearby Springbok projects, the Eland Project, or from a commercial source. In that case, there would be no impact involving construction or relocation of any water infrastructure. Impacts would be potentially significant and further analysis in the EIR is warranted.

Power, Natural Gas, and Telecommunication Facilities. The proposed project would involve construction of a PV solar facility that would generate electrical energy that would be transmitted via new overhead or underground lines to the regional electrical energy supply grid. Analyses of various environmental effects associated with construction and operation of these facilities will be provided throughout the EIR, with respect to numerous topics. There may be on-site telecommunications facilities to facilitate collection and transmission of meteorological data and data regarding performance of the solar arrays. Impacts associated with construction of the telecommunications and transmission line facilities will be evaluated in the EIR. The proposed project would not use natural gas. The proposed project would not otherwise generate the demand for or require or result in the relocation or construction of new or expanded electric power, natural gas, or telecommunications facilities that would in turn, result in a significant impact to the environment. Impacts are considered to be less than significant; however, further analysis in the EIR will be provided.

(b) Water demand for panel washing and O&M domestic use is not expected to exceed 50 acre-feet per year. Water usage during construction, primarily for dust-suppression purposes, is not expected to exceed 400 acre-feet. Water is anticipated to be obtained from on-site wells. Alternatively, water may be obtained from one or more off-site source(s) and delivered to the project site via truck. If off-site water is used, it would likely be obtained from one of the nearby Springbok projects, the Eland Project, or from a commercial source. A water supply assessment will be completed for the project to analyze potential impacts to water supplies. This potentially significant impact will be addressed further in the EIR.

(c) As stated above, portable toilets would provide for wastewater disposal during project construction and no connection to a public system for wastewater treatment would be required. Due to the limited number of employees for project operations, the project would not generate a substantial amount of wastewater. The proposed project would include construction of an on-site septic system to serve each of the O&M facilities. All wastewater disposal for project operations would be handled on-site. Therefore, the project would not adversely affect any existing wastewater treatment facilities. Impacts would be less than significant and further analysis of this issue is not warranted in the EIR.

(d) The proposed project is not expected to generate a significant amount of solid wastes that would exceed the capacity of local landfills. Materials brought to the project site would be used to construct facilities, and few residual materials are expected. Non-hazardous construction refuse and solid waste would be either collected and recycled per the Construction Waste Management Plan or disposed of at a local Class III landfill, while any hazardous waste generated during construction would be disposed of at an approved off-site location. The closest Class III municipal landfill is the Mojave-Rosamond Recycling and Sanitary Landfill, located approximately 13 miles southwest from the project site. As of 2013, the Mojave-Rosamond Recycling and Sanitary Landfill has a remining capacity of 76,310,297 cubic yards, with an anticipated closure date of 2123 (CalRecycle 2020). Although it is not anticipated that the amount of solid waste generated by the proposed project would exceed the capacity of local landfills needed to accommodate the waste, further analysis of this issue will be included in the EIR to ensure the project meets state and local waste reduction goals.

(e) The proposed project would generate solid waste during construction, operation, and decommissioning, thus requiring the consideration of waste reduction and recycling measures. The 1989 California Integrated Waste Management Act (AB 939) requires Kern County to attain specific waste diversion goals. In addition, the California Solid Waste Reuse and Recycling Access Act of 1991, as amended, requires expanded or new development projects to incorporate storage areas for recycling bins into the proposed project design. The proposed project would be required to comply with the 1989 California Integrated Waste Management Act and the 1991 California Solid Waste Reuse and Recycling Access Act of 1991. Further analysis of the pertinent solid waste reduction and management regulations applicable to this project will be included in the EIR.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
XX. Wildfire				
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
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?	☐	☐	☒	☐

RESPONSES:

(a) According to the Fire Hazard Severity Zones map published by the California Department of Forestry and Fire Protection (CalFire), the project site is not located within or near state responsibility areas or lands classified as very high fire hazard severity zones (VHFSZ). The nearest VHFSZ is located more than three miles away from the project site (CalFire 2020). The project site is classified as Local Responsibility Area (LRA) Moderate; thus, the potential for wildfire on the project site exists, but is not considered high and is not anticipated to physically impede the existing emergency response plans, emergency vehicle access, or emergency personnel access to the site (CalFire 2007). The project site is not identified for any purpose in an adopted emergency evacuation plan to address wildfires or other types of emergencies (Kern County 2012b). The project site is not located along an identified emergency evacuation route and roads reservations proposed to be abandoned are not identified in any adopted emergency evacuation plan pertaining to wildfire hazards. There are multiple existing local roadways adjacent to the project sites that lead to primary emergency evacuation routes, such as SR 14. In compliance with applicable Fire Code and Building Code requirements, construction and maintenance/operations managers and personnel would be trained in fire prevention and emergency response. Fire suppression equipment specific to construction would be maintained on the project site. Additionally, project construction and maintenance/operations would comply with applicable existing codes and ordinances related to the maintenance of mechanical equipment, handling and storage of flammable materials, and cleanup of spills of

flammable materials. Therefore, the project would not conflict with the implementation of, or physical interference with, an adopted emergency response plan or emergency evacuation plan and impacts would be less than significant. Nevertheless, further analysis will be conducted in the EIR.

(b) Slope and wind can influence the rate at which wildfire spreads. Given the project site's generally flat topography, the proposed project is not anticipated to expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to sloping topography. Further analysis of prevailing winds is required to determine if there are periodic high winds that could influence the spreading and velocity of wildfires. Adherence to applicable regulations would reduce wildfire ignitions and prevent the spread of wildfires. The project proponent/operator would be required to develop and implement a Fire Safety Plan that contains notification procedures and emergency fire precautions consistent with the 2019 California Fire Code and Kern County Fire Code for use during construction, operation and decommissioning, However, as the project would have the potential to expose occupants (i.e., at the O&M facilities) to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire due to prevailing winds or other factors, further analysis will be conducted in the EIR.

(c) The proposed project involves the development of a solar energy generation and storage facility, which would include the construction of, inverters, roads, and an energy storage facility. The project site vegetation would be removed as necessary, which would reduce ignition sources. Due to the presence of electrical equipment and battery storage on site, however, the proposed project has the potential for accidental fires from this equipment, which could exacerbate wildfire risk. This will be further evaluated in the EIR.

(d) The project site is not considered to be a high risk area for landslides as it is relatively flat and is not anticipated to be subject to post-fire slope instability, or drainage changes that would expose people or structures to significant risks in a post-wildfire burned landscape condition. Therefore, this impact will not be further analyzed in the EIR.

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than Significant Impact	No Impact
XXI. Mandatory Findings of Significance					
a.	Does the project have 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 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 significant 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 that would cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

RESPONSES:

(a) The EIR's biological, cultural, and tribal cultural resources sections will discuss specific project impacts on plants and wildlife, including avian species, and impacts to cultural and tribal cultural resources. The document will also propose mitigation that will reduce the impacts to less than significant levels, where feasible.

(b) The project has the potential to contribute to cumulatively considerable construction impacts involving noise, air emissions, and traffic, if other planned/approved solar projects in the vicinity are under construction at the same time. The project could also contribute to cumulatively considerable permanent impacts involving aesthetics, air quality, biological resources, cultural resources, tribal cultural resources, greenhouse gas emissions, traffic, and wildfire. The EIR will evaluate the project's contribution to cumulative impacts in these and possibly other areas.

(c) The proposed project would not result in the long-term generation of any hazardous air emissions or noise sources that would adversely affect nearby sensitive receptors. The solar farm would not include any kinds of industrial processes or equipment that would generate hazardous substances or wastes that would threaten the well-being of people on or off-site. However, short-term construction activities could result in temporary increases in pollutant concentrations and potentially significant

off-site noise impacts. Pollutants of primary concern commonly associated with construction-related activities include toxic air contaminants, gaseous emissions of criteria pollutants, and fugitive dust. Within the project area, the potential for increased occurrences of Valley Fever and exacerbated health issues related to COVID-19 is also of concern. Human health impacts from the short-term cumulative contribution to air quality impacts from project construction will be further evaluated in the EIR.

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Public Comments

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Eastern Kern
Air Pollution Control District

Glen E. Stephens, P.E.
Air Pollution Control Officer

September 17, 2020

RECEIVED
SEP 30 2020
Kern County Planning &
Natural Resources Dept.

Ronelle Candia, Supervising Planner
Kern County Planning and Natural Resources Department
2700 "M" Street, Suite 100
Bakersfield, CA 93301

SUBJECT: Comments for Initial Study/Notice of Preparation of Environmental Impact Report for Kudu Solar Farm by 69SV 8ME LLC (PP20405); ZCC 14, Map #152; CUP 28, Map #152; and GPA 10, Map #152

Dear Ms. Candia:

Eastern Kern Air Pollution Control District (District) is in receipt of the Notice of Preparation of an Environmental Impact Report (EIR) for the Kudu Solar Farm by 69SV 8ME LLC.

Commercial solar power generation facilities 10 acres and larger are required to submit a Fugitive Dust Emission Control Plan, Fugitive Dust Emission Monitoring Plan, and apply for an Authority to Construct prior to commencing construction of the facility.

Regarding the ozone attainment plan referenced on page 46 of the initial study, the most recent ozone attainment plan for the District is the 2017 Ozone Attainment Plan for 2008 Federal 75ppb 8-Hour Ozone Standard, adopted on July 27, 2017.

Thank you for your cooperation in this matter. Should you have any questions, please telephone Samuel Johnson our office at (661) 862-5250.

Sincerely,

Glen E. Stephens, P.E.
Air Pollution Control Officer

GES:SJ:tf

DEPARTMENT OF TRANSPORTATION
DISTRICT 9
500 SOUTH MAIN STREET
BISHOP, CA 93514
PHONE (760) 872-0785
FAX (760) 872-0678
TTY 711
www.dot.ca.gov

Making Conservation a California Way of Life.

September 29, 2020

Ms. Ronelle Candia
Kern County Planning/Natural Resources Dept.
2700 M Street, Suite 100
Bakersfield, California 93301

File: Ker-14-27.3
NOP DEIR
SCH#: 2020099017

Kudu Solar - Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR)

Dear Ms. Candia:

Thank you for giving the California Department of Transportation (Caltrans) District 9 the opportunity to comment during the NOP phase for the Kudu Solar Farm project in eastern Kern County and California City. We offer the following:

- We look forward to reviewing the EIR's evaluation of potential impacts on the roadway system from construction related trips. Such analysis should address the need for a traffic management plan, and adequacy of the Phillips Road/State Route 14 intersection for geometrics, queueing, etc.

- The document notes a gen-tie crossing of SR 14, perhaps utilizing an Eland Solar Project gen-tie with alterations. A new encroachment permit would be required. Details regarding state highway gen-tie crossings may be found in Section 600 Utility Permits of the **Encroachment Permit Manual** at: https://dot.ca.gov/-/media/dot-media/programs/traffic-operations/documents/encroachment-permits/chapter-6-ada.pdf

  The permit application may be found at:
  https://dot.ca.gov/programs/traffic-operations/ep/applications

  For permitting details, you may contact Stephen Winzenread, District 9 Permits Engineer, at (760) 872-5222.

We value our cooperative working relationship with Kern County regarding development impacts to the state transportation system. For any questions, feel free to contact me at (760) 872-0785 or at gayle.rosander@dot.ca.gov.

Sincerely,

Gayle J. Rosander

GAYLE J. ROSANDER
External Project Liaison

c: State Clearinghouse
Mark Reistetter, Caltrans D-9

September 28, 2020

Kern County Planning and Natural Resources Department
2700 “M” Street, Suite 100
Bakersfield, CA 93301
Attn: Ronelle Candia

Re: Kern County Department of Agriculture Comments Regarding Planning Dept. Project Kudu Solar Farm

To Whom It May Concern,

The Kern County Department of Agriculture, as the local agricultural authority, has received a request for comments regarding the scope and content for a notice of preparation of a Draft EIR for Kudu Solar Farm. Upon initial review, we have the following input as it relates to our department responsibilities.

The applicant shall determine if they are subject to provisions of the California Desert Native Plants Act (CDNPA). The provisions of the act can be found in the California Food and Agricultural Code, Division 23, Sections 80001-80201.

The purpose of the CDNPA is to protect certain species of California desert native plants from unlawful harvesting on both public and privately owned lands. The CDNPA only applies within the boundaries of Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego Counties. Within these counties, the CDNPA prohibits the harvest, transport, sale, or possession of specific native desert plants unless a person has a valid permit or wood receipt, and the required tags and seals. The appropriate permits, tags and seals must be obtained from the sheriff or agricultural commissioner of the county where collecting will occur, and the county will charge a fee.

Please feel free to contact our office.

With appreciation,

Darin Heard
Assistant Agricultural Commissioner
Kern County Dept. Agriculture

KERN COUNTY
Public Health Services
DEPARTMENT

MATTHEW CONSTANTINE
DIRECTOR

2700 M STREET, SUITE 300 BAKERSFIELD, CALIFORNIA, 93301-2370 VOICE: 661-862-8740 FAX: 661-862-8701 WWW.CO.KERN.CA.US/EH

INTEROFFICE MEMORANDUM

To: Ronelle Candida
From: Evelyn Elizalde
Subject: Draft EIR for Kudu Solar Farm by 69SV 8ME LLC

Date: September 29, 2020

The Kern County Environmental Health Division has reviewed the above referenced project. This Division has the local regulatory authority to enforce state regulations and local codes as they relate to waste discharge, water supply requirements, and other items that may affect the health and safety of the public or that may be detrimental to the environment.

The Environmental Health Division requests that the following conditions be placed on the subject project and be satisfied prior to issuance of building permits:

1. Please log in to the California Environmental Reporting System (CERS) at http://cers.calepa.ca.gov/ and create an account and facility. If you have questions on what needs to be uploaded please contact Bilal Korin at (661)862-8730 or korinb@kerncounty.com
2. The method of water supply and sewage disposal for the proposed project shall be approved by Kern County Environmental Health Division.
3. If any abandoned wells are found during the grading and construction process, the applicant shall contact the Land and Water Division for permitting and destruction procedures.

Printed on Recycled Paper

October 2, 2020

Kern County Planning and Natural Resources Department
Attn: Ronelle Candia
2700 M Street, Suite 100
Bakersfield, CA 93301
Via email to: CandiaR@kerncounty.com

City of California City Planning Department
21000 Hacienda Boulevard
California City, CA 93505
Attn: Shawn Monk, City Planner/Economic Development Administrator
Via email to: smonk@californiacity-ca.gov

Re: Initial Study/Notice of Preparation of an Environmental Impact Report-Kudu Solar Farm Project by 69SV 8ME LLC (PP20405)

Dear Ms. Candia and Mr. Monk;

Thank you for the opportunity to review and submit comments on the Initial Study and Notice of Preparation (IS/NOP) of a Draft Environmental Impact Report (DEIR) for the proposed Aratina Solar Farm project (Project). This comment letter is submitted by Defenders of Wildlife (Defenders) on behalf of its 1.8 million members and supporters in the U.S., including 279,000 in California, and the Desert Tortoise Council (Council), a strong advocate in tortoise conservation and recovery.

Defenders is a national conservation organization founded in 1947 and dedicated to protecting all wild animals and plants in their natural communities. To this end, we employ science, public education and participation, media, legislative advocacy, litigation, and proactive on-the-ground solutions to impede the accelerating rate of extinction of species, associated loss of biological diversity, and habitat alteration and destruction.

The Council is a non-profit organization comprised of hundreds of professionals and laypersons

who share a common concern for wild desert tortoises and a commitment to advancing public understanding of desert tortoise species. Established in 1975 to promote conservation of tortoises in the deserts of the southwestern United States and Mexico, the Council routinely provides information and other forms of assistance to individuals, organizations, and management and regulatory agencies on matters potentially affecting desert tortoises within their geographic ranges.

Brief Description of the Project: The Kudu Solar Farm is a proposed photovoltaic solar facility and energy storage system capable of producing up to 500 megawatts of alternating current power and 600 MW hours of battery storage capacity on approximately 1,955 acres of privately-owned land. The proposed project would be supported by a 230 kilovolt gen-tie overhead and/or underground gen-tie originating from the Eland Substation and terminating at the Los Angeles Department of Water and Power Barren Ridge Substation located approximately two miles northwest of the project site, or through an upgraded connection through the existing Eland 1 Solar Project transmission line.

Approximately 1,281 acres of the proposed project are located within the California City limits, with the remainder located on unincorporated private land under the permitting jurisdiction of Kern County. Native vegetation onsite is typical of that found throughout the western Mojave Desert, dominated by creosote bush and white bursage on bajadas, and saltbush scrub in interspersed, lower elevation alkaline basins.

Many project parcels have been previously disturbed and/or cultivated, with fallow agricultural fields and cleared lands that were never put into planned agricultural production. Much of the fallowed land is barren of native shrub cover, save a monoculture of rubber rabbitbrush.

Our comments on the IS/NOP for the Project are as follows:

1. NOP/Initial Study/Biological Resources: We are pleased to find that various impacts to biological resources from proposed project are recognized as potentially significant in the IS/NOP, including:

- Species identified as a candidate, sensitive, or special status species by the California Department of Fish and Wildlife (CDFW) or U.S. Fish and Wildlife Service (USFWS);
- Sensitive natural communities identified by the CDFW or USFWS;
- Intermittent streams classified by the CDFW as "Waters of the State"; and
- Wildlife habitat linkages providing opportunities for movement of native resident or migratory species.

2. Agassiz's Desert Tortoise: The proposed project is located within the range of Agassiz's desert tortoise, a species listed as threatened under the Endangered Species Act and California Endangered Species Act (CESA).

We understand that EnviroPlus Consulting performed focused protocol surveys in the spring of 2020 that discovered desert tortoise sign on western parts of the subject property, north of Phillips Road. During subsequent trapping surveys for Mohave ground squirrel, tortoise sign was also found south of Phillips Road. We ask that the results of these surveys and observations be included in the DEIR. Because tortoise sign has been found onsite, the project applicant should be advised to apply for and obtain an incidental take permit from the USFWS and CDFW. The applicant should be advised to also initiate discussions with these two agencies to determine how many acres of occupied desert tortoise habitat would be impacted by the project, which would be used to determine how many acres of compensation habitat must be acquired and managed in perpetuity.

Since the species occurs onsite, the DEIR should include measures to avoid, minimize and compensate for unavoidable impacts. Such measures should include terms and conditions for incidental take permits issued to the project applicant.

2. Mohave Ground Squirrel: The proposed project is located within the range of the Mohave ground squirrel, listed as a threatened species under CESA.

It is our understanding that protocol trapping surveys for Mohave ground squirrel[1] were performed by Dr. Philip Leitner in the spring and summer of 2020. We ask that the results of these surveys, including consultant survey reports, be published in the DEIR. During these surveys, Mohave ground squirrels were captured both east and west of Neuralia Road, which demonstrates that all non-agricultural lands within proposed project areas are considered to be suitable, likely occupied habitats. Please include maps that show differing habitat types, which can serve as the basis to determine how many acres of habitat will need to be compensated. This acreage and other information will be required to determine compensation levels in the incidental take permit that will be required from CDFW.

In addition, the DEIR should include measures to avoid, minimize or compensate for unavoidable impacts. Such measures should include terms and conditions for incidental take permits issued to the project applicant.

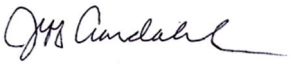
3. Habitat Linkages: The proposed project is located within or adjacent to a desert habitat linkage identified in the Desert Renewable Energy Conservation Plan (DRECP) and shown on Figure III.7-26 (see attachment). The DEIR should analyze if the proposed project would impact this linkage and, if so, identify alternative configurations of the project solar panel arrays and other infrastructure that would avoid or minimize function of the linkage. Based on the maps of the proposed project in the IS/NOP, it appears project site numbers 2 and 3 may have the potential to impact the integrity and function of the linkage.

Conclusion: Defenders and the Council thank the Kern County Planning and Natural Resources Department, and the California City Planning Department, for the opportunity to review and comment on the IS/NOP for the proposed project. We hope our comments are helpful in

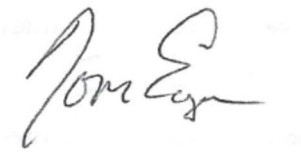
[1] California Department of Fish and Game. 2003 (revised 2010). Mohave ground squirrel survey guidelines. Unpublished guidelines produced by CDFG (now CDFW). Sacramento, CA.

preparing the DEIR. Please contact us if you would like any additional information or have questions on our comments.

Sincerely,



Jeff Aardahl
California Representative
Defenders of Wildlife
46600 Old State Highway, Unit 13
Gualala, CA 95445
jaardahl@defenders.org



Tom Egan
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tegan@defenders.org

Ken MacDonald
Desert Tortoise Council, Chairperson
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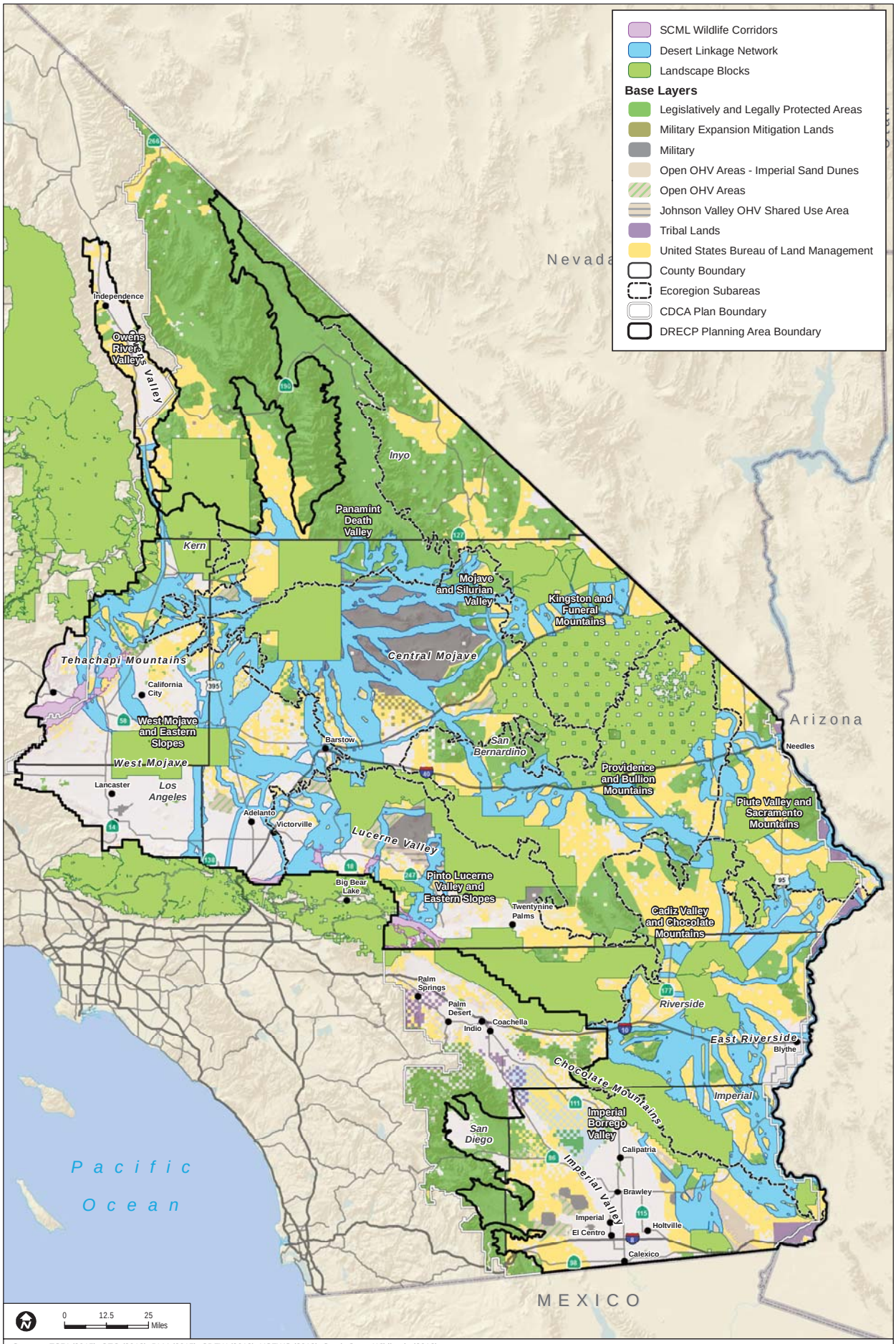
Palmdale, California 93552
eac@deserttortoise.org

Attachments: Map of habitat linkages from the DRECP



Sources: ESRI (2015); CEC (2013); BLM (2015); CDFW (2013); USFWS (2013); South Coast Wildlands (2012)

FIGURE III.7-26

Habitat Linkages and Wildlife Movement Corridors - Ecoregion Subarea Index Map

From: catherine ngo
To: Ronelle Candia
Subject: Re: Kudu Solar Farm by 69SV
Date: Tuesday, October 6, 2020 11:51:21 PM

CAUTION: This email originated from outside of the organization. Do not click links, open attachments, or provide information unless you recognize the sender and know the content is safe.

Thank you Ronelle for the information. I want to confirm that I have not signed or entered in any agreement to use my land.
Catherine

On Tuesday, October 6, 2020, 11:01:14 PM PDT, Ronelle Candia <candiar@kerncounty.com> wrote:

Good Evening,

The notice you received in the mail is for informational purposes letting you know the Kern County Planning and Natural Resources Department is processing an application submitted by 69SV 8ME to allow for an approximately 1,955.13 acre large scale solar facility. If you received this notice, your property is most likely within a 1,000 feet of the proposed project boundary. The project boundary only includes land in which the applicant either owns or has entered into an agreement with the property owner to use their land for the project.

This project is required to go through the highest level of environmental review and a Environmental Impact Report will be prepared for this project. You are not required to do anything; however, if you wish to provide comments on analysis you would like to see in the Environmental Impact Report, please feel free to do so at this time. If you would like to learn more about the project and/or the environmental review process, please provide a phone number and I would be more than happy to discuss with you over the phone.

Sincerely,

Ronelle

Ronelle R. Candia

Supervising Planner – Advanced Planning Division

Kern County Planning & Natural Resources Department

2700 “M” Street, Suite 100

Bakersfield, CA 93301

Phone: 661.862.8997

Email: CandiaR@KernCounty.com

From: catherine ngo <catherinepn@yahoo.com>
Sent: Sunday, October 4, 2020 12:09 AM
To: Ronelle Candia <Candiar@kerncounty.com>; catherine ngo <catherinepn8@yahoo.com>
Subject: Re: Kudu Solar Farm by 69SV

CAUTION: This email originated from outside of the organization. Do not click links, open attachments, or provide information unless you recognize the sender and know the content is safe.

hello,

please advise what information do you need from me.

thank you

Catherine Ngo

On Wednesday, September 23, 2020, 05:18:22 PM PDT, catherine ngo <catherinepn8@yahoo.com> wrote:

Hello,
I received the notice of preparation for Kudu Solar Farm by 69SV. I am not certain what actions are needed from me. Will my land be impacted by this project? I need more details.
thank you,
Catherine Ngo

Kern Audubon Society
Attn: Franklin Bedard
P.O. Box 3581
Bakersfield, CA 93385
mbedard@bak.rr.com

October 10, 2020 *submitted electronically*

Ronelle Candia, Supervising Planner
Kern County Planning and Natural Resources Department
2700 "M" Street, Suite 100
Bakersfield, CA 93301
CandiaR@kerncounty.com

Subject: **Notice of Preparation of a Draft Environmental Impact Report**
Kudu Solar Farm Project (Project), by 69SV 8ME LLC

Dear Ms Candia:

The Kern Audubon Society (KAS), an interested party, received a notice of availability concerning a Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) from the Kern County Planning and Natural Resources Department (County) for the above referenced Project pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.

Thank you for the opportunity to provide comments concerning the scope and content of the environmental analysis of the Project that may affect the diverse California wildlife within the Project's footprint and its cumulative impacts in the region.

The DEIR for the proposed 1,955.13 acre project near the city of California City should identify and evaluate potential adverse impacts to protected species that may utilize the disturbed and undeveloped desert saltbush scrub areas proposed for the Project activities. These undeveloped areas have potential to support desert kit fox, American badger, Western burrowing owl, Swainson's hawk, loggerhead shrike, Mohave ground squirrel, and desert tortoise. The biological site evaluation should be performed by qualified biological consultants using the appropriate survey protocols as established by both state and federal wildlife agencies.

It is imperative that all biological surveys be performed during the appropriate time of year to discern species presence for this eco-region. This is especially true for the desert tortoise and Mohave ground squirrel. Biological consultants should also evaluate the Project's potential to subsidize and support local raven populations that depredate the endangered desert tortoises of the Mojave Desert region. Ravens represent a major threat to long term tortoise recovery in the Mojave. The close proximity of the Desert Tortoise Preserve makes raven management a major concern. Of additional concern is the Project's location along the eastern edge of the Sierra flyway, a major migratory path for millions of migrating birds every year.

KAS appreciates the opportunity to comment on the NOP for the Kudu Solar Farm Project DEIR and to assist the County in identifying Project impacts on local sensitive biological resources.

Sincerely,

Franklin Bedard
Conservation Chair
Kern Audubon Society

MOJAVE
AIR AND SPACE PORT

October 14, 2020

Ms. Ronelle Candia
Kern County Planning and Natural Resources Department
2700 “M” Street, Suite 100
Bakersfield, CA 93301
Email: CandiaR@kerncounty.com

Subject: Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the Proposed Kudu Solar Farm

Dear Ms. Candia**:**

The Mojave Air and Space Port (MASP) staff has reviewed the Notice of Preparation (NOP) of a Draft Environmental Impact Report (EIR) for the proposed Kudu Solar Farm by 69SV 8ME LLC (project proponent) on 1,955 acres of privately owned land. The proposed project intends to share the Eland 1 Solar Project's gen-tie line and right of way, which will be accomplished by constructing a line conductor capable of supporting both projects. Construction of the gen-tie and substation will be done as part of the Eland 1 Solar Project, consistent with the conditions of approval outlined in that project's conditional use permits (CUPs). If the proposed project cannot share these facilities, a new gen-tie line would be developed within one of the routes previously analyzed in the Eland 1 Solar Supplemental Environmental Impact Report (State Clearinghouse No. 2012011029).

MASP staff previously reviewed environmental impact documents associated with the Eland 1 Solar Project. Similar to our review of that project, our primary concerns are associated with the location and height of overhead transmission lines.

Potential Height Conflicts

The proposed project includes the installation of overhead transmission lines. While the figures included in the NOP indicate that overhead lines would be located more than 8 miles to the northeast and outside of the Airport Influence Area associated with MASP, the location of the overhead lines is undetermined at this time. In the past, transmission lines associated with solar projects have been constructed in the approach to MHV Runway 30 and protected airspace, and MASP staff are concerned that the potential location of new poles could result in new, cumulative, or synergistic effects to navigable airspace.

MOJAVE
AIR AND SPACE PORT

Ongoing Coordination and Draft EIR Review

As previously noted, MASP staff understands that the proposed project would be constructed approximately 8.7 miles northeast of MASP and outside if its associated Airport Influence Area as designated by the Kern County Airport Land Use Compatibility Plan. Nevertheless, the location of proposed lines remains uncertain. I look forward to review of the forthcoming Draft EIR and further coordination with the Project Proponent's team to identify and prevent potential effects to aircraft operations at MASP.

Sincerely,

Karina Drees

Karina Drees
CEO

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State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4005
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director

October 15, 2020

Ronelle Candia
Supervising Planner
Kern County Planning and
Natural Resources Department
2700 "M" Street, Suite 100
Bakersfield, California 93301
CandiaR@kerncounty.com

Subject: Kudu Solar Farm by 69SV 8ME LLC (Project)
Notice of Preparation (NOP)
State Clearinghouse No.: 2020099017

Dear Ms. Candia:

The California Department of Fish and Wildlife (CDFW) received a NOP for an Environmental Impact Report (EIR) from Kern County, as Lead Agency, for the Project pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1]

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

CDFW ROLE

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

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

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projects and related activities that have the potential to adversely affect fish and wildlife resources.

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

As a responsible agency, CDFW is responsible for providing, as available, biological expertise during public agency environmental review efforts (e.g., CEQA), focusing specifically on project activities that have the potential to adversely affect fish and wildlife resources. CDFW provides recommendations to identify potential impacts and possible measures to avoid or reduce those impacts.

Protected Furbearing Mammals: CDFW has jurisdiction over furbearing mammals pursuant to Title 14, California Code of Regulations, section 460, which states "Fisher, marten, river otter, desert kit fox and red fox may not be taken at any time". Therefore, CDFW cannot authorize their take.

Unlisted Species: Species of plants and animals need not be officially listed as Endangered (E), Rare (R) or Threatened (T) on any State or federal list pursuant to CESA and/or the federal Endangered Species Act (ESA) to be considered E, R, or T under CEQA. If a species can be shown to meet the criteria for a listing as E, R, or T under CESA and/or ESA as specified in the CEQA Guidelines (Cal. Code Regs. tit. 14, Chapter 3, § 15380), it should be fully considered in the environmental analysis for this Project.

Bird Protection: CDFW has jurisdiction over actions with potential to result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections that protect birds, their eggs and nests include sections 3503 (regarding unlawful take, possession or needless destruction of the nest or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird).

Water Pollution: Pursuant to Fish and Game Code section 5650, it is unlawful to deposit in, permit to pass into, or place where it can pass into "Waters of the State" any substance or material deleterious to fish, plant life, or bird life, including non-native species. It is possible that without mitigation measures implementation of the Project

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could result in pollution of Waters of the State from storm water runoff or construction-related erosion. Potential impacts to the wildlife resources that utilize the streams and wetlands include the following: increased sediment input from road or structure runoff; and toxic runoff associated with construction activities and Project implementation. The Regional Water Quality Control Board and United States Army Corps of Engineers also have jurisdiction regarding discharge and pollution to Waters of the State.

Cumulative Impacts: General impacts from Projects include habitat fragmentation, degradation, habitat loss, migration/movement corridor limitations, and mortality of individuals to multiple species' populations. Multiple solar energy projects as well as other projects (e.g., cannabis-related projects) have been proposed or are being constructed within or near California City with similar impacts to biological resources. CDFW recommends the Kern County consider all approved and future projects when determining impact significance to biological resources.

PROJECT DESCRIPTION SUMMARY

Proponent: 69SV 8ME LLC.

Objective: The primary Project objective of the Kudu Solar Farm Project by 69SV 8ME LLC is to construct a photovoltaic solar facility and energy storage system capable of producing up to 500 MW of alternating current power and 600 MW hours of storage capacity on approximately 1,955.13 acres of privately-owned land. The proposed project would be supported by a 230-kV gen-tie overhead and/or underground generation tie-line (gen-tie) from originating from the Eland substation and terminating at the Los Angeles Department of Water and Power's Barren Ridge Substation located approximately two miles to the northwest of the project site, or through an upgraded connection through Eland 1. The proposed project intends to share the Eland 1 Solar Project's gen-tie line and right of way, which will be accomplished by constructing the line conductor capable of supporting both projects. Construction of the gen-tie and substation will be done as part of the Eland 1 Solar Project, consistent with the conditions of approval outlined in that project's CUP(s). If the proposed project cannot share these facilities, a new gen tie line would be developed within one of the routes previously analyzed in the Eland 1 Solar Supplemental Environmental Impact Report (State Clearinghouse No. 2012011029). The proposed project's permanent facilities would include solar arrays and inverters, service roads, a power collection system, communication cables, overhead and underground electrical switchyards, project substations, energy storage system(s), and operations and maintenance (O&M) facilities.

The Project also includes the following land use changes:

- Kern County: Zone Change Case No. 14, Map No. 152 as follows:

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  - From A-1 (Limited Agriculture) to A (Exclusive Agriculture) for approximately 164.76 acres;
  - From A-1 MH (Limited Agriculture, Mobile Home Combining) to A for approximately 2.39 acres;
  - From PL RS (Platted Lands, Residential Suburban Combining) to A for approximately 10.29 acres; and
  - From PL RS MH (Platted Lands, Residential Suburban Combining, Mobile Home Combining) to A for approximately 7.73 acres.

- Kern County: Issuance of Conditional Use Permit (CUP) No. 28, Map No. 152 to allow for the construction and operation, within the A (Exclusive Agriculture) pursuant to Section 19.12.030G of the Kern County Zoning Ordinance, of a 673.60-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 500 MW of alternating current power and 600 MW hours of storage capacity
- Kern County: General Plan Amendment No. 10, Map No. 152 to the Circulation Element of the Kern County General Plan to remove road reservations on section and mid-section lines within the Kern County project boundaries.
- City of California City as a Responsible Agency under CEQA: Issuance of a CUP to allow for the construction and operation of a solar facility, in the 0/RA (Openspace/Residential Agriculture) zone, of a 1,281.53-acre PV solar facility with a total project generating capacity, in both Kern County and California City, of up to 500 MW of alternating current power and 600 MW hours of storage capacity (CUP 19-04). The project proponent has requested to remove the future section and mid-section lines for the portion of the project within the City of California City's jurisdiction. The City will determine during the CUP process (Sec. 9-2-2501 of the California City Municipal Code) which section lines will be preserved and which ones will be removed. If deemed necessary by the City of California City, the project proponent may request a zone change from 0/RA to M-1 (Light Industrial) for the portion of the facility located in California City.

Location: The proposed Project site is located in portions of unincorporated Kern County and the City of California City, north of the California City Municipal Airport. The Project site is bisected north-south by Washburn Boulevard (which is also the Kern County/California City limit line) and east-west by Neuralia Road. State Route 14 is approximately one mile west of the Project site. Access to the site would be from Phillips Road, Gantt Road, Neuralia Road, Pioneer Road, Sage Street, or through the Eland 1 project site. The Project site is located within Township 31S, Range 37E, and portions of Sections 14, 15, 22, 23, 26,27, 28, 29, 30, 31, 32, 33, 34, 35 and Township 32S, Range 37E, and portions of Sections 1, 2, 3, 4, 9, 10, 11, 12.

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Timeframe: Unspecified

COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations below to assist the County in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. Editorial comments or other suggestions may also be included to improve the CEQA document.

Aerial imagery of the Project boundary and its surroundings show the Project area consists of undeveloped land with native vegetation within Mojave desert habitat suitable for special-status species. Based on review of the Project description, review of California Natural Diversity Database (CNDDB) records, knowledge of other Projects in close proximity to this Project area, and the surrounding habitat, several special-status species could potentially be impacted by Project activities.

Currently, the NOP acknowledges that there is potential for candidate, sensitive, or special-status plants and wildlife species to be present on site or in the proposed project vicinity and that the findings of field surveys for the presence of candidate, sensitive, or special-status plant and animal species will be included in the EIR prepared for this Project. Specifically, CDFW is concerned Project-related activities could potentially impact special-status species and habitats known to occur in the area including, but not limited to, the following: State and federally threatened desert tortoise (*Gopherus agassizii*) and the State threatened Mohave ground squirrel (*Xerospermophilus mohavensis*), State candidate for listing as threatened or endangered western Joshua tree (*Yucca brevifolia),* the protected furbearing mammal desert kit fox (*Vulpes macrotis macrotis*), the State species of special concern burrowing owl (*Athene cunicularia*), American badger (*Taxidea taxus*), Le Conte's thrasher (*Toxostoma lecontei*), and loggerhead shrike (*Lanius ludovicianus*), and California rare plant rank (CRPR) 1B.2 alkali mariposa-lily (*Calochortus striatus*), CRPR 1B.2 Barstow woolly sunflower (*Eriophyllum mohavense*), CRPR 1B.2 desert cymopterus (*Cymopterus deserticola)*, CRPR 4.2 crowned muilla *(Muilla coronata)*, CRPR 4.2 and white pygmy-poppy (*Canbya candida*) as well as impacts to birds and other non-listed plants and animals.

Please note that the CNDDB is populated by, and records, voluntary submissions of species detections. As a result, species may be present in locations not depicted in the CNDDB but where there is suitable habitat and features capable of supporting species. Therefore, a lack of an occurrence record in the CNDDB is not tantamount to a negative species finding.

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As such, CDFW requests that the EIR fully identify potential impacts to biological resources, including the above-mentioned species. In order to adequately assess any potential impact to biological resources, focused biological surveys should be conducted by a qualified wildlife biologist/botanist during the appropriate survey period(s) in order to determine whether any special-status species and/or suitable habitat features may be present within the Project area. Properly conducted biological surveys, and the information assembled from them, are essential to identify any mitigation, minimization, and avoidance measures and/or the need for additional or protocol-level surveys, and to identify any Project-related impacts under CESA and other species of concern. CDFW recommends that the following be incorporated into the EIR.

I. Environmental Setting and Related Impact

Would the Project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or the United States Fish and Wildlife Service (USFWS)?

COMMENT 1: Desert Tortoise

Issue: Desert tortoise are known to occur in the Project area vicinity (CDFW 2020). Based on aerial imagery, the Project area contains desert scrub and desert wash habitat which is suitable habitat for desert tortoise. Desert tortoise are most common in desert scrub, desert wash, and Joshua tree habitats (CDFW 2018a). Desert tortoise may have the potential to be onsite and impacted by Project activities.

Specific impact: Without appropriate avoidance and minimization measures for desert tortoise, potentially significant impacts that may result from Project-related activities include loss of foraging habitat, habitat degradation and fragmentation, burrow destruction, and direct mortality.

Evidence impact is potentially significant: Human impacts to desert tortoise include habitat conversion to agriculture and urban lands, degradation of habitat by off-highway vehicles (OHV), intentional killing of tortoises, and killing by cars and OHV (Doak et al. 1994). Habitat conversion to agriculture results in the loss of habitat and may lead to an increase in the predator raven population, drawdown of water table, introduction of pesticides and other toxic chemicals, and the potential introduction of invasive plants (Boarman 2002). Project activities may result in the loss of potential desert tortoise habitat through conversion, may increase habitat fragmentation, and expand urbanization into the area.

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Recommended Potentially Feasible Mitigation Measures

To evaluate potential Project-related impacts to desert tortoise, CDFW recommends conducting the following evaluation of the Project area, including the following mitigation measures in the EIR, and that these measures be made conditions of approval for the Project.

Recommended Mitigation Measure 1: Desert Tortoise Surveys

CDFW recommends that a qualified biologist conduct surveys during the appropriate survey period following the protocol contained in "Preparing for any action that may occur within the range of the Mojave desert tortoise (*Gopherus agassizii*)" (USFWS 2010) to determine the potential for desert tortoise to use the Project site and surrounding area. Survey results are advised to be submitted to both CDFW and the USFWS. Please note desert tortoise surveys are valid for one year and should be conducted within a year of the start of ground-disturbing activities.

Recommended Mitigation Measure 2: Desert Tortoise Avoidance and Take Authorization

If desert tortoise are found within the Project site during preconstruction surveys or construction activities, consultation with CDFW is advised to discuss how to implement the Project and avoid take; or if avoidance is not feasible, to acquire an ITP prior to any ground-disturbing activities, pursuant Fish and Game Code section 2081 subdivision (b). Alternatively, the applicant can assume presence and acquire an ITP prior to initiating Project implementation.

COMMENT 2: Mohave Ground Squirrel (MGS)

Issue: MGS are known to occur in the Project area vicinity (CDFW 2020). Potential habitat for MGS is land supporting desert shrub vegetation within or adjacent to the known geographic range of the species (CDFG 2003). Based on aerial imagery and information within the NOP, the Project area contains desert shrub habitat and is within the range of MGS (Leitner 2008, CDFW 2019). Because of the Project location and habitat onsite, MGS have the potential to be onsite and be impacted by Project activities.

Specific impact: Without appropriate avoidance and minimization measures for MGS, potential significant impacts associated with Project-related activities include burrow collapse, inadvertent entrapment, reduced reproductive success, and mortality of individuals.

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Evidence impact is potentially significant: Major threats to the MGS are drought, habitat destruction, habitat fragmentation, and habitat degradation (Gustafson 1993, CDFW 2019). MGS is restricted to a small geographic range and the greatest habitat loss has occurred near desert towns including California City (Gustafson 1993). Natural cycling is anticipated in MGS populations, therefore, the true indicators of the status of the species are the quantity, pattern of distribution, and quality of habitat (Gustafson 1993, CDFW 2019). Project activities may result in the loss of potential MGS habitat through conversion, may increase habitat fragmentation, and expand urbanization into the area.

Recommended Potentially Feasible Mitigation Measures

To evaluate potential Project-related impacts to MGS, CDFW recommends conducting the following evaluation of the Project area, including the following mitigation measures in the EIR, and that these measures be made conditions of approval for the Project.

Recommended Mitigation Measure 3: MGS Surveys

CDFW recommends that a qualified permitted biologist conduct protocol surveys for MGS following the methods described in the "Mohave Ground Squirrel Survey Guidelines" (CDFG 2003) during the appropriate survey season prior to Project implementation, including any vegetation- or ground-disturbing activities. Please note that guidelines indicate that a visual survey and up to three trapping sessions may need to be conducted (CDFG 2003). Results of the MGS surveys are advised to be submitted to the CDFW. Please note MGS surveys are valid for one year and should be conducted within a year of the start of ground-disturbing activities.

Recommended Mitigation Measure 4: MGS Avoidance

If protocol surveys will not be conducted or if surveys detect MGS, in order to implement full avoidance for MGS, CDFW recommends a 50-foot no-disturbance buffer be employed around all burrows that could be used by MGS and that all suitable burrows and burrow complexes maintain habitat connectivity with suitable habitat features outside the Project site.

Recommended Mitigation Measure 5: MGS Take Authorization

If MGS are found within the Project site during protocol surveys, preconstruction surveys, or construction activities, consultation with CDFW is recommended to discuss how to implement the Project and avoid take, or if avoidance is not feasible, to acquire an ITP prior to any ground-disturbing activities, pursuant Fish and Game

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Code section 2081 subsection (b). Alternatively, the applicant can assume presence of MGS and acquire an ITP prior to initiating Project implementation.

COMMENT 3: Western Joshua Tree (WJT)

Issue: On September 22, 2020, the Fish and Game Commission determined that listing WJT as threatened or endangered under CESA may be warranted. Pursuant to Fish and Game Code section 2074.6, CDFW has initiated a status review report to inform the Commission's decision on whether listing of WJT, pursuant to CESA, is warranted. During the candidacy period, consistent with CEQA Guidelines section 15380, the status of the WJT as a candidate species under CESA (Fish & G. Code, § 2050 et seq.) qualifies it as an endangered, rare, or threatened species under CEQA. The Fish and Game Commission also adopted emergency regulations to authorize conditional take of western Joshua tree during its candidacy for some solar energy projects pursuant to Fish and Game Code section 2084. The NOP acknowledges the presence of WJT on the Project site, so the Project has the potential to impact this plant species.

Specific impact: Potentially significant impacts to WJT associated with proposed Project activities include inability to survive and reproduce and direct mortality.

Evidence impact is potentially significant: Major threats to the WJT are predation, invasive species, wildfires, climate change, and habitat loss related to human development and conversion. These threats are often related and can work synergistically and cumulatively to threaten the continued existence of WJT (DeFalco et al. 2010, Svenning and Sandel 2013, Esque et al. 2015). Human development includes large and small-scale renewable energy projects. While many of the impacts of these projects on WJT have been difficult to quantify, the USFWS (2018) has estimated renewable energy development alone has resulted in the loss of 1.2% of WJT habitat, or approximately 68,000 acres. Project activities may result in the loss of potential WJT habitat through conversion which can exacerbate the impacts to WJT from predation, invasive species, wildfires, drought, and climate change.

Recommended Potentially Feasible Mitigation Measures

To evaluate potential Project-related impacts to WJT, CDFW recommends conducting the following evaluation of the Project area, including the following mitigation measures in the EIR, and that these measures be made conditions of approval for the Project.

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Recommended Mitigation Measure 6: WJT Surveys

CDFW recommends that the Project site be surveyed by a qualified botanist or biologist to conduct a complete census of all WJT within the Project site.

Recommended Mitigation Measure 7: WJT Consultation and Take Authorization

Since WJT have already been documented to occur on the Project site, consultation with CDFW is warranted to determine appropriate avoidance, minimization, and mitigation measures and take authorization since the Kudu Solar by 69SV 8ME LLC Project was identified as one of the solar energy projects in the Special Order Relating to Take of Western Joshua Tree (*Yucca brevifolia*) During Candidacy Period (Cal. Code Regs. tit. 14, § 749.10, effective date pending).

COMMENT 4: Other Special-Status Plants

Issue: Special-status plant species have the potential to occur on the Project site, including the California rare plant ranked alkali mariposa-lily, Barstow woolly sunflower, desert cymopterus, crowned muilla, and white pygmy-poppy (CDFW 2020). Based on the Project site location, the Project has the potential to impact these plant species.

Specific impact: Potentially significant impacts to special-status plant species associated with proposed Project activities include inability to survive and reproduce and direct mortality.

Evidence impact is potentially significant: The plant species listed above occur in Mojave Desert scrub (CNPS 2020). As a result, these species have the potential to occur at the Project site. Habitat loss and degradation resulting from human development, urbanization, grazing, trampling, and hydrological alterations and water diversions that result in the lowering of the water table (CNPS 2020).

Recommended Potentially Feasible Mitigation Measures

To evaluate potential Project-related impacts to special-status plants, CDFW recommends conducting the following evaluation of the Project area, including the following mitigation measures in the EIR, and that these measures be made conditions of approval for the Project.

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Recommended Mitigation Measure 8: Special-Status Plant Surveys

CDFW recommends that the Project site be surveyed for special-status plants by a qualified botanist following the "*Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities"* (CDFW 2018b). This protocol, which is intended to maximize detectability, includes identification of reference populations to facilitate the likelihood of field investigations occurring during the appropriate floristic period. In the absence of protocol-level surveys being performed, additional surveys may be necessary.

Recommended Mitigation Measure 9: Special-Status Plant Avoidance

Further, CDFW recommends special-status plant species be avoided whenever possible by delineation and observation of a no-disturbance buffer of at least 50 feet from the outer edge of the plant population(s) or specific habitat type(s) required by special-status plant species. If buffers cannot be maintained, then consultation with CDFW is warranted to determine appropriate minimization and mitigation measures for impacts to special-status plant species.

Recommended Mitigation Measure 10: Listed Plant Species Take Authorization

If a State-listed plant species is identified during botanical surveys, consultation with CDFW is warranted to determine if the Project can avoid take. If take cannot be avoided, take authorization is warranted. Take authorization would occur through issuance of an ITP, pursuant to Fish and Game Code section 2081 subdivision (b).

COMMENT 5: Burrowing Owl (BUOW)

Issue: BUOW are known to occur in the Project area vicinity (CDFW 2020). BUOW inhabit deserts and scrublands characterized by low-growing vegetation containing small mammal burrows, a requisite habitat feature used by BUOW for nesting and cover. The Project area appears to contain suitable habitat based on aerial imagery. Therefore, there is potential for BUOW to occupy or colonize the Project area and may be impacted by Project activities.

Specific impact: Without appropriate avoidance and minimization measures for BUOW, potential significant impacts associated with subsequent activities and land conversion include habitat loss, burrow collapse, inadvertent entrapment, nest abandonment, reduced reproductive success, reduction in health and vigor of eggs and/or young, and direct mortality of individuals.

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Evidence impact is potentially significant: BUOW rely on burrow habitat year-round for their survival and reproduction. Habitat loss and degradation are considered the greatest threats to BUOW in California (Gervais et al. 2008). The Project and surrounding area contain undeveloped land; therefore, subsequent ground-disturbing activities associated with the Project have the potential to significantly impact local BUOW populations. In addition, and as described in CDFW's "Staff Report on Burrowing Owl Mitigation" (CDFG 2012), excluding and/or evicting BUOW from their burrows is considered a potentially significant impact under CEQA.

Recommended Potentially Feasible Mitigation Measures

To evaluate potential Project-related impacts to burrowing owl, CDFW recommends conducting the following evaluation of the Project area, including the following mitigation measures in the EIR, and that these measures be made conditions of approval for the Project.

Recommended Mitigation Measure 11: BUOW Surveys

CDFW recommends assessing presence/absence of BUOW by having a qualified biologist conduct surveys following the California Burrowing Owl Consortium's (CBOC) *"Burrowing Owl Survey Protocol and Mitigation Guidelines"* (CBOC 1993) and CDFW's *Staff Report on Burrowing Owl Mitigation"* (CDFG 2012). CDFW advises that surveys include a 500-foot buffer around the Project site. Please note the guidelines suggest three or more surveys be conducted during the peak breeding season (April 15 to July 15) to determine presence (CDFG 2012).

Recommended Mitigation Measure 12: BUOW Avoidance

CDFW recommends implementing no-disturbance buffers, as outlined in the "*Staff Report on Burrowing Owl Mitigation"* (CDFG 2012), prior to and during any ground-disturbing activities associated with Project implementation. Specifically, CDFW's Staff Report recommends that impacts to occupied burrows be avoided in accordance with the following table unless a qualified biologist approved by CDFW verifies through non-invasive methods that either: 1) the birds have not begun egg laying and incubation; or 2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

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Location	Time of Year	Level of Disturbance		
		Low	Med	High
Nesting sites	April 1-Aug 15	200 m*	500 m	500 m
Nesting sites	Aug 16-Oct 15	200 m	200 m	500 m
Nesting sites	Oct 16-Mar 31	50 m	100 m	500 m

Recommended Mitigation Measure 13: BUOW Passive Relocation and Mitigation

If BUOW are found to occupy the Project site and avoidance is not possible, it is important to note that according to the Staff Report (CDFG 2012), exclusion is not a take avoidance, minimization, or mitigation method and is considered a potentially significant impact under CEQA. However, if necessary, CDFW recommends that burrow exclusion be conducted by qualified biologists and only during the non-breeding season, before breeding behavior is exhibited and after the burrow is confirmed empty through non-invasive methods, such as surveillance. CDFW recommends replacement of occupied burrows with artificial burrows at a ratio of 1 burrow collapsed to 1 artificial burrow constructed (1:1) as mitigation for the potentially significant impact of evicting BUOW. BUOW may attempt to colonize or re-colonize an area that will be impacted; thus, CDFW recommends ongoing surveillance of the Project site during Project activities, at a rate that is sufficient to detect BUOW if they return.

COMMENT 6: American Badger (AMBA)

Issue: AMBA have the potential to occur in and near the Project site (CDFW 2020). AMBA occupy sparsely vegetated land cover with dry, friable soils to excavate dens, which they use for cover, and that support fossorial rodent prey populations (i.e. ground squirrels, pocket gophers, etc.) (Zeiner et. al 1990). The Project area may support these requisite habitat features. Therefore, the Project has the potential to impact American badger.

Impact: Without appropriate avoidance and minimization measures for AMBA, potential significant impacts include den abandonment, which may result in reduced health or vigor of young, in addition to direct mortality.

Evidence impact is potentially significant: AMBA populations in California have been declining due to agriculture and urban development (Williams 1986). Habitat loss is a primary threat to American badger (Gittleman et. al 2001). The Project site is within the range of American badger and suitable habitat may be present on or in the vicinity of the Project site. As a result, Project activities have the potential to significantly impact local populations of American badger.

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Recommended Potentially Feasible Mitigation Measures

To evaluate potential Project-related impacts to AMBA, CDFW recommends conducting the following evaluation of the Project area, including the following mitigation measures in the EIR, and that these measures be made conditions of approval for the Project.

Recommended Mitigation Measure 14: AMBA Surveys

CDFW recommends that a qualified biologist conduct focused surveys for American badger and their requisite habitat features (dens) to evaluate potential impacts resulting from ground- and vegetation-disturbance.

Recommended Mitigation Measure 15: AMBA Avoidance

Avoidance whenever possible is encouraged via delineation and observation of a 50-foot no-disturbance buffer around occupied dens and a 250-foot no-disturbance buffer around natal dens until it is determined through non-invasive means that individuals occupying the den have dispersed.

COMMENT 10: Other State Species of Special Concern and Watchlist Species

Issue: Le Conte's thrasher, loggerhead shrike, prairie falcon (*Falco mexicanus*), and California horned lark (*Eremophila alpestris actia*) have the potential to occur in the Project area. All the species mentioned above have been documented to occur in the vicinity of the Project, which supports requisite habitat elements for these species (CDFW 2020).

Specific impact: Without appropriate avoidance and minimization measures for these species, potentially significant impacts associated with ground disturbance include habitat loss, nest abandonment, which may result in reduced health or vigor of eggs and/or young, and direct mortality.

Evidence impact is potentially significant: Habitat loss threatens all of the species mentioned above (Shuford and Gardali 2008). The Project and surrounding area contain undeveloped land; therefore, subsequent ground disturbing activities and habitat conversion associated with the Project may have the potential to significantly impact local the populations of these species.

Recommended Potentially Feasible Mitigation Measure(s)
To evaluate potential impacts to these special-status species associated with subsequent development, CDFW recommends conducting the following evaluation

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of the Project area, including the following mitigation measures in the EIR, and that these measures be made conditions of approval for the Project.

Recommended Mitigation Measure 16: Species of Special Concern and Watchlist Species Habitat Assessment

CDFW recommends that a qualified biologist conduct a habitat assessment in advance of project implementation, to determine if project areas or their immediate vicinity contain potential habitat for the species mentioned above.

Recommended Mitigation Measure 17: Species of Special Concern and Watchlist Species Surveys

If potential habitat is present, CDFW recommends that a qualified biologist conduct focused surveys for applicable species and their requisite habitat features to evaluate potential impacts resulting from ground and vegetation disturbance.

Recommended Mitigation Measure 18: Species of Special Concern and Watchlist Species Avoidance

Avoidance whenever possible is encouraged via delineation and observance a 50-foot no-disturbance buffer around burrow or den entrances that can provide refuge for small mammals, reptiles, and amphibians, and 250 feet around nests of special-status bird species.

II. Editorial Comments and/or Suggestions

Lake and Streambed Alteration: Aerial imagery shows the Project area contains several desert washes. Project activities have the potential to substantially change the bed, bank, and channel of these features and/or substantially divert the flow of any such feature that is subject to CDFW's regulatory authority pursuant Fish and Game Code section 1600 et seq. Fish and Game Code section 1602 requires an entity to notify CDFW prior to commencing any activity that may (a) substantially divert or obstruct the natural flow of any river, stream, or lake; (b) substantially change or use any material from the bed, bank, or channel of any river, stream, or lake (including the removal of riparian vegetation): (c) deposit debris, waste or other materials that could pass into any river, stream, or lake. "Any river, stream, or lake" includes those that are ephemeral, intermittent, or episodic as well as those that are perennial.

CDFW is required to comply with CEQA in the issuance of a Lake or Streambed Alteration Agreement (LSAA); therefore, if the CEQA document approved for the Project does not adequately describe the Project and its impacts to lakes or streams, a

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subsequent CEQA analysis may be necessary for LSAA issuance. For information on notification requirements, please refer to CDFW's website (https://wildlife.ca.gov/Conservation/LSA) or contact CDFW staff in the Central Region Lake and Streambed Alteration Program at (559) 243-4593.

Desert Kit Fox: The proposed Project area is within desert kit fox range. The desert kit fox is protected under Title 14, California Code of Regulations, Section 460, which prohibits take of the species at any time. CDFW recommends that the USFWS "Standardized recommendations for protection of the San Joaquin kit fox prior to or during ground disturbance" (2011) be followed to minimize impacts to desert kit fox. Please note the guidelines indicate pre-activity surveys be conducted by a qualified biologist no less than 14 days and no more than 30 days prior to the beginning of ground disturbance and/or construction activities (USFWS 2011). If any active or potential dens are found on the Project site during surveys, consultation with CDFW would be warranted for guidance on take avoidance measures for the desert kit fox.

Nesting Birds: CDFW has jurisdiction over actions with potential to result in the disturbance or destruction of active nest sites or the unauthorized take of birds. Fish and Game Code sections that protect birds, their eggs and nests include sections 3503 (regarding unlawful take, possession or needless destruction of the nest or eggs of any bird), 3503.5 (regarding the take, possession or destruction of any birds-of-prey or their nests or eggs), and 3513 (regarding unlawful take of any migratory nongame bird). CDFW encourages Project implementation to occur during the bird non-nesting season; however, if Project activities must occur during the breeding season (i.e., February through mid-September), the Project applicant is responsible for ensuring that implementation of the Project does not result in violation of the Migratory Bird Treaty Act or relevant Fish and Game Codes as referenced above.

To evaluate Project-related impacts on nesting birds, CDFW recommends that a qualified wildlife biologist conduct pre-activity surveys for active nests no more than 10 days prior to the start of ground disturbance to maximize the probability that nests that could potentially be impacted by the Project are detected. CDFW also recommends that surveys cover a sufficient area around the work site to identify nests and determine their status. A sufficient area means any area potentially affected by a project. In addition to direct impacts (i.e., nest destruction), noise, vibration, and movement of workers or equipment could also affect nests. Prior to initiation of construction activities, CDFW recommends that a qualified biologist conduct a survey to establish a behavioral baseline of all identified nests. Once construction begins, CDFW recommends that a qualified biologist continuously monitor nests to detect behavioral changes resulting from the project. If behavioral changes occur, CDFW recommends that the work causing that change cease and CDFW be consulted for additional avoidance and minimization measures.

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If continuous monitoring of identified nests by a qualified wildlife biologist is not feasible, CDFW recommends a minimum no-disturbance buffer of 250 feet around active nests of non-listed bird species and a 500-foot no-disturbance buffer around active nests of non-listed raptors. These buffers are advised to remain in place until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. Variance from these no-disturbance buffers is possible when there is compelling biological or ecological reason to do so, such as when the construction area would be concealed from a nest site by topography. CDFW recommends that a qualified wildlife biologist advise and support any variance from these buffers and notify CDFW in advance of implementing a variance.

Federally Listed Species: CDFW recommends consulting with USFWS regarding potential impacts to federally listed species including but not limited to the desert tortoise. Take under the Federal Endangered Species Act (FESA) is more broadly defined than CESA; take under FESA also includes significant habitat modification or degradation that could result in death or injury to a listed species by interfering with essential behavioral patterns such as breeding, foraging, or nesting. Consultation with the USFWS in order to comply with FESA is advised well in advance of any Project activities.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database, which may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special-status species and natural communities detected during Project surveys to the CNDDB. The CNDDB field survey form can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data. The completed form can be mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to CNDDB can be found at the following link: https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals.

FILING FEES

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

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CONCLUSION

CDFW appreciates the opportunity to comment on the NOP to assist Kern County in identifying and mitigating Project impacts on biological resources.

If you have any questions, please contact Craig Bailey, Senior Environmental Scientist (Supervisory), at the address provided on this letterhead, or by electronic mail at Craig.Bailey@wildlife.ca.gov.

Sincerely,

DocuSigned by:
FA83F09FE08945A...
Julie A. Vance
Regional Manager

Attachment

ec: Office of Planning and Research
State Clearinghouse
state.clearinghouse@opr.ca.gov
Ray Bransfield
United States Fish and Wildlife Service
ray_bransfield@fws.gov

Annee Ferranti, Carrie Swanberg, Craig Bailey
California Department of Fish and Wildlife

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Attachment 1

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
RECOMMENDED MITIGATION MONITORING AND REPORTING PROGRAM (MMRP)

PROJECT: Kudu Solar Farm by 69SV 8ME LLC (Project)
Notice of Preparation (NOP)

SCH No.: 2020099017

RECOMMENDED MITIGATION MEASURE	STATUS/DATE/INITIALS
Before Disturbing Soil or Vegetation	
Mitigation Measure 1: Desert Tortoise Surveys	
Mitigation Measure 2: Desert Tortoise Avoidance and Take Authorization	
Mitigation Measure 3: MGS Surveys	
Mitigation Measure 4: MGS Avoidance	
Mitigation Measure 5: MGS Take Authorization	
Mitigation Measure 6: WJT Surveys	
Mitigation Measure 7: WJT Consultation and Take Authorization	
Mitigation Measure 8: Special-Status Plant Surveys	
Mitigation Measure 9: Special-Status Plant Avoidance	
Mitigation Measure 10: Listed Plant Species Take Authorization	
Mitigation Measure 11: BUOW Surveys	
Mitigation Measure 12: BUOW Avoidance	
Mitigation Measure 13: BUOW Passive Relocation and Mitigation	
Mitigation Measure 14: AMBA Surveys	
Mitigation Measure 15: AMBA Avoidance	
Mitigation Measure 16: Species of Special Concern and Watchlist Species Habitat Assessment	
Mitigation Measure 17: Species of Special Concern and Watchlist Species Surveys	
Mitigation Measure 18: Species of Special Concern and Watchlist Species Avoidance	
During Construction	
Mitigation Measure 2: Desert Tortoise Avoidance and Take Authorization	
Mitigation Measure 4: MGS Avoidance	
Mitigation Measure 9: Special-Status Plant Avoidance	
Mitigation Measure 12: BUOW Avoidance	

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Mitigation Measure 13: BUOW Passive Relocation and Mitigation	
Mitigation Measure 15: AMBA Avoidance	
Mitigation Measure 18: Species of Special Concern and Watchlist Species Avoidance	

SUMMARY OF PROCEEDINGS

KERN COUNTY AGENCY SCOPING MEETING

Kern County Planning Department
2700 M Street, Suite 100
Bakersfield, California

Microsoft Live Event
https://tinyurl.com/y2zzzrvm

Date October 2, 2020

STAFF ATTENDANCE: Craig M. Murphy, Assistant Director
Katrina Slayton, Division Chief
Ronelle Candia, Supervising Planner
Johnathan Jensen, Planner I
Julie Williams, GIS Specialist

The virtual meeting convened at **1:30 p.m**. on the TEAMS application with Ms. Slayton outlining the purpose of the scoping meeting. Items were then discussed in order as identified on the agenda. In addition, a PowerPoint presentation was given of the project noted below:

NOTICE OF PREPARATION PROJECT:

Notice of Preparation:
Kudu Solar Project by 69SV 8ME LLC (PP 20405)

Ms. Slayton introduced and described the proposed project, provided a brief history of the project and asked if there were any comments.

No public comments were presented.

Public testimony closed at approximately 1:45 p.m.

Notes prepared by
Katrina Slayton, Division Chief

Kudu Solar Project October 2, 2020 Scoping Meeting Attendee Report

Session Id	Full Name	UTC Event Timestamp	Action	Role
bae44956-0dd7-44be-8c9b-8618b8bc0c8a	Anonymous	10/1/2020 4:20:35 PM	Joined	Attendee
60779d5b-16c9-46a0-b59b-050fb5b6330c	Anonymous	10/1/2020 4:22:14 PM	Joined	Attendee
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Appendix B-1

Visual Resources Technical Report

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Kudu Solar Project

Visual Resources Technical Report

January 31, 2020

Prepared for:

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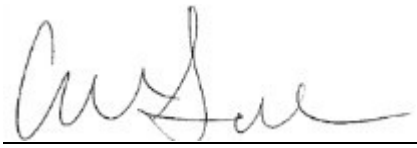
Approved by  (signature)

Caitlin Schroeder – Senior Environmental Planner

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Appendix A: FHWA Visual Quality Rating Worksheets

Abbreviations

AC	alternating current
af	acre-feet
afy	acre-feet per year
amsl	above mean sea level
applicant	69SV 8me LLC
BLM	Bureau of Land Management
CEQA	California Environmental Quality
CUP	Conditional Use Permit
DC	direct electrical current
ESS	energy storage system
FHWA	Federal Highway Administration
gen-tie	generation-tie
ISO	International Organization for Standardization
KOPs	Key Observation Points
kV	kilovolt
LADWP	Los Angeles Department of Water and Power
MW	megawatt
O&M	operations & maintenance
Project	Kudu Solar Project
PV	photovoltaic
SR	State Route

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1.0 INTRODUCTION

This technical report evaluates potential effects on visual quality from development of the Kudu Solar Project. Visual resources are elements of a natural or built environment with aesthetic value based on visual quality and character. They may be formally identified by local, state, or federal governments or recognized by other institutions and organizations. They may also be components of a natural or built environment that contribute to a memorable or distinct landscape. A visual resources technical report evaluates the potential effects on visual resources from a proposed project based on the project's physical characteristics and potential visibility and the degree to which the project could alter existing visual quality and/or visual character.

1.1 PROJECT INFORMATION

69SV 8me LLC (applicant) is seeking approval of conditional use permits (CUPs) for the construction and operation of an up to 500-megawatt (MW)-alternating electrical current (AC) utility-scale solar farm with energy storage, known as the Kudu Solar Project (Project) in unincorporated Kern County and California City, California (Figure 1). The applicant proposes to construct, own, and operate the Project and would secure CUPs from both Kern County and California City along with permits from other relevant agencies as required by law.

1.1.1 Project Site Information

The Project is comprised of 75 assessor's parcels (Project area) totaling approximately 1,955 gross acres (Table 1). The permanent disturbance acreage associated with development of the solar facility and associated infrastructure (Project site) within the Project area would be less than the gross acreage of the Project area. The Project area is adjacent to the approved Eland 1 Solar Farm (Eland 1), south of the existing Springbok 1 & 2 Solar Farms, and southeast of the Los Angeles Department of Water and Power (LADWP) Beacon Solar facility. The topography of the Project area is relatively flat.

1.1.2 Location

The Project area is located in portions of unincorporated Kern County and California City, north of the California City Municipal Airport. The majority of the Project is bisected by Washburn Boulevard (which is also the California City boundary) and Neuralia Road (Figure 1).

Table 1: Kudu Parcels

No.	APN	Acres
California City		
1	302-020-08	40.17
2	302-020-09	80.09
3	302-020-11	163.68

No.	APN	Acres
4	302-020-14	40.99
5	302-020-15	10.52
6	302-020-16	10.15
7	302-020-17	9.59
8	302-020-18	9.98
9	302-290-03	83.58
10	302-305-15	43.54
11	302-321-01	160.93
12	302-322-01	10.10
13	302-322-02	10.09
14	302-322-04	10.24
15	302-322-05	10.28
16	302-322-06	40.04
17	302-322-08	10.33
18	302-322-09	40.50
19	302-322-10	10.27
20	302-322-11	10.29
21	302-325-49	9.74
22	302-330-33	20.21
23	302-330-37	20.38
24	302-341-29	168.79
25	302-342-01	40.23
26	302-342-11	2.67
27	302-342-12	2.66
28	302-342-19	29.69
29	302-342-25	40.77
30	302-342-26	39.89
31	302-342-27	40.29
32	302-342-28	40.68
33	302-470-14	20.20
	California City Total	**1,281.51**
Unincorporated Kern County		
34	469-170-10	10.02
35	469-170-18	39.49
36	470-020-08	2.31

No.	APN	Acres
37	470-020-19	4.38
38	470-030-01	79.22
39	470-080-15	20.27
40	470-080-16	10.07
41	470-080-17	10.10
42	470-080-32	10.07
43	470-151-09	19.62
44	470-151-15	20.23
45	470-151-16	20.40
46	470-151-17	19.98
47	470-152-01	39.32
48	470-152-18	10.32
49	470-152-19	4.93
50	470-302-24	2.59
51	470-302-25	2.62
52	470-302-26	2.52
53	470-322-13	2.39
54	470-322-15	9.96
55	470-330-01	5.06
56	470-330-02	4.77
57	470-330-03	19.86
58	470-330-04	20.15
59	470-330-06	9.95
60	470-330-07	10.02
61	470-330-14	4.89
62	470-330-15	5.23
63	470-350-04	18.65
64	470-350-05	18.91
65	470-350-06	18.89
66	470-350-07	18.57
67	470-350-08	19.93
68	470-360-01	18.43
69	470-360-02	17.85
70	470-360-05	21.15
71	470-380-01	19.92

No.	APN	Acres
72	470-380-04	21.35
73	470-380-05	17.34
74	470-380-06	19.88
75	470-380-07	21.95
	Unincorporated Kern County Total	**673.55**
	Total	**1,955.06**

Note:
APN = Assessor Parcel Number

1.2 DESCRIPTION OF PROPOSED PROJECT

The applicant proposes to develop a photovoltaic (PV) energy facility and energy storage system (ESS) that is capable of producing up to 500 MW of AC power, and 600 MW hours (MWh) of storage capacity. Power generated by the Project would be collected using up to 230 kilovolt (kV) collector lines which run underground and/or overhead to a dedicated Project substation, or to the Eland 1 Substation. The Project may also share the Eland 1 generation tie- (gen-tie) line facilities, or gen-tie rights-of-way. The Eland 1 substation and gen-tie line have gone through environmental analysis and subsequent approval by Kern County and are not part of the Project.

Additionally, the Project may share an operations & maintenance (O&M) building, ESS, and/or transmission facilities, as necessary, with one or more nearby solar Projects, and/or may be remotely operated. Any unused O&M building, substation, and/or transmission facility areas onsite may be covered by solar panels under such scenarios.

The applicant has considered the following in its selection of the Project site for detailed evaluation:

- Land availability (approximately 1,955 gross acres)
- Land use zoning: primarily agriculture located away from high-density residential developments
- Proximity to interconnecting substation (approximately 7 miles away) and ability to share facilities with other solar Projects

Up to 20 full-time employees would operate the Project. Typically, most staff would work during the day shift (sunrise to sunset), and the remainder would work during the night shifts and weekends. If the Project shared O&M, substation, and/or transmission facilities with one or more nearby solar Projects, and/or became remotely operated, the Project's onsite staff could be reduced.

After the useful life of the Project, the panels would be disassembled from the mounting frames, and the Project site would be restored to its pre-development condition.

1.2.1 PV Module Configuration

The Project would use PV panels or modules[1] on mounting frameworks to convert sunlight into electricity. Individual panels would be installed on either fixed-tilt or tracker mount systems (single- or dual- axis, using galvanized steel or aluminum). If the panels are configured for fixed tilt, they would be oriented toward the south. For tracking systems, the panels would rotate to follow the sun over the course of the day. Although the panels could stand up to 20 feet high, depending on the mounting system used and county building codes, panels are expected to remain between 6 and 8 feet high.

The foundations for the mounting structures can extend up to 10 feet below ground, depending on the mounting structure, soil conditions, and wind loads, and may be encased in concrete or use small concrete footings. Final solar panel layout and spacing would be optimized for site characteristics and the desired energy production profile.

1.2.2 Inverter Stations

Direct Current (DC) energy is delivered from the panels via cables to inverter stations, generally located near the center of each block. Inverter stations convert the DC energy to AC energy, which can be dispatched to the transmission system. Inverter stations are typically comprised of one or more inverter modules with a rated power of up to 2 MW each, a unit transformer, and voltage switch gear. The unit transformer and voltage switch gear are housed in steel enclosures, while the inverter module(s) are housed in cabinets. Depending on the supplier selected, the inverter station may lie within an enclosed or canopied metal structure, typically on a skid or concrete mounted pad.

1.2.3 Energy Storage System

The Project may include one or more ESS, located at or near a substation/switchyard (onsite or shared) and/or at the inverter stations, or elsewhere onsite. Such large-scale ESSs would be up to 600 MW AC in capacity and occupy up to 25 acres in total area. ESSs consist of modular and scalable battery packs and battery control systems that conform to U.S. national safety standards. The ESS modules, which could include commercially available lithium or flow batteries, typically consist of International Organization of Standardization (ISO) standard containers (40 feet long by 8 feet wide by 8 feet high) housed in pad- or post-mounted, stackable metal structures, but may also be housed in a dedicated building(s) in compliance with applicable regulations. The maximum height of the structure is not expected to exceed 25 feet. The actual dimensions and number of energy storage modules and structures would vary depending on the application, supplier, and configuration chosen, as well as on offtaker/power purchase agreement requirements and on county building standards. The Project may share an ESS with one or more nearby solar Projects or may operate one or more standalone ESS facilities within the Project site.

[1] Including but not limited to bi-facial or concentrated photovoltaic (CPV) technology

1.2.4 Substation

Output from the inverter stations would be transferred via electrical conduits and electrical conductor wires to one or more Project substations or switchyards (collectively referred to as substations herein), or the Eland 1 Substation. The Project and any associated ESS would have their own dedicated substation equipment located either within the Project site, or within the Eland 1 Substation footprint. Dedicated equipment may incorporate several components, including auxiliary power transformers, distribution cabinets, revenue metering systems, a microwave transmission tower, and voltage switch gear. Each substation would occupy an area of up to approximately 5 acres, secured separately by a chain-link fence. The final location(s) of each component would be determined before the issuance of building permits.

Substations typically include a small control building (roughly 500 square feet) standing 10 feet tall. The building would either be prefabricated concrete or steel housing, with rooms for the voltage switch gear and metering equipment, a room for the station supply transformer, and a separate control technology room within which the main computer, intrusion detection system, and main distribution equipment are housed. Components of this building (e.g., control technology room and intrusion detection system) may instead be located at an O&M building below.

1.2.5 Generation-tie Line

Power generated by the Project would be transmitted to the Los Angeles Department of Water and Power (LADWP) Barren Ridge Substation via a 230 kV overhead and/or underground gen-tie. The Project intends to share the Eland 1 gen-tie line and right-of-way, which may require stringing additional line on the Eland 1 transmission structures or increasing the capacity of the Eland 1 gen-tie by reconductoring the line with thicker cable. If the Project cannot share these facilities, a new gen-tie line would be developed within one of the routes previously analyzed in the Eland 1 Environmental Impact Report.

1.2.6 Water Usage

Water demand for panel washing and O&M use is not expected to exceed 50 acre-feet per year (afy). Water usage during construction, primarily for dust-suppression purposes, is not expected to exceed 400 acre-feet (af). It is anticipated that water would be obtained from existing onsite wells. Alternatively, water may be obtained from one or more offsite source(s) and delivered to the Project area via truck. If offsite water is used, it would likely be obtained from one of the nearby Springbok Projects, the Eland 1 Project, or from a commercial source. If the applicant determines that offsite water would be used, the applicant would submit a Will Serve Letter from the proposed offsite water purveyor(s). A small water treatment system may be installed to provide deionized water for panel washing.

1.2.7 Water Storage Tank(s)

One or more aboveground water storage tanks with a total capacity of up to 50,000 gallons may be placed onsite near the O&M building. The storage tank(s) near the O&M building would have the appropriate fire department connections to be used for fire suppression.

1.2.8 Operations and Maintenance Building

The Project may include an O&M building approximately 40 feet long by 80 feet wide, with associated onsite parking. The O&M building would be steel framed, with metal siding and roof panels. The O&M building may include the following:

1. Office
2. Repair building/parts storage
3. Control room
4. Restroom
5. Septic tank and leach field

Roads, driveways, and parking lot entrances would be constructed in accordance with Kern County and California City improvement standards. Parking spaces and walkways would be constructed in conformance with all California accessibility regulations.

1.2.9 Project Site Security and Fencing

The Project site would be enclosed within a chain link fence with barbed wire measuring up to 8 feet above finished grade. An intrusion alarm system would be integrated into the perimeter fence, with intrusion detection cabinets placed every 1,500 feet along the perimeter fence. An intrusions control unit or similar technology may include additional security measures including but not limited to barbed wire, low voltage fencing with warning reflective signage, controlled access points, security alarms, security camera systems, and security guard vehicle patrols to deter trespassing and/or unauthorized activities.

Gates would be maintained at the main entrances to the Project site to restrict access. Project site access would be provided to offsite emergency responders in the event of an after-hours emergency. Enclosure gates would be manually operated with a key provided in an identified key box location.

1.2.10 Project Lighting

Project lighting would be directed away from public rights-of-way and would be minimal. Site lighting may include motion sensor lights for added security purposes. Lighting would be of the lowest intensity, in compliance with any applicable regulations, measured at the property line after dark.

1.3 ANNUAL PRODUCTION

The Project would generate electrical power during daylight hours. Peak electricity demand in California corresponds with air conditioning use on summer afternoons when ambient temperatures are high. The Project's peak generating capacity corresponds to this time-period. There is no generating capacity between sunset and sunrise due to the lack of solar energy, though power may be released from the ESS at any time of day.

The Project would have a nominal output capacity of up to 500 MW AC and 600 MWh of storage capacity, sufficient to power roughly 240,000 homes and displacing 745,000 tons of carbon dioxide equivalent (CO_2e) per year when compared to a gas-fired power plant or 1,476,000 tons when compared to a coal-fired power plant.

1.4 CONSTRUCTION ACTIVITIES

Site preparation through construction, testing, and commercial operation, is expected to commence as early as Q4 2021 and would extend for 12 to 18 months.

Construction would include the following:

- site preparation
- grading and earthwork
- concrete foundations
- structural steel work
- electrical/instrumentation work
- collector line installation
- architecture and landscaping

No roads would be affected by the Project, except during construction. Construction traffic would access the site from Philips Road, Gantt Road, and Neuralia Road, or through the Eland 1 Project site. Up to 1,000 workers per day (during peak construction periods) would be required during the construction of the Project.

Heavy construction would occur between 6:00 AM and 5:00 PM, Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Some activities may continue 24 hours per day, seven days per week. Low-level noise activities may occur between 10:00 PM and 7:00 AM. Nighttime activities could include but are not limited to refueling equipment, staging materials, quality assurance and control, and commissioning.

Truck deliveries would normally occur during daylight. However, there would be offloading and/or transporting to the Project area on weekends and during evenings.

Earth-moving is expected to be limited to the construction of the access roads, O&M building, substation, ESS(s), and any stormwater protection or storage (detention) facilities. Final grading may include revegetation with low growing or applying earth-binding materials to disturbed areas. In addition, a palliative with more reflective properties is being considered for use on the Project. A supplemental simulation included in this report shows a representation of its use.

1.5 WORK FORCE

Once the Project is constructed, maintenance would generally be limited to the following:

1. Cleaning of PV panels
2. Monitoring electricity generation
3. Providing site security
4. Facility maintenance: replacing or repairing inverters, wiring, and PV modules

The project would require up to 20 full-time O&M employees. If the project uses shared O&M, substation, ESS, and/or transmission facilities with any future projects share personnel would reduce O&M staff.

The facility would operate seven days a week, 24 hours a day, generating electricity during normal daylight hours when the solar energy is available. Maintenance activities may occur seven days a week, 24 hours a day to ensure PV panel output when solar energy is available.

1.6 PROJECT FEATURES AND BEST MANAGEMENT PRACTICES

The following sections describe standard Project features and best management practices that would be applied during construction and long-term operation of the Project to maintain safety and minimize or avoid environmental impact.

1.6.1 Waste and Hazardous Materials Management

The Project would have minimal levels of materials onsite that have been defined as hazardous under 40 Code of Federal Regulations (CFR), Part 261. The following materials are expected to be used during the construction, operation, and long-term maintenance of the Project:

- Insulating oil: used for electrical equipment
- Lubricating oil: used for maintenance vehicles
- Various solvents and detergents: equipment cleaning
- Gasoline: used for maintenance vehicles

Hazardous materials and wastes would be managed, used, handled, stored, and transported in accordance with applicable local and state regulations. All hazardous wastes would be maintained at quantities below the threshold requiring a Hazardous Material Management Program (HMMP): one 55-gallon drum. Though not expected, should any onsite storage of hazardous materials exceed one 55-gallon drum, an HMMP would be prepared and implemented.

1.6.2 Spill Prevention and Containment

Less than 55 gallons of hazardous materials would be stored onsite. Spill prevention and containment for construction and operation of the Project would adhere to the Environmental Protection Agency's guidance on Spill Prevention Control and Countermeasures.

1.6.3 Wastewater/Septic System

A standard onsite septic tank and leach field may be used at the O&M building to dispose sanitary wastewater and would be designed to meet O&M guidelines required by Kern County laws, ordinances, regulations, and standards.

1.6.4 Inert Solids

Inert solid wastes resulting from construction activities may include recyclable items such as paper, cardboard, solid concrete and block, metals, wire, glass, type 1-4 plastics, drywall, wood, and lubricating oils. Non-recyclable items include insulation, other plastics, food waste, vinyl flooring and base, carpeting, paint containers, packing materials, and other construction wastes. A construction waste management plan would be prepared for review by the county and California City. Consistent with local regulations and the California Green Building Code, the plan would provide for diversion of a minimum of 50 percent of construction waste from landfill.

Chemical storage tanks (if any) would be designed and installed to meet applicable local and state regulations. Any wastes classified as hazardous, such as solvents, degreasing agents, concrete curing compounds, paints, adhesives, chemicals, or chemical containers, would be stored in an approved storage facility/shed/structure and disposed of as required by local and state regulations. Material quantities of hazardous wastes are not expected.

1.6.5 Health and Safety

Safety precautions and emergency systems would be implemented as part of the design and construction of the Project to ensure safe and reliable operation. Administrative controls would include classroom and hands-on training in O&M procedures, general safety items, and a planned maintenance program. These would work with the system design and monitoring features to enhance safety and reliability.

The Project would have an emergency response plan (ERP). The ERP would address potential emergencies including chemical releases, fires, and injuries. All employees would be provided with communication devices, cell phones, or walkie-talkies to provide aid in the event of an emergency.

2.0 EXISTING CONDITIONS

2.1 EXISTING SETTING

The Project is located within the Fremont Valley in the southeastern portion of Kern County (Figure 1). The Fremont Valley is within the northwestern portion of the Mojave Desert and is bordered by the Sierra Nevada Mountain Range to the west and the Rand Mountains to the east. The valley landscape is typical of the Mojave Desert terrain and consists of generally flat lands that are interspersed with low undulations that are predominantly covered with desert scrub vegetation. The north/south-oriented SR 14 runs along the western edge of the valley, just east of the Project area. Regionally, urban development is sparse and concentrated within California City, south of the Project site. Outside of the California City boundary, there are a few isolated residential neighborhoods, but the valley has been mostly developed with utility-scale solar energy facilities and associated transmission and distribution infrastructure. Other land uses in this portion of the valley include the Honda Proving Center of California and the Bureau of Land Management (BLM) Jawbone Station Visitors Center, which are about 2 miles north and 5 miles northwest of the Project site, respectively.

The Project site is flat with elevations ranging from about 2,100 feet to 2,500 feet above mean sea level. The Project would be placed on undeveloped lands north and south of Washburn Boulevard and adjacent to the Eland 1 project, which was approved by Kern County in April 2019. Potential viewers of the Project include motorists traveling northbound or southbound on SR 14 or along nearby local roads and residents that live in the vicinity of the Project. Views of the area from along SR 14 are expansive and generally characterized by the sparsely developed desert landscape that is bordered by mountainous terrain. Low-profile scrub vegetation including creosote bushes and Joshua trees, typical to this portion of the Mojave Desert, are widely visible. Utility-scale solar energy facilities, transmission lines, and distribution infrastructure are also visible to motorists travelling north/south on SR 14 and from locations that they may stop at along the highway corridor, including the BLM Jawbone Station Visitors Center (see Character View 1 and Character View 2). These renewable energy facilities are discernable throughout the landscape primarily in the foreground (within 0.25 mile) and middleground (0.25 to 3-5 miles away) views from the highway. The largest utility-scale solar projects in this part of Fremont Valley are shown on Figure 1.

The closest residential neighborhood is located less than 1 mile away from the Project site at the northeast corner of Phillips Road and Cheyenne Boulevard, adjacent to the Eland 1 project. Due to the relatively flat topography, residents would have direct views of the Project to the west and southwest. Distant views of the Project would also be available from publicly accessible portions of California City. However, views of renewable energy facilities from these residential areas are not uncommon and solar arrays and ancillary facilities are visible throughout the landscape (see Character View 3 and Character View 4).

Character View 1: Overlook view to the south from the BLM Jawbone Station Visitors Center along SR 14. Several existing solar projects are visible in the center of the view across the valley floor.

Character View 2: View of the Beacon solar project from the southbound lane of SR 14. The Beacon solar project is 2 miles north of the Project site.

Character View 3: View to the northeast from the northbound lane of Neuralia Road. A portion of a small solar installation is visible in the right side of the view.

Character View 4: View to the north from California City High School. A distribution line is visible across the center of the view, approximately 1 mile away.

2.2 REGULATORY SETTING

Visual resources identified in plans, policies, or other applicable regulations that could be affected by the Project are discussed below. This is not a complete list of every law, ordinance, regulation, or other standard related to the Project or Project site.

2.2.1 California Environmental Quality Act

Both Kern County and California City are responsible for ensuring that projects within their jurisdiction meet the requirements of the California Environmental Quality (CEQA). Section 5.0 of this report includes a preliminary analysis of potential visual impacts from the Project in accordance with the CEQA Appendix G checklist.

2.2.2 California State Scenic Highway Program

The California Scenic Highway Program was created by the Legislature in 1963 and is managed by the Landscape Architecture Division of the California Department of Transportation. Its purpose is to protect and enhance the natural scenic beauty of California highways and adjacent corridors through special conservation treatment. A highway may be designated scenic depending on how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes upon travelers' enjoyment of the view.

No Kern County highways are officially designated as California State Scenic Highways. However, the entire segment of SR 14, north of Mojave to the Inyo County line, is eligible for state scenic highway designation (Caltrans 2019).

2.2.3 Kern County

Kern County General Plan

Scenic resources identified in the Kern County General Plan Land Use, Open Space and Conservation Element include roadways eligible for scenic highway designation and scenic parks and trails. State Route 14, which is west of the Project, is classified as a County Scenic Route. The Kern County General Plan defines this as a "roadway that has scenic vistas and other scenic and aesthetic qualities that over time have been found to add beauty to the County" (Kern County 2009a). Scenic parks and trails include the Kern National Wildlife Refuge, Pacific Crest National Scenic Trail, Sequoia National Forest, and Los Padres National Forest (Kern County 2009b). Of these scenic parks and trails, only the Pacific Crest National Scenic Trail is on the eastern side of the Sierra Nevada Mountain Range; at its closest point, it is around 10 miles away from the Project site.

2.2.4 California City

California City General Plan

The vision statement of the California City General Plan is to create a livable, viable, and visually attractive community through efficient and effective continued growth and sustainable development that will result in a model city within eastern Kern County. The California City General Plan included goals and policies related to aesthetics that would apply to the Project. These goals included those pertaining to new industrial development, and recommended that new development provide design features, such as screen walls, landscaping, and height, setback, and lighting restrictions between the boundaries of adjacent residential land use designations to reduce impacts on residents due to aesthetics and light and glare. The city's design/image policies would also be applicable to the Project and recommended that new development use drought-tolerant landscaping, minimize light and glare, and shield exterior lighting (California City 2009).

3.0 METHODS

A comparison of the Project site's existing conditions and the change to the landscape that would result from implementation of the Project is based on visual simulations. As a part of this process, Stantec visual resources specialists reviewed aerial imagery to identify where the Project could be visible from visually sensitive areas and selected preliminary viewpoints for site photography. Stantec conducted field surveys on August 21, 2019 to photo-document current visual conditions and views toward the Project site. A representative subset of photographed viewpoints was selected for use as Key Observation Points (KOPs), which collectively serve as the basis for this assessment. KOP selection was done in coordination with 69SV 8me LLC. Assessments of existing visual conditions were made based on professional judgment that considered sensitive receptors and sensitive viewing areas in the lands surrounding the Project site. The locations of the 5 KOPs in relation to the Project are presented on Figure 2. In addition, a supplemental view from KOP 4 demonstrates the visual properties of a palliative being considered for the Project.

The view from each KOP was photographed using a 35-millimeter, 53-megapixel, full-frame, single lens reflex camera equipped with a 50-millimeter fixed focal length lens. This configuration is the industry-accepted standard for approximating the field of vision in a static view of the human eye. The camera positioning was determined with a sub-meter, differentially corrected global positioning system. The camera was positioned at eye-level for each photograph.

The site photos were used to generate a rendering of the existing conditions and a proposed visualization of the implemented Project. The Project area is adjacent to the Eland 1 Project, which was approved in 2019 and is currently in final planning stages. Construction is due to start in 2020 and would be under construction during preparation of the CEQA document for the Kudu Project. Because the Project would appear alongside portions of the approved Eland 1 project, the "existing" photograph for each KOP view evaluated in this report shows that project simulated. The gen-tie route for Eland 1 has not been finalized. Therefore, the gen-tie routes included in the simulations here are intended to be representative. The model assumes use of the largest potential transmission structures.

The visual simulations provide clear before-and-after images of the location, scale, and visual appearance of the features affected by and associated with the Project. The simulations were developed through an objective analytical and computer-modeling process and are accurate within the constraints of the available site and alternative data (3-dimensional computer model was created using a combination of AutoCAD files and geographic information system layers and exported to Autodesk's 3-dimensional Studio Max for production). Design data—consisting of engineering drawings, elevations, site and topographical contour plans, concept diagrams, and reference pictures—were used as a platform from which digital models were created. In cases where detailed design data were unavailable, more general descriptions about facilities and their locations were used to prepare the digital models.

Relying on observations during the site photography and the resulting images of views toward the Project site, visual resources specialists evaluated the visual quality of existing conditions for each KOP. Stantec used worksheets that

focus on key concepts of the Federal Highway Administration (FHWA) Visual Impact Assessment for Highway Projects method (FHWA 2015). These worksheets assess natural harmony, cultural order, overall coherence, and landscape composition and vividness for each view, assigning a visual quality rating ranging from “very low” to “very high” (Appendix A). Visual resources specialists then re-assessed the simulated images showing the Project as it would be seen from each KOP. A visual quality rating for each view showing proposed conditions was established. The difference in visual quality rating for each view between existing and proposed conditions established the degree of contrast in visual quality from the Project. Potential sources of contrast related to visual character—described in terms of form, line, color, and texture—were also identified.

4.0 DESCRIPTION OF POTENTIAL VISUAL EFFECTS

This section describes views from each KOP, first under existing conditions, and then with the Project simulated. The visual simulations illustrate the location, scale, and conceptual appearance of the Project, as seen from each KOP. These visual simulations allow for comparison of pre-project and post-project conditions. KOP locations are shown in Figure 2. Existing and simulated images are included in Figure 3 through Figure 6. Worksheets showing the evaluation of visual quality contrast for each view are included in Appendix A.

4.1 KOP 1 – PHILLIPS ROAD AT CHEYENNE BOULEVARD

4.1.1 Existing View

KOP 1 is located at the northwest corner of Phillips Road and Cheyenne Boulevard, about 6 miles north of California City. The view from KOP 1 is to the west and represents views of the Project from the nearest residential neighborhood (Figure 3a). Due to the flat topography and sparse development in this area, residents at this location generally have sustained views of the expansive desert landscape. The visual quality of this view is moderate. It consists of the western edge of the Fremont Valley, which is bordered by the Sierra Nevada Mountain Range to the west. Phillips Road extends from the viewpoint to the background and bisects the undeveloped valley floor that is covered mostly with creosote bushes. Like other parts of the western Fremont Valley, solar facilities and related transmission infrastructure are present in the view. Such features include the solar panels that are part of the Barren Ridge Solar Project and will include the gen-tie line for the planned Eland 1 project. While their scale and form are typical of the type of renewable development found throughout the Fremont Valley, these facilities obscure slight portions of the Sierra Nevada Mountain Range to the west.

4.1.2 View with Project

Figure 4b shows the view from KOP 1 with the Project simulated. The visual quality of the view from KOP 1 with the Project would be moderately low. The Project would be placed alongside and utilize the planned Eland 1 overhead collector and gen-tie line and in front of the Barren Ridge Solar Project. The Project solar panels would mostly extend into the left side of the view appearing similar in form and color to the Barren Ridge solar panels in the right side of the view, but also noticeably obscuring a portion of the mountain foothills. The Project would be consistent with the existing visual character, but a larger portion of the landscape would become visibly mechanized in appearance, with most of the lands in view appearing occupied by renewable energy development.

4.2 KOP 2 – NEURALIA ROAD

4.2.1 Existing View

KOP 2 is located along the northbound lane of Neuralia Road, about 5 miles north of California City. The view from KOP 2 is to the north-northeast toward the northern portion of the Project site that is less than 1 mile away. The view represents motorists travelling north on Neuralia Road from California City. Vehicles travel at relatively high speeds on Neuralia Road and therefore views of the landscape outside the roadway corridor are short in duration. The visual quality of the view from KOP 2 is moderate. The view is characterized by the contrast between the eastern edge of the Fremont Valley floor and the sloped terrain of the Rand Mountains to the northeast. The Rand Mountains are relatively vivid features as are the identifiable rows of creosote bushes in the foreground. Solar panels from the planned Eland 1 project would be the most prominent built features in the view and would appear as a continuous single polygon in the middleground. The solar panels would further delineate the edge of the valley floor and while they would not substantially encroach on visibility of the landscape features that contribute to the view's visual character, they would interrupt the transition from the valley to the foothills, leaving the valley floor moderately intact.

4.2.2 View with Project

Figure 4b shows the view from KOP 2 with the Project simulated. The visual quality of the view from KOP 2 with the Project would remain moderate. With addition of the Project, the view would still be characterized by the contrast between the eastern edge of the Fremont Valley and the Rand Mountains to the northeast. The Project panels would be placed in front of the planned Eland 1 solar panels and extend across the view. The Project would increase the amount of solar development within the view, but it would appear within the same developed area as the existing solar panels. The Project solar panels would, however, appear slightly taller compared to the existing panels as they would be closer to the viewer. As such, the Project would slightly obscure the visibility of the mountains, but their overall form would be consistent with the visual character of the existing solar panels that are set within the valley landscape.

4.3 KOP 3 – CALIFORNIA CITY MUNICIPAL AIRPORT

4.3.1 Existing View

KOP 3 is located at the California City Municipal Airport. The view is to the northeast toward the southern portion of the Project site that is about 0.5 miles away (Figure 5a). The view from the California City Municipal Airport represents views of the Project from the northern edge of the urbanized portion of California City. Viewers at the airport, which includes a restaurant, offices, and other gathering spaces, are likely to have sustained views toward the Project area. Viewers traveling elsewhere along the northern edge of urbanized California City, on the other hand, are likely to have much shorter or more intermittent views. The visual quality of the view from KOP 3 is moderately low. The airplane parking area and runway are the most prominent built features, occupying more than half of the view. Beyond the airport, the landscape consists of the desert floor with low hills and distant mountains, appearing mostly undeveloped and dotted with scrub vegetation. The planned Eland 1 project would be detectable in the view, about 3

miles away, and would draw the viewer's eye toward the low sloped hills. The solar panels' light blue color would contrast with the desert landscape, but their overall form would be indistinguishable from, and would appear subordinate to, the developed foreground and natural character of the vegetated desert landscape

4.3.2 View with Project

Figure 5b shows the view from KOP 3 with the Project simulated. The visual quality of the view from KOP 3 with the Project would be slightly reduced but would, overall, remain moderately low. The Project would be more prominent than the planned Eland 1 solar panels as the Project site is noticeably closer to the KOP, about 0.5 miles away. While the presence of solar development in the view would intensify with addition of the Project, it would be consistent with the existing visual character because such facilities already exist in this portion of the view. The Project would change the appearance of the mostly undeveloped desert floor, but it would not appear more dominant than the development associated with the California City Municipal Airport that occupies more than half the view. Rather, it would appear to expand slightly the area containing solar panels in the existing view. The Project would also remain below the low sloped hills and would not affect these landscape features.

4.4 KOP 4 – SOUTHBOUND STATE ROUTE 14

4.4.1 Existing View

KOP 4 is located along the western shoulder of SR 14, around 13 miles northeast of Mojave. The view is to the southeast toward the Project and approximates views from motorists driving south on SR 14. The visual quality of the view from KOP 4 is moderately low. While the flat, vegetated terrain in the foreground and middleground of the view is typical of this portion of the Fremont Valley, the geologic formations along the horizon – Castle Butte along the left edge of the view and Desert Butte (appearing directly in front of Twin Buttes South) in the center of the view – add elements of visual interest (Figure 6a). However, the view toward these features is partially obstructed by gen-tie facilities associated with the planned Eland 1 project, which cross the view aligned with a rail right-of-way slightly detectable from this location. The vertical transmission structures repeat across the view and are close enough to the viewpoint so that the conductors are visible. As a whole, the planned Eland 1 gen-tie line would be a dominant feature in the view. Planned Eland 1 solar panels would be visible around 2 miles away, in the left half of the view. A rural residential neighborhood located north of Phillips Road, just over two miles away, is identifiable in the left side of the view by the cluster of trees low in the horizon. In general, this view would be characterized visually by the polygonal forms of the solar panels and repeating vertical forms of the transmission line which would appear, along with other developments, tucked between the mostly undeveloped foreground and buttes along the background horizon.

4.4.2 View with Project

Figure 6b shows the view from KOP 4 with the Project simulated. The visual quality of the view from KOP 4 with the Project would remain moderately low. This is because the Project, while somewhat closer than the planned Eland 1 solar panels, would appear consistent with the visual character evident in the existing view. Project solar panels

would be as close as 1.25 miles from this viewpoint, with the majority of new panels visible just under two miles away. Being comparatively proximate to the viewpoint, the Project would appear similarly articulated, with rows of solar panels evident in certain parts of the Project. It would also appear to extend an already existing footprint of solar panels. A segment of the vegetated valley floor would be covered and obscured by the Project solar panels. However, the valley horizon would remain discernable beyond and the Project would have no effect of the visibility of the distant buttes, which already appear partially encroached upon by the planned Eland 1 overhead collector line extending east-west along Phillips Road. Individual views toward the Project from southbound SR 14 are short in duration given the high vehicle speeds; however, views of solar projects are typical in this portion of the Fremont Valley. Southbound viewers will have observed utility-scale solar projects on both sides of the highway, and as close as adjacent to the roadway corridor, since entering the valley approximately 9 miles to the north. To that extent, the view with the Project in place would not only be consistent in character with the existing view from KOP 4, it would be consistent with similar views from the highway through the valley to the north.

Figure 6c shows the addition of the palliative material used to stabilize disturbed soils underneath the solar panels. Its lighter color, barely discernable from this distance, would highlight the presence of the solar panels and would contrast with the color of the valley floor to a greater degree than would the simple grading shown in Figure 6b. Application of such palliatives or light-colored gravel is indicative of changes in the visual landscape and user groups that would occur through the application of such ground coverings across the Project site.

4.5 KOP 5 – NORTHBOUND STATE ROUTE 14

4.5.1 Existing View

KOP 5 is located along the western shoulder of SR 14, just south of Washburn Boulevard, around 10 miles north of Mojave. The view is to the northeast toward the Project and approximates views from motorists driving north on SR 14. The visual quality of the view from KOP 5 is moderate. It is characterized by its natural features, the most visible of which are the Joshua trees, seen throughout the foreground among creosote and other scrub vegetation, and the backdrop of the Rand Mountains, the broad, low slopes of which somewhat offset the generally flat desert floor (Figure 7a). This view typifies those to the east from this segment of SR 14. Evident development beyond the highway corridor is minimal, with a boundary fence extending away from the viewpoint, in the direction of a cluster of trees along the valley horizon, which is indicative of the rural residential neighborhood north of Phillips Road. Solar panels associated with the planned Eland 1 project are nearly 2 miles away from this viewpoint and would not visible due to distance, their slightly lower elevation, and intervening terrain.

4.5.2 View with Project

Figure 7b shows the view from KOP 5 with the Project simulated. The visual quality of the view from KOP 5 would remain moderate with addition of the Project despite a slight decrease in visual quality. The visual character of the view is based on the individually discernable forms of Joshua trees and the contrast between the valley and the mostly low-sloped mountain backdrop. Project solar panels would appear across a portion of the middleground, within the valley floor, in the left half of the view. The Project would be visible no closer than 1.4 miles away and would be at

an elevation slightly lower than the KOP's. The Project would appear less as a polygon in the landscape than a line, identifiable by its light-blue color and barely identifiable obstruction of a cluster of more distant trees in the valley. The elements of the view that contribute to its existing level of visual quality would not be diminished or substantially affected. Viewers traveling at relatively high speed along this segment of northbound SR 14 would likely notice the Project, but they would view it as a minor portion of a broader, mostly undeveloped landscape.

5.0 PRELIMINARY CEQA ANALYSIS

This technical report will inform the Project's eventual evaluation of potential environmental effects in order to satisfy CEQA. There are four CEQA criteria for Aesthetics. Each is presented here as a question, with preliminary assessments of impact to visual resources provided.

1. **Would the Project have a substantial adverse effect on a scenic vista?**

   Less Than Significant Impact. Scenic vistas are typically expansive views from elevated areas. They may or may not be part of a designated scenic overlook or other area providing a static vista view of a landscape. There are no designated scenic vistas in the Project vicinity. Elevated views of the Fremont Valley from SR 14 are in the northern part of the valley, as represented by Character View 1, which is a sustained view from the BLM Jawbone Station Visitors Center. The northernmost portion of the Project site is 5 miles south of this viewpoint and would, if visible, appear in the background valley floor beyond an area extensively developed with solar projects. It would not substantially alter this or any other elevated, expansive view toward the Fremont Valley. As such, impacts to scenic vistas would be less than significant.

2. **Would the Project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?**

   Less Than Significant Impact. There are no officially designated state scenic highways in Kern County. The segment of SR 14 that passes within a mile to the west and north of the northwestern corner of the Project site is eligible for scenic highway designation (Caltrans 2019). It is also a Kern County Scenic Route (Kern County 2009a). The Project would involve removal of scrub vegetation mostly consisting of creosote bushes and relocation of Joshua trees, none of which are identified as scenic resources by either the Kern County or California City General Plans. The Project site is undeveloped and does not contain historic buildings. It would appear alongside a recently approved solar project in the closest views from SR 14, and beyond existing solar projects in longer views. Given this, the Project would not substantially damage scenic resources within a state scenic highway and impacts would be less than significant.

3. **Would the Project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?**

   Less-than-Significant Impact. The Project site is located in the Fremont Valley portion of the Mojave Desert, which includes lands that are part of unincorporated Kern County and California City. This part of the valley is characterized visually by sparse development, widespread desert vegetation (creosote and other scrub brush, along with Joshua trees), and an increasing amount of solar energy projects and their ancillary facilities, including transmission gen-tie lines. Publicly accessible views toward the Project would generally be from rural residences and lands within or adjacent to the broader Project footprint (KOP 1 and KOP 2),

from the northern edge of the urbanized portion of California City (KOP 3), and from SR 14, west and north of the Project (KOP 4 and KOP 5). The Project would be highly visible to viewers where viewed at eye-level and in close proximity, as shown in the simulated view for KOP 1, which shows the Project as near as 0.25 mile away. Where set back a bit further from the viewpoint—between one-third of a mile (KOP 2) and two-thirds of a mile (KOP 3)—the Project would be clearly observable within a visually limited portion of the view, appearing as a linear feature or distinct polygon across all or part of the valley floor. From further away (KOP 4, 1.2 miles away, and KOP 5, as close as 1.5 miles away), it would appear as a plane along the near horizon, visible but difficult to discern or even identify given atmospheric conditions. In the view from KOP 1, the Project would appear alongside the approved Eland 1 project and in front of the existing Barren Ridge project. Eland 1 solar panels would be clearly visible in existing views from KOP 2 and KOP 4, and conceptual gen-tie lines associated with that project are, as repeating vertical features in some views, as dominant visually as the solar panels. None of the Project solar panels would encroach on views of near or distant mountain slopes to the extent that transmission structures do. The proximity of the Eland 1 solar panels to the Project and their presence in most views would establish the degree to which solar projects are a visible presence throughout this portion of the Fremont Valley. The Barren Ridge project to the west and the Beacon and Springbok projects to the north define the broader visual character in the area as a patchwork landscape of large, utility-scale solar development into which the Project would appear absorbed. The Project would appear consistent with these existing uses and would not substantially degrade the existing visual character or quality of public views. This impact would be less than significant.

4. **Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?**

Less Than Significant Impact. The Project would not include any source of substantial nighttime lighting. Any lighting required for safety and security within the Project area would be shielded and directed away from public rights-of-way. Lighting would be of the lowest intensity foot candle level in accordance with the Kern County Municipal Code. There currently is no source of substantial daytime glare within the Project site. The proposed Project, similar to Eland 1, would introduce a new potential source of glare from the reflective portions of the solar panel arrays. Solar panels are designed to absorb, not reflect, light; PV solar glass is often stippled with a light-trapping, photon-absorbent solar cell that reduces reflectance (Sunpower 2010). Further, modern PV panels reflect as little as 2 percent of incoming sunlight, with approximately the same reflectivity as a body of water (USDOE 2014). Incorporation of low-reflective materials would ensure reflectivity, and glint or glare associated with the Project would be minimized. Therefore, the proposed Project would not create a new source of substantial light or glare in the area that would affect day or nighttime views in the area and impacts would be less than significant.

6.0 CONCLUSIONS

The Kudu Solar Project would consist of the construction of solar arrays and associated structures within the Fremont Valley on lands that are currently undeveloped in portions of unincorporated Kern County and California City, and adjacent to the recently approved Eland 1 project. The Project would be visible and identifiable to motorists traveling north/south on SR 14 and residents that live in the vicinity of the Project or are driving on roads adjacent to the Project site. Its presence would generally result in only slight decreases in observable visual quality in most views. This is because a substantial portion of the Fremont Valley has been developed with utility-scale solar facilities, which define the visual character of this area. In close-in views, the Project would appear consistent in form and color to other nearby solar energy developments. In broader views, it would appear as being absorbed into a valley landscape that is characterized by a patchwork of renewable energy projects.

7.0 REFERENCES

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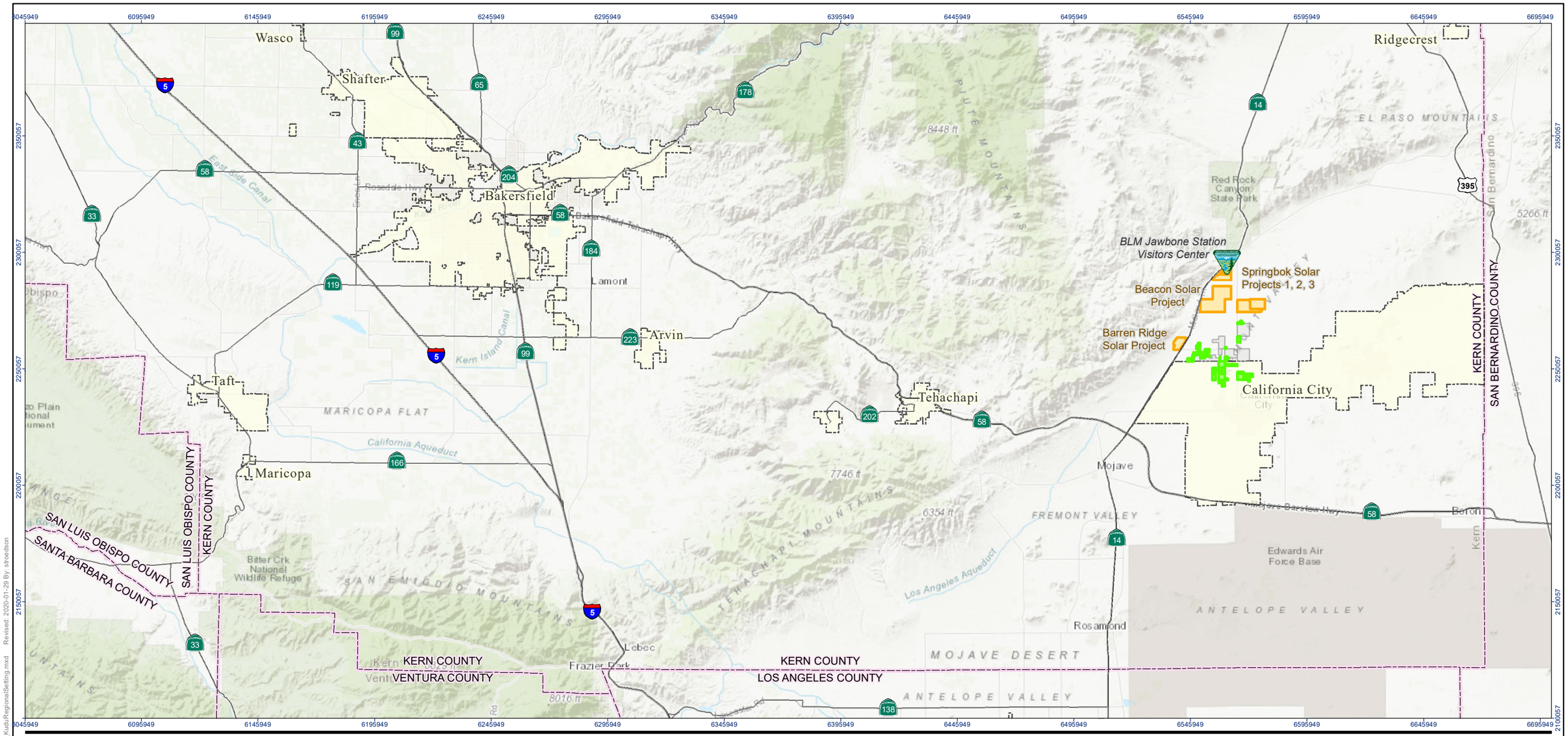
FIGURES



- Kudu Project Site
- Eland 1 Solar Project
- Existing Large Solar Project
- Incorporated City
- County

0 8 16 Miles

(At original document size of 11x17)
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N

Notes

1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: 8 Minute Solar Energy and Stantec
3. Basemap Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Stantec

8MINUTE SOLAR ENERGY

Project Location
N of and in California City
Kern County, CA

Prepared by SET on 2020-01-29
TR by JH on 2020-01-30
IR by CB on 2020-01-30

Client/Project
8 Minute Solar Energy
Kudu Solar Project

185704635_0014

Figure No.
1

Title
Kudu Solar Project Location

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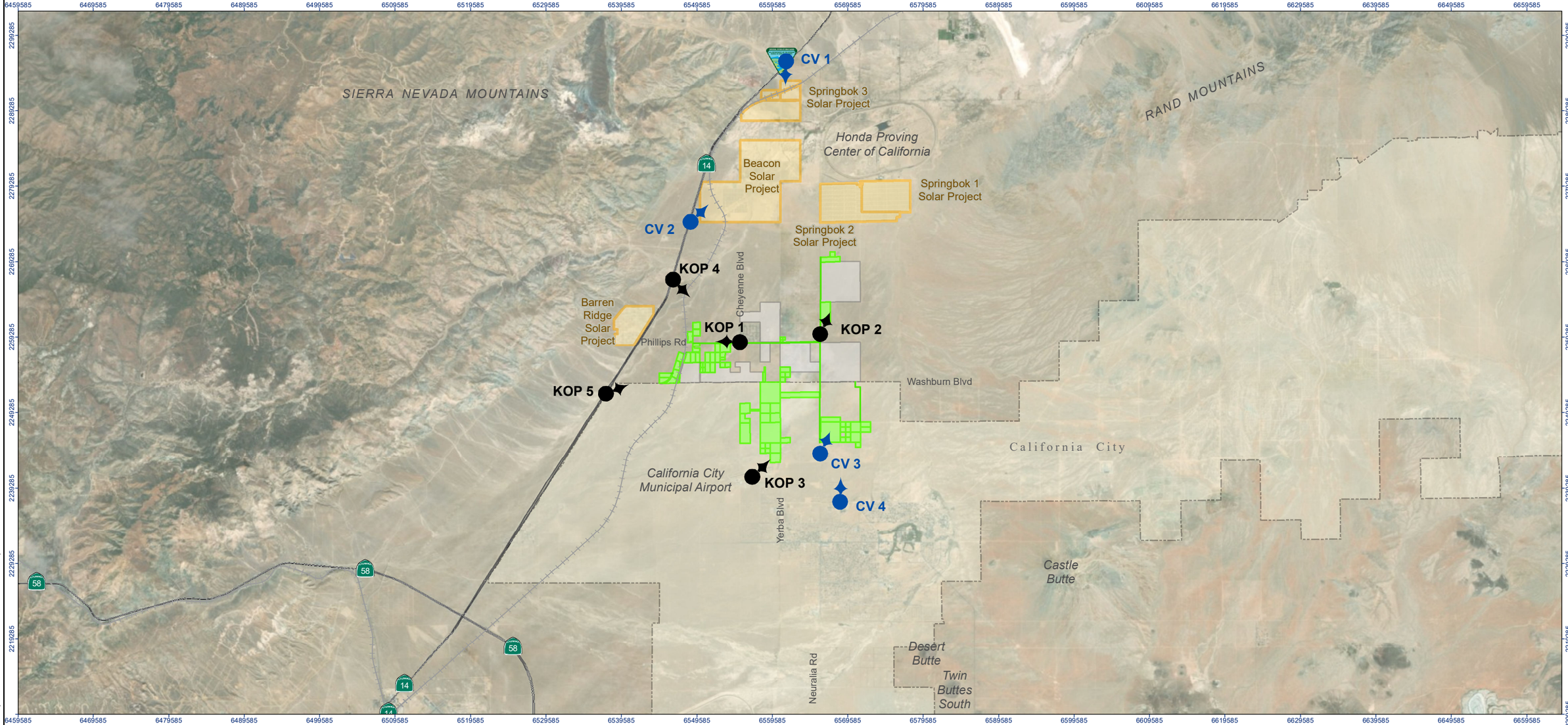

Key Observation Point (KOP)

Character View (CV)

BLM Jawbone Station Visitors Center

Kudu Collector Route

Kudu Project Site

Eland 1 Solar Project

Existing Large Solar Project

0 1.25 2.5 Miles

(At original document size of 11x17)
1:158,400

N

Notes

1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: 8 Minute Solar Energy and Stantec
3. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Stantec

MINUTE SOLAR ENERGY

Project Location
SW of California City
Kern County, CA

Prepared by SET on 2020-01-29
IR by JH on 2020-01-30
TR by CB on 2020-01-30

Client/Project
185704635_0016
8 Minute Solar Energy
Kudu Solar Project

Figure No.
2

Title
Kudu Solar Project Site and Key Observation Points

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Figure 3a: View to the west from KOP 1 at the southwest corner of Phillips Road and Cheyenne Boulevard. The Barren Ridge Solar Project and Eland 1 gen-tie line are visible in the view.

Figure 3b: View from KOP 1 with the Project simulated.

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Figure 3
KOP 1-Phillips Road at Cheyenne Boulevard
Kudu Solar Project

Figure 4a: View to the north-northeast from KOP 2 along the northbound lane of Neuralia Road, about 5 miles north of California City. The Eland 1 Solar Project is visible in the center of the view and is less than 1 mile away.

Figure 4b: View from KOP 2 with the Project simulated.

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Figure 4
KOP 2- Neuralia Road
Kudu Solar Project

Figure 5a: View to the northeast from KOP 3 at the California City Municipal Airport. The Eland 1 Solar Project is visible in the right side of the view, about 3 miles to the northeast.

Figure 5b: View from KOP 3 with the Project simulated.

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Figure 5
KOP 3- California City Municipal Airport
Kudu Solar Project

Figure 6a: View to the southwest from KOP 4 along the southbound lane of SR 14. A rural residential area is visible in the left side of the view. The Eland 1 Solar Project and its gen-tie line along Phillips Road are also visible in the view, about 2 miles away.

Figure 6b: View from KOP 4 with the Project simulated.

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Figure 6
KOP 4 - Southbound State Route 14
Kudu Solar Project

Figure 6c: View from KOP 4 with the Project simulated and the palliative underneath the solar panels. From this distance and elevation, the difference in color is barely detectable along the right edge of the view.

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Figure 6
KOP 4 - Southbound State Route 14
Kudu Solar Project

Figure 7a: View to the east-northeast from KOP 5 along the northbound lane of SR 14, just south of Washburn Boulevard, around 10 miles north of Mojave.

Figure 7b: View from KOP 5 with the Project simulated.

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Figure 7
KOP 5-Northbound State Route 14
Kudu Solar Project

APPENDIX

FHWA Visual Quality Worksheets

Kudu Solar Project - Assessment of Visual Effects

Existing Conditions

KOP 1	Location: Phillips Road at Cheyenne Boulevard	Photo Date: 21-Aug-19
Landscape Unit or Type:	NA	Viewer Type(s): Travelers / Drivers / Residents
View Orientation / Viewer Position to Project (Inferior, Level, or Superior):		W / Level
Viewpoint Description (Figure Caption):	View to the west from the intersection of Phillips Road and Cheyenne Boulevard. The existing Barren Ridge Solar Project and Eland 1 gen-tie line are visible in the view.	

VISUAL CHARACTER

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Edge of Fremont Valley bordered by Sierra Nevada mountains.	Fore	X	Buildings	NA	Fore	
		Mid	X			Mid	
		Back	X			Back	
Water	NA	Fore		Infrastructure	Phillips Road extends from foreground to background. Access roads between solar panels visible.	Fore	X
		Mid				Mid	X
		Back				Back	X
Vegetation	Desert scrubland, mainly creosote, in foreground; present but indistinguishable in mid/background.	Fore	X	Structures	Solar panels visible in right half of the view. Transmission line visible.	Fore	X
		Mid	X			Mid	X
		Back	X			Back	X
Animals	NA	Fore		Artifacts / Art	NA	Fore	
		Mid				Mid	
		Back				Back	
Atmospheric	Clear conditions.	Fore		Motion	Vehicles when present.	Fore	
		Mid				Mid	
		Back				Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	4	The western edge of the Fremont Valley is backdropped by the Sierra Nevada Mountain Range. Sierra Nevada mountains appear close to viewer here, thus increasing their dominance in the view.
Cultural Order	3	Phillips Road, transmission line, and the existing solar project are the dominant human-made features visible in the view. The existing solar project appears as a polygon at the base of the mountain foothills in the right half of the view.
Overall Coherence	3	The view is typical of the Fremont Valley landscape that has been developed with solar facilities and associated transmission structures; however, the solar panels and transmission poles encroach on visibility of the Sierra Nevada mountains.
Landscape Composition and Vividness	4	The view is characterized by the transition between the valley floor and Sierra Nevada mountains. The solar panels and gen-tie appear within a natural landscape and provide visual interest to the view.
Overall Visual Quality Score	3.5	Moderate.

With Project

KOP 1	Location: Phillips Road at Cheyenne Boulevard	Date of Eval: 7-Oct-19
Landscape Unit or Type:	NA	Viewer Type(s): Travelers / Drivers / Residents
View Orientation / Viewer Position to Project (Inferior, Level, or Superior):		W / Level
Viewpoint Description (Figure Caption):	View from KOP 1 with the Project simulated.	

VISUAL CHARACTER CONTRAST

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Majority of flat lands in foreground covered by Project. In views with panels oriented toward east, substantial change in color.	Fore	X	Buildings	NA	Fore	
		Mid	X			Mid	
		Back	X			Back	
Water	NA	Fore		Infrastructure	No change with Project.	Fore	X
		Mid				Mid	X
		Back				Back	X
Vegetation	Slightly coarse texture of gray/green vegetation visible in foreground/ middleground replaced by smooth blue/black of solar panels.	Fore	X	Structures	Solar panels would occupy majority of the left side of the view.	Fore	X
		Mid	X			Mid	X
		Back	X			Back	X
Animals	NA	Fore		Artifacts / Art	NA	Fore	
		Mid				Mid	
		Back				Back	
Atmospheric	Project does not affect atmospheric conditions observed.	Fore		Motion	No change with Project.	Fore	
		Mid				Mid	
		Back				Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	3	With the Project in place, vegetation visible along Phillips Road would be removed. The contrasting forms of the valley floor and hills / ridgelines would remain visible, but the majority of land visible would appear as being developed.
Cultural Order	3	With the Project, the landscape would appear more intensively developed than at present. The Project would be visible throughout the view; however, would relate in form and color to the existing solar project in the distance.
Overall Coherence	3	The addition of the solar panels would extend into the left side of the view, which already exists in the right side of the view.
Landscape Composition and Vividness	3	The visual character here would become substantially mechanized in appearance, with the majority of the lands in view dedicated to renewable energy development. Structures would be clearly visible along Phillips Road.
Overall Visual Quality Score	3.0	Moderately Low.

* Foreground = zone including area up to 0.25 - 0.5 mile from viewer; Middleground = zone extending between 0.25 - 0.5 mile from viewer to 3 - 5 miles away; Background = zone extending from 3-5 miles away from viewer to infinity.
** 1 = Very Low; 2 = Low; 3 = Moderately Low; 4 = Moderate; 5 = Moderately High; 6 = High; 7 = Very High

Kudu Solar Project - Assessment of Visual Effects

Existing Conditions

KOP 2	Location: Neuralia Road	Photo Date: 21-Aug-19
Landscape Unit or Type:	NA	Viewer Type(s): Travelers / Drivers
View Orientation / Viewer Position to Project (Inferior, Level, or Superior):		NNE / Level
Viewpoint Description (Figure Caption):	View to the north-northeast from Neuralia Road, north of California City. The Eland 1 solar project is visible in the middleground and is less than 1 mile away.	

VISUAL CHARACTER

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Eastern edge of the Fremont Valley in foreground and middleground, with mountains as backdrop.	Fore	X	Buildings	NA	Fore	
		Mid	X			Mid	
		Back	X			Back	
Water	NA	Fore		Infrastructure	Roadway signage visible in the foreground, evident of the Neuralia Road corridor.	Fore	X
		Mid				Mid	
		Back				Back	
Vegetation	Desert scrubland, mainly creosote, in foreground; present but indistinguishable in mid/background.	Fore	X	Structures	Solar panels from Eland 1 project visible in the middleground.	Fore	
		Mid	X			Mid	X
		Back	X			Back	
Animals	NA	Fore		Artifacts / Art	NA	Fore	
		Mid				Mid	
		Back				Back	
Atmospheric	Clear conditions, but atmospheric haze above valley floor evident in views.	Fore		Motion	NA	Fore	
		Mid				Mid	
		Back				Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	4	Eastern edge of the Fremont Valley is backdropped by the Rand Mountains. Portion of the Sierra Nevada Mountain Range is visible in the left side of the view.
Cultural Order	3	Solar panels are visible in the center of the view, in the middleground and background. The solar panels appear as a smooth single polygon at the base of the mountains.
Overall Coherence	3	The view is typical of the Fremont Valley landscape that has been developed with solar facilities and associated transmission structures. The solar panels are contained within the middleground. The mountains in the background remain visible and appear intact.
Landscape Composition and Vividness	4	Solar panels add elements of visual interest in the center of the view, as are the Rand Mountains in the background. The solar panels visible further delineate the transition between the valley floor and mountains.
Overall Visual Quality Score	3.5	Moderate.

With Project

KOP 2	Location: Neuralia Road	Date of Eval: 7-Oct-19
Landscape Unit or Type:	NA	Viewer Type(s): Travelers / Drivers
View Orientation / Viewer Position to Project (Inferior, Level, or Superior):		NNE / Level
Viewpoint Description (Figure Caption):	View from KOP 2 with the Project simulated.	

VISUAL CHARACTER CONTRAST

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Project would appear atop land throughout the middleground, in front of the mountains.	Fore		Buildings	NA	Fore	
		Mid	X			Mid	
		Back				Back	
Water	NA	Fore		Infrastructure	No change with Project	Fore	
		Mid				Mid	
		Back				Back	
Vegetation	Slightly coarse texture of gray/green vegetation visible in distance replaced by smooth blue/white solar panels.	Fore		Structures	Solar panels and subation would be added in front of the existing panels in the middleground.	Fore	
		Mid	X			Mid	X
		Back				Back	
Animals	NA	Fore		Artifacts / Art	NA	Fore	
		Mid				Mid	
		Back				Back	
Atmospheric	Project does not affect atmospheric conditions observed	Fore		Motion	NA	Fore	
		Mid				Mid	
		Back				Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	4	Vegetation in the middleground would be removed and replaced with solar panels. The solar panels would be placed in front of the existing solar panels, closer in the view and obscure portions of the mountains in the background.
Cultural Order	3	The addition of the Project would intensify the amount of solar development in the view, but would appear within the same developed area as the existing solar panels. The Project would relate in form and color to the existing solar project.
Overall Coherence	3	Still typical of views throughout Fremont Valley. Intactness of existing view would remain, with the Project limited to the valley floor and in the middleground where there are existing solar panels.
Landscape Composition and Vividness	4	With addition of the Project, the view would still be characterized by the solar development that is set within the natural landscape.
Overall Visual Quality Score	3.5	Moderate.

* Foreground = zone including area up to 0.25 - 0.5 mile from viewer; Middleground = zone extending between 0.25 - 0.5 mile from viewer to 3 - 5 miles away; Background = zone extending from 3-5 miles away from viewer to infinity.
** 1 = Very Low; 2 = Low; 3 = Moderately Low; 4 = Moderate; 5 = Moderately High; 6 = High; 7 = Very High

Kudu Solar Project - Assessment of Visual Effects

Existing Conditions

KOP 3	Location: California City Municipal Airport	Photo Date: 21-Aug-19

Landscape Unit or Type: NA **Viewer Type(s):** Airport Visitors

View Orientation / Viewer Position to Project (Inferior, Level, or Superior): NE / Level

Viewpoint Description (Figure Caption): View to the northeast from the California City Municipal Airport. A portion of the Eland 1 solar project is visible, approximately 3 miles to the northeast.

VISUAL CHARACTER

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Valley floor visible in middleground with low hills and more distant mountains in the background.	Fore Mid Back	 X X	**Buildings**	Edge of storage building in right side of the view.	Fore Mid Back	X
Water	NA	Fore Mid Back	 	**Infrastructure**	Plane runway and parking area visible in foreground.	Fore Mid Back	X
Vegetation	Desert scrubland in mid/background, but indistinguishable.	Fore Mid Back	 X X	**Structures**	Bollards, fire hydrants, fencing, and signage in plane parking area. Solar panels visible in the right side of the view.	Fore Mid Back	X X
Animals	NA	Fore Mid Back	 	**Artifacts / Art**	NA	Fore Mid Back	
Atmospheric	Clear conditions, but atmospheric haze above valley floor evident in views.	Fore Mid Back	 	**Motion**	Occasional airplanes landing/ taking off.	Fore Mid Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	**3**	The northern edge of California City that is adjacent to a mostly undeveloped valley floor with low hills as the immediate backdrop and more distant mountains identifiable along the horizon. The Eland 1 solar project is visible in the middleground but appears subordinate to existing topography and does not obstruct visibility of such features.
Cultural Order	**3**	Development associated with the California Municipal Airport is the dominant human-made features visible in the view. Except for the Eland 1 solar project visible in the right side of the view, the middleground appears undeveloped. Hillsides and mountains in the background appear intact.
Overall Coherence	**4**	This view is typical of views from California City where development is concentrated within populated areas and beyond that the valley floor mostly undeveloped, but also contains renewable energy facilities.
Landscape Composition and Vividness	**3**	The view is characterized by the transition between the built environment and the natural landscape that appears mostly undeveloped. The Eland solar project is evident in the middleground, but is not distinguishable.
Overall Visual Quality Score	**3.3**	Moderately Low.

With Project

KOP 3	Location: California City Municipal Airport	Date of Eval: 7-Oct-19

Landscape Unit or Type: NA **Viewer Type(s):** Airport Visitors

View Orientation / Viewer Position to Project (Inferior, Level, or Superior): NE / Level

Viewpoint Description (Figure Caption): View from KOP 3 with the Project simulated.

VISUAL CHARACTER CONTRAST

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	A substantial portion of the land visible in the middleground will be covered by the Project.	Fore Mid Back	 X X	**Buildings**	No change with Project.	Fore Mid Back	
Water	NA	Fore Mid Back	 	**Infrastructure**	No change with Project.	Fore Mid Back	
Vegetation	Slightly coarse texture of gray/green vegetation visible in distance replaced by smooth blue/white solar panels.	Fore Mid Back	 X X	**Structures**	Solar arrays would appear as a collective, singular polygon across the middleground and into the background.	Fore Mid Back	X X
Animals	NA	Fore Mid Back	 	**Artifacts / Art**	NA	Fore Mid Back	
Atmospheric	Project does not affect atmospheric conditions observed.	Fore Mid Back	 	**Motion**	No change with Project.	Fore Mid Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	**2**	The existing natural harmony is based on the contrast between the developed edge of the valley that is backdropped by the low hills and more distant mountains. The Project would appear in front of the existing solar project, but would be more prominently visible.
Cultural Order	**3**	The Project would be contained within the middleground and appear similar in form and color as the existing project. However, addition of the Project would increase the presence of solar development visible in the view.
Overall Coherence	**4**	Intactness of the existing view would remain, with the Project limited to the valley floor in the middleground. The low hills and distant mountains would remain visible, but overall the middleground would appear mostly developed with the Project.
Landscape Composition and Vividness	**3**	With addition of the Project, solar panels would be identifiable and add visual interest to the view. Despite the size of the project area visible compared to existing conditions, the Project would still be contained within the middleground and the low hills and distant mountains would remain visible.
Overall Visual Quality Score	**3.0**	Moderately Low.

* Foreground = zone including area up to 0.25 - 0.5 mile from viewer; Middleground = zone extending between 0.25 - 0.5 mile from viewer to 3 - 5 miles away; Background = zone extending from 3-5 miles away from viewer to infinity.

** 1 = Very Low; 2 = Low; 3 = Moderately Low; 4 = Moderate; 5 = Moderately High; 6 = High; 7 = Very High

Kudu Solar Project - Assessment of Visual Effects

Existing Conditions

KOP 4	Location: Southbound State Route 14	Photo Date: 21-Aug-19
Landscape Unit or Type: NA	Viewer Type(s): Drivers / Travelers	
View Orientation / Viewer Position to Project (Inferior, Level, or Superior):	NW / Level	
Viewpoint Description (Figure Caption):	View to northwest from southbound State Route 14. California City is visible in the left side of the view. The Eland solar project is visible in the view about 2 miles away.	

VISUAL CHARACTER

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Flat portion of Fremont Valley extends from viewpoint to the background. Two isolated buttes and low sloped hills detectable.	Fore Mid Back	X X X	Buildings	Residential area in left side of the view about 2 miles away.	Fore Mid Back	
Water	NA	Fore Mid Back		Infrastructure	Railroad corridor visible in foreground.	Fore Mid Back	X
Vegetation	Desert scrubland, mainly creosote, in foreground; Joshua Trees also present but indistinguishable in mid/background	Fore Mid Back	X X X	Structures	Perimeter fence visible in the foreground. Solar panels and transmission line visible.	Fore Mid Back	X
Animals	NA	Fore Mid Back		Artifacts / Art	NA	Fore Mid Back	X
Atmospheric	Clear conditions, but atmospheric haze above valley floor evident in views.	Fore Mid Back		Motion	Occasional trains travelling on railroad corridor.	Fore Mid Back	X X

VISUAL QUALITY

	Score**	Notes
Natural Harmony	4	Desert valley floor that has been developed with utility-scale solar energy facilities and transmission infrastructure. Low sloped hills visible in the background, including Castle Butte in the left side of the view.
Cultural Order	3	The existing solar panels and transmission structures are the most proiment human-made features in the view. Residential development is visible in the left side of the view.
Overall Coherence	3	Inherently less-than-moderate coherence in view that encompasses utility-scale power generation / transmission structures and residential structures within the valley floor. Component pieces, while individually of visual interest, do not add up to a coherent whole.
Landscape Composition and Vividness	3	The view is typical of this portion of the Fremont Valley, which has been developed with utility-scale solar energy facilities and associated infrastructure. The transmission structures extend into the skyline and obscure visiblity of the hillsides in the background.
Overall Visual Quality Score	3.3	Moderately Low.

With Project

KOP 4	Location: Southbound State Route 14	Date of Eval: 7-Oct-19
Landscape Unit or Type: NA	Viewer Type(s): Drivers / Travelers	
View Orientation / Viewer Position to Project (Inferior, Level, or Superior):	NW / Level	
Viewpoint Description (Figure Caption):	View from KOP 4 with the Project simulated.	

VISUAL CHARACTER CONTRAST

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Some land visible in the middleground will be covered by the Project.	Fore Mid Back	 X X	Buildings	No change with Project.	Fore Mid Back	
Water	NA	Fore Mid Back		Infrastructure	NA	Fore Mid Back	
Vegetation	Slightly coarse texture of green vegetation visible in distance replaced by smooth blue/white solar panels.	Fore Mid Back	 X X	Structures	Solar panels would be added in the middleground and background.	Fore Mid Back	 X X
Animals	NA	Fore Mid Back		Artifacts / Art	NA	Fore Mid Back	
Atmospheric	Project does not affect atmospheric conditions observed.	Fore Mid Back		Motion	No change with Project.	Fore Mid Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	4	Project would not affect visual resources, but would place additional solar panels in the valley floor requring the removal of vegetation slightly discernable in the middleground. Change not substantial.
Cultural Order	3	With the project, the landscape would appear incrementally more intensively developed than at present. The Project would appear wholly contained within the view's middleground and background, however, and would relate in form and color to the existing solar project in the distance.
Overall Coherence	3	Intactness would remain. The Project would be placed within a landscape that already contains utility-scale solar energy facilities, but the landscape would become intensively mechanized with blocks of solar arrays.
Landscape Composition and Vividness	3	The visual character here would become slightly more mechanized in appearance, with the majority of the lands in view dedicated to renewable energy development. Solar arrays would be of visual interest and would be vivid components in the landscape where detectable.
Overall Visual Quality Score	3.3	Moderately Low.

* Foreground = zone including area up to 0.25 - 0.5 mile from viewer; Middleground = zone extending between 0.25 - 0.5 mile from viewer to 3 - 5 miles away; Background = zone extending from 3-5 miles away from viewer to infinity.
** 1 = Very Low; 2 = Low; 3 = Moderately Low; 4 = Moderate; 5 = Moderately High; 6 = High; 7 = Very High

Kudu Solar Project - Assessment of Visual Effects

Existing Conditions

KOP 5	Location: Northbound State Route 14	Photo Date: 21-Aug-19
Landscape Unit or Type: NA	Viewer Type(s): Drivers/Travelers	
View Orientation / Viewer Position to Project (Inferior, Level, or Superior):	ENE / Level	
Viewpoint Description (Figure Caption):	View to the northeast from northbound State Route 14, south of Washburn Boulevard.	

VISUAL CHARACTER

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Flat portion of the Fremont Valley floor extends from the foreground to the middleground with low hills and moutains as backdrop.	Fore	X	Buildings	NA	Fore	
		Mid	X			Mid	
		Back				Back	
Water	NA	Fore		Infrastructure	NA	Fore	
		Mid				Mid	
		Back				Back	
Vegetation	Desert scrubland, mainly creosote, in foreground; Joshua Trees also present but indistinguishable in mid/background	Fore	X	Structures	Property fence extends from foreground into the middleground	Fore	
		Mid	X			Mid	X
		Back	X			Back	
Animals	NA	Fore		Artifacts / Art	NA	Fore	
		Mid				Mid	
		Back				Back	
Atmospheric	Clear conditions, but atmospheric haze above valley floor evident in views.	Fore		Motion	NA	Fore	
		Mid				Mid	
		Back				Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	5	Fremont Valley with low hills as immediate backdrop and more distant mountains identifiable along distant horizon.
Cultural Order	4	The landscape appears mostly undeveloped. The perimeter fence visibile in the foreground and middleground is the only visible human-made feature in the view.
Overall Coherence	4	This view of the Fremont Valley is typical of views throughout the area. The view is characterized by the transition between the mostly undeveloped valley floor, low hills, and the distant mountains.
Landscape Composition and Vividness	4	An undeveloped vegetated desert landscape. The mountains in the background are of visual interest.
Overall Visual Quality Score	4.3	Moderate.

With Project

KOP 5	Location: Northbound State Route 14	Date of Eval:
Landscape Unit or Type: NA	Viewer Type(s): Drivers/Travelers	
View Orientation / Viewer Position to Project (Inferior, Level, or Superior):	ENE / Level	
Viewpoint Description (Figure Caption):	View from KOP 5 with the Project simulated.	

VISUAL CHARACTER CONTRAST

Natural Environment		Distance Zones *		Cultural Environment		Distance Zones *	
Land	Project would be visible along the edge of the valley floor where it meets with the mountains in the background.	Fore		Buildings	NA	Fore	
		Mid				Mid	
		Back	X			Back	
Water	NA	Fore		Infrastructure	NA	Fore	
		Mid				Mid	
		Back				Back	
Vegetation	Some Joshua trees visible at base of mountain replaced with Project. Texture altered in the background.	Fore		Structures	Solar panels would be barely detectable in the background.	Fore	
		Mid				Mid	
		Back	X			Back	X
Animals	NA	Fore		Artifacts / Art	NA	Fore	
		Mid				Mid	
		Back				Back	
Atmospheric	No change with Project.	Fore		Motion	NA	Fore	
		Mid				Mid	
		Back				Back	

VISUAL QUALITY

	Score**	Notes
Natural Harmony	4	Project would not affect visual resources. The solar panels would be placed at the base of the low hills/ mountains visible in background views, but would not obstruct visibility or be prominently visible.
Cultural Order	4	The Project would not alter foreground or middleground views. The solar panels would contained in the background, but would be barely detactable.
Overall Coherence	4	Intactness of the view would remain as the Project would be contained in the background and appear subordinate to the natural landscape features that contribute to the view's character.
Landscape Composition and Vividness	4	The view would still be characterized as a vegetated desert landscape that is backdropped by the low mountains. The Project would be barely detectable in the background and would not obstruct visibility of the natural landscape.
Overall Visual Quality Score	4.0	Moderate.

* Foreground = zone including area up to 0.25 - 0.5 mile from viewer; Middleground = zone extending between 0.25 - 0.5 mile from viewer to 3 - 5 miles away; Background = zone extending from 3-5 miles away from viewer to infinity.
** 1 = Very Low; 2 = Low; 3 = Moderately Low; 4 = Moderate; 5 = Moderately High; 6 = High; 7 = Very High

Appendix B-2
Glare Analysis

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Glare Analysis Report for the Kudu Solar Project

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AUGUST 2021

Printed on 30% post-consumer recycled material.

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A Detailed Modeling Results

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1 INTRODUCTION

1.1 Purpose and Scope

The purpose of this Glare Analysis Report (report) is to assess the potential glare impacts associated with implementation of the proposed Kudu Solar Project (project). The study was conducted per the Federal Aviation Administration's recommended procedures described in the *Technical Guidance for Evaluating Selected Solar Technologies on Airports* (FAA 2018) and the geometric glare modeling software utilized adheres to interim Federal Aviation Administration policy regarding solar energy system projects on federally obligated airports (78 FR 63276–63279).

This Glare Analysis Report includes an introduction to the photovoltaic (PV) technologies proposed to be implemented on the Project and their potential to result in glare. Section 1, Project Description, provides a description of the project, the project location, and describes the environmental setting. Section 2, Glare Impacts, describes the methodology used to perform the glare analysis and provides a summary of the analysis results. Section 3, References Cited, includes a list of the references cited in this report, and Section 4, Document Preparers, includes a list of those involved in the preparation of this report. The complete detailed glare report generated by the modeling software is included in Appendix A, Modeling Results.

2 PROJECT DESCRIPTION

2.1 Project Characteristics

The applicant proposes to construct a photovoltaic solar facility and energy storage system capable of producing up to 500 megawatt (MW) alternating current (AC) utility-scale solar power with an up to 600 MW-hour (MWh) energy storage capacity. Located on approximately 1,955.1 acres of privately-owned land, the proposed project would be supported by a 230-kV gen-tie overhead and/or underground generation tie-line (gen-tie) from originating from the Eland substation and terminating at the Los Angeles Department of Water and Power's Barren Ridge Substation located approximately two miles to the northwest of the project site, or through an upgraded connection through Eland 1. The proposed project intends to share the Eland 1 Solar Project's gen-tie line and ROW, which will be accomplished by constructing the line conductor capable of supporting both projects. Construction of the gen-tie and substation will be done as part of the Eland 1 Solar Project, consistent with the conditions of approval outlined in that project's CUP(s). If the proposed project cannot share these facilities, a new gen-tie line would be developed within one of the routes previously analyzed in the Eland 1 Solar Supplemental Environmental Impact Report (State Clearinghouse No. 2012011029).

This Glare Analysis Report considers the impacts of the PV solar arrays and their potential to generate glare. The project includes other components that do not have potential for significant glare and are therefore not analyzed in this report. These components include, but are not be limited to:

- Inverter Stations
- Service Roads
- Power Collection System
- Communications Cables
- Overhead and Underground Electrical Transmission Lines
- Substations
- Energy Storage System(s)
- Operations and Maintenance (O&M) Facilities

2.2 Regional and Local Setting

2.2.1 Regional Location

The project is located in portions of unincorporated Kern County and the City of California City, just north of the California City Municipal Airport. According to the U.S. Geological Survey (USGS), the project site is located on the California City North and Mojave North East 7.5 minute USGS Quadrangles at Township 31S, Range 37E – portions of Sections 14, 15, 22, 23, 26, 27 , 28, 29, 30, 31, 32, 33, 34, 35 and Township 32S, Range 37E – portions of Sections 1, 2, 3, 4, 9, 10, 11, 12.

Figure 1, Project Location, shows the project location and surrounding municipalities, including the City of California City, and the communities of Mojave and Fremont in unincorporated Kern County. The project is comprised of several adjacent or attached sites totaling approximately 1,955 acres in size, of which 1,189 acres falls within the City of California City. The southern portion of the project is about 10 miles northeast of the Mojave Air and Space Port and directly North of the California City Municipal Airport. The Southern Pacific Railway (Lone Pine Subdivision) runs through the western edge of the project boundary.

2.2.2 Project Setting

The project site is located within the Fremont Valley, southwest of Koehn Dry Lake in the western portion of the Mojave Desert. Approximate elevations within the project site range from 2,174

feet above mean sea level (amsl) at the northeastern portion of the site, to roughly 2,460 feet amsl at the southeast portion of the project site. The project site is relatively flat and features numerous ephemeral desert drainages trending to the northeast, which ultimately drain into Koehn Dry Lake located to the northeast of the project site. The major north-south roadways in the region is State Route (SR) 14, a four-lane highway. The project site is located approximately 58 miles east of I-5 and 27 miles north of SR 138. The project area is primarily accessible by exiting SR 14 at Phillips Road.

2.2.3 Project Site Conditions and Surrounding Land Uses

Landforms in the Fremont Valley include granite-derived alluvial fans and plains, low hills, washes, and an alkaline basin. The entire area drains in a northeasterly direction to Koehn Lake. Native vegetation onsite is typical of that found throughout the Mojave Desert, dominated by creosote bush and white bursage on slopes and plains and saltbush scrub in the alkaline basin. Many of the project parcels have been previously disturbed and/or cultivated. Currently, these areas include fallow agricultural fields and cleared parcels that were never put into agricultural production. Much of this fallowed land is still barren of native shrub cover and has been colonized by rubber rabbitbrush.

Existing land uses in the surrounding area are primarily undeveloped but also includes rural residences, an automobile product testing facility, and solar facilities. The project site lies to the east, west, and south of the Fremont Rural Community which consists predominantly of rural residential dwellings. A few miles north of the project site is the Honda Proving Ground, which is a 3,840-acre testing site for new automobile products. Regarding solar facilities, the project site is adjacent to the approved constructed Eland Solar Farm, south of the existing Springbrook 1 and 2 Solar Farms and southeast of the Los Angeles Department of Water and Power Beacon solar facility.

3 REGULATIONS AND REGULATORY REQUIREMENTS

3.1 Federal

Federal Aviation Administration

In order to understand and model glare in accordance with FAA standards, Sandia National Laboratories developed the Solar Glare Hazard Analysis Tool (SGHAT). With SGHAT, standardized safety metrics define the anticipated glare intensity that would cause unwanted visual impacts to Air Traffic Control towers and airplane pilots. Glare intensity is described according to potential for after-image and is illustrated on the FAA's Solar Glare Ocular Hazard Plot. Low potential for after-image is referred to as "green" glare and potential for after-image is referred to

as “yellow” glare. “Red” glare is representative of glare conditions with potential for permanent eye damage. While use of SGHAT or the publicly available and licensed SGHAT application ForgeSolar is required to demonstrate compliance with the standards for measuring ocular impact stated above for any proposed solar energy system located on a federally-obligated airport, the FAA has not established a formal policy for ocular impact assessments for non-airport solar facilities. Still, SGHAT and ForgeSolar are industry standard tools for assessing potential glare impacts associated with new solar facilities.

SGHAT and ForgeSolar are also able to evaluate the potential of a particular PV array to produce glare intensity, predicting when and where glare would occur from a proposed PV array at discrete observation points (i.e. from the Air Traffic Control Tower, runway approach, or fixed receptor location). In instances where glare may be a concern, the tools can prescribe minor adjustments to the tilt, direction, and location of the panels to alleviate issues.

While the project is not located on a federally-obligated airport and is not required to do so by Kern County, Dudek staff utilized the industry standard ForgeSolar 3D geometric glare analysis software tool to disclose potential glare impacts associated with operation of the project.

3.2 State

California Environmental Quality Act (CEQA)

CEQA requires an analysis of aesthetic impacts when an agency or individual proposes an activity which may cause either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment. In Appendix G, Environmental Checklist Form, the 2021 CEQA Statute and Guidelines contains the follow impact threshold related to glare:

- Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Other than the CEQA Guidelines, there are no state regulations pertaining to potential glare effects associated with the operation of solar facilities.

3.3 Local

Kern County General Plan Chapter 1: Land Use, Open Space, and Conservation Element

The following policy and implementation measure pertain to glare generated by new discretionary projects in Kern County:

- 1.10.7 Light and Glare (Policy 47): Ensure that light and glare from discretionary new development projects are minimized in rural as well as urban areas.
- Implementation Measure AA: The County shall utilize *CEQA Guidelines* and the provisions of the Zoning Ordinance to minimize the impacts of light and glare on adjacent properties and in rural undeveloped areas.

Chapter 19.81, Dark Skies Ordinance (Outdoor Lighting)

There are no local glare regulations that are applicable to the project. The Kern County Dark Skies Ordinance (Chapter 19.81 of the Kern County Zoning Ordinance) addresses glare; however, regulations and development standards are specific to outdoor lighting and signage. There are no development standards in the Kern County Dark Skies Ordinance that pertain specifically to solar facilities.

4 GLARE IMPACTS

4.1 General Concepts of Solar Technologies and Glare

The project would involve the installation of photovoltaic panels to convert the sun's light into electrical energy. To increase the efficiency of this conversion process, designers of solar systems strive to maximize the amount of solar energy that can be absorbed by solar cells. This work towards increasing efficiency has the added benefit of reducing the amount of light that reflects off of the surface of the solar panels. Reflected light can cause glint (a quick reflection) and glare (reflection that lasts for a longer duration), which can create hazards for pilots, air-traffic control personnel, motorists, and other potential receptors. For the purpose of this Glare Analysis Report, any light reflected off of the solar panels is referred to as 'glare.'

There are several key design considerations that can reduce glare from solar panels. One of the main factors of reflectance is the position of the PV modules relative to the sun. A panel that has been designed to absorb 90% of the sunlight that directly meets the face of the panels (perpendicular to the sun's rays) may have that absorption significantly reduced if the panel is not directly facing the sun (ForgeSolar 2019). Because the sun tracks across the sky over the course of a day, fixed-mount stationary panels can only maximize its efficiency for a few minutes out of the day when the sunlight is directly perpendicular to the face of the panel. To maximize the amount of solar energy generated from the solar array, some PV systems employ tracking mechanisms that would adjust to track the sun's trajectory as it crosses the sky. Figure 3, Comparison of Photovoltaic Tracking Systems, provides an illustrative example of fixed-mount panel system, single-axis tracking system, and dual-axis tracking system.

In addition to panel orientation, the materials used in the panel construction play an important role in reducing glare and maximizing efficiency. Different glass textures can be used to reflect light beams into the solar array and anti-reflective coatings can be added to the glass to further reduce reflectivity at high incidence angles (the angle at which the light hits the solar array).

The project is anticipated to employ a single-axis tracking system, as illustrated by the middle panel system in Figure 3. The axis of rotation would be aligned north-south with a maximum tracking angle of 52°. The surface of the panels would be constructed out of smooth glass and would include an anti-reflective coating, as further described in Section 4.2.3.

Glare can result in visual hazards and temporary loss of vision. The hazard level of glare depends on the ocular impact to the observer. Generally, an ocular impact is calculated as a function of the incidence angle and the intensity of the light. For the purpose of this Glare Analysis Report, an ocular impact is classified in one of three categories as follows:

- Green: Low potential for the glare to cause an after-image (also known as flash blindness)
- Yellow: Potential to cause a temporary after-image
- Red: Potential to cause retinal burn and permanent eye damage

4.2 Methodology

In order to determine where and when glare might occur as a result of the proposed project, Dudek staff utilized a multi-step process that included a combination of spatial analysis, 3D geometric modeling, and aerial imagery interpolation. Because of the project's close proximity to the California City Municipal Airport (located immediately south of the project), and the existence of multiple highways in the immediate vicinity of the project site, a 5-mile-radius study area was determined to be necessary for this analysis, as shown on Figure 1. The location of California City Municipal Airport are identified on Figure 1.

Dudek performed a visibility analysis on the surrounding terrain within the study area to determine where the project is most visible. Based on the visibility analysis, Dudek determined the location of potential receptors within the study area. All runway approach paths associated with California City Municipal Airport were included in this analysis regardless of visibility or distance. A geometric glare analysis was then conducted for the identified potential receptors to determine a worst-case scenario of where and when glare might be encountered (see section 2.2.4 for known modeling limitations). Upon completion of the geometric analysis, Dudek reviewed the results for potential glare hazards.

Because the project is broken into 17 non-contiguous parts, the geometric glare analysis had to be performed on each part individually. These individual parts, referred to as analysis groups in this report, are labeled Group A through Group Q on Figure 2, Project Site Layout.

4.2.1 Visibility Analysis

The first step in pinpointing potential receptor locations was to determine where the project is most visible on the surrounding landscape. This is an important step because the geometric glare analysis software described in Section 4.2.3 does not take into consideration the terrain between the observer and the reflective surfaces associated with the project. Without this step, there would

be potential for a false positive glare impact on an observer that, in reality, could not possibly see the project due to intervening terrain.

Figure 4, Visibility Analysis, shows the results of the visibility analysis performed by Dudek staff. Terrain within the study area is colored based on the percentage of the project visible from that location. Locations on the map colored red, can view most of the proposed solar arrays within each analysis group. Areas in blue have their view of the arrays mostly obscured by terrain. This visibility analysis only utilized existing terrain models, and did not take into consideration existing and proposed structures or vegetation.

4.2.2 Potential Receptor Identification

Using the visibility analysis results in conjunction with aerial imagery, road centerline data, land use data, and flight path information, Dudek staff selected potential receptors based on their distance from the project, orientation to the project, and the percentage of the project visible from the receptor's location. To keep the geometric processing time within reasonable limits, only receptors that were either close to the project or able to see most of the project from their location were selected for the analysis. Potential receptors to the south of the project that were not within close proximity were also excluded due to the fact that, at the latitude of the project, most of the glare resulting from the project would be reflected to the north, east, and west of the project. Figure 4, shows the locations of analyzed receptors as well as the modeled array locations. Figure 5, Air Traffic Receptor Locations, shows the locations of receptor routes associated with airport approach paths. Modeled array extents were subdivided into smaller portions to increase the accuracy of the modeling software. Each modeled receptor type shown on Figures 4 and 5 are described below and receptor's precise modeling parameters can be found in Appendix A:

- Dwelling Observation Point – Analysis included four existing residential dwellings that were located adjacent to the project or within direct line of sight of most of the solar array. Because modeling every dwelling would not be feasible, Dudek staff selected representative dwellings from the neighborhoods surrounding the site.
- Airport Flight Path Observation Route – Two flight path observation routes were selected to simulate an aircraft following a straight-line approach toward each runway 4.3-1. Flight path routes utilize glide slope and elevation parameters, as well as cockpit visibility angles. Modeled flight approaches extended out two miles from each runway threshold.
- Highway/Road Observation Route – Sixteen Highway/Road observation routes were selected based on visibility, distance to the project site, and level of traffic expected on the roadways. To keep the number of receptor routes below the allowed limit by the geometric modeling software, Dudek staff selected routes that would be representative of each road

type and road direction of travel within view of the project. Because of the project's location in the northern hemisphere, roads to the east, west, and north of the project were preferred in the selection process because of their higher likelihood of receiving glare (depending on distance).

- Railroad Observation Route – Two railroad routes were selected based on their proximity and visibility from the project site.

Table 1 shows the number of receptor points/routes modeled categorized by receptor type.

Table 1
Receptor Counts

Receptor Type	Count
Airport Flight Paths	2
Observation Points (Dwellings)	4
Observation Routes (Roads and Highways)	15
Railroads	2

4.2.3 Geometric Glare Analysis

Dudek staff utilized an industry standard 3D geometric glare analysis software tool developed by Sandia National Laboratories and licensed by ForgeSolar. By inputting the solar panel locations and characteristics, as well as the locations and elevations of the receptors, the software was able to simulate the sun's progression across the sky over the course of a year and model the potential glare caused by the proposed solar arrays. If glare is detected, the software is able to quantify the level of ocular impact hazard (green, yellow, or red) as well as pinpoint the exact time of year the glare would occur. This analysis was automatically performed for every minute of the calendar year, for each analysis group, and for each potential receptor defined in the model.

In order to ensure model accuracy, Dudek staff consulted the Project Applicant to obtain the precise characteristics of the proposed solar array system. Data gathered included the physical location, orientation, build material (including the presence of anti-reflective coatings), tilt angle, and tracking technology. All of these characteristics were entered into the modeling software as described in Table 2.

Table 2
Solar Array Model Inputs

Solar Array Characteristics	Proposed Project Configuration
Tracking method	Single-axis
Module surface material	Smooth glass with anti-reflective coating
Orientation of tracking axis	North–south
Maximum tracking angle	52°
Resting angle (when sun leaves maximum tracking angle)	10°

As described in Table 2, the proposed project is anticipated to utilize a single-axis tracking system. This tracking system would be oriented running north–south with the panel faces rotating from east to west. The system would be able to track the sun's progression across the sky, within the system's 104° range of motion (52° to the east and 52° to the west). When the sun is not within the 104° range of motion, the panels would backtrack and rest at 10°.

4.2.4 Known Limitations of the Geometric Analysis

The following known limitations in the modeling software have potential to exaggerate the level of predicted glare shown in the section 2.2.5, Analysis Results. Because of this, the results detailed in section 2.2.5 should be considered worst case scenario results.

- The geometric modeling software does not allow for a precise modeling of the backtracking strategy employed by the project's solar tracking system. The modeling software sets the resting angle of the solar panels to 10° at the instant the sun travels outside of the maximum tracking angle. In reality, the panels will slowly track back to 10° as the sun nears the horizon. The sudden backtracking as modeled in the geometric analysis maximizes the angle of incidence during the early morning and late afternoon hours, exaggerating the glare at those times.

- The visibility analysis and geometric modeling software does not consider existing vegetation or structures that might obscure the view of the panels from the receptor locations. This might result in glare at receptors that are, in reality, unable to clearly see the panels.

4.3 Analysis Results

To reiterate, the glare analysis was conducted per the Federal Aviation Administration's recommended procedures described in the *Technical Guidance for Evaluating Selected Solar Technologies on Airports* (FAA 2018) and the geometric glare modeling software utilized adheres to interim Federal Aviation Administration policy regarding solar energy system projects on federally obligated airports (78 FR 63276–63279). Specifically, the glare analysis and software quantifies the level of ocular impact hazard (reported as green or yellow glare) and pinpoints the exact time of year the glare would occur.

Dudek has determined that, according to the results of the geometric analysis, the proposed project could result in glare in the "Green" or "Yellow" ocular impact categories to 3 of the 23 receptors analyzed: Neuralia Rd B, Neuralia Rd D, and the flight approach path to Runway 24 at California City Municipal Airport. No other receptors received glare in our analysis. Figure 6, Modeled Glare Sources, shows the approximate locations of the sources of glare predicted by the geometric analysis.

4.3.1 Analysis Results for Neuralia Rd B

As detailed in Table 3, Analysis Results for Neuralia Rd B, this portion of the roadway will experience glare in the "Yellow" ocular impact category for up to 52 minutes per day in the early daylight hours of November, December, and January, and between 2 and 14 minutes per day in February. Glare in the less severe "Green" ocular impact category is predicted to be experienced by Neuralia Rd B from October through February, ranging from 1 to 4 minutes per day in the early daylight hours.

As depicted on Figure 6, the glare received by Neuralia Rd B is produced by the western edge of Analysis Group B. The precise location and duration of glare received by this receptor can be found in Appendix A.

Table 3
Analysis Results for Neuralia Rd B

Month	Ocular Impact	Time of Day				
		Early Morning Sunrise to 9AM	*Late Morning* 9AM to 11AM	*Mid-Day* 11AM to 1PM	*Early Afternoon* 1PM to 3PM	*Late Afternoon* 3PM to Sunset
		Range of Minutes Per Day				
January	Yellow	16 - 48	0	0	0	0
	Green	1 - 3	0	0	0	0
February	Yellow	2 - 14	0	0	0	0
	Green	1 - 2	0	0	0	0
March	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
April	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
May	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
June	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
July	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
August	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
September	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
October	Yellow	0	0	0	0	0
	Green	1*	0	0	0	0
November	Yellow	1 - 42	0	0	0	0
	Green	1 - 3	0	0	0	0
December	Yellow	42 - 52	0	0	0	0
	Green	3 - 4	0	0	0	0

* Maximum and minimum values are equal.

4.3.2 Analysis Results for Neuralia Rd D

As detailed in Table 4, Analysis Results for Neuralia Rd D, this portion of the roadway will experience glare in the "Yellow" ocular impact category for up to 53 minutes per day in the late afternoon hours of November, December, and January, and between 2 and 15 minutes per day in February. Glare in the less severe "Green" ocular impact category is predicted to be experienced by Neuralia Rd D in the fall and winter months, ranging from 1 to 5 minutes per day in the late morning and early daylight hours.

As depicted in Figure 6, the glare received by Neuralia Rd D is produced by the easternmost edge of Analysis Group O. The precise location and duration of glare received by this receptor can be found in Appendix A.

Table 4
Analysis Results for Neuralia Rd D

Month	Ocular Impact	Time of Day				
		Early Morning *Sunrise to 9AM*	*Late Morning* *9AM to 11AM*	*Mid-Day* *11AM to 1PM*	*Early Afternoon* *1PM to 3PM*	*Late Afternoon* *3PM to Sunset*
		Range of Minutes Per Day				
January	Yellow	0	0	0	0	17 - 49
	Green	0	3 - 5	0	0	0
February	Yellow	0	0	0	0	2 - 15
	Green	0	1 - 4	0	0	0
March	Yellow	0	0	0	0	0
	Green	0	1 - 2	0	0	0
April	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
May	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
June	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
July	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
August	Yellow	0	0	0	0	0
	Green	0	0	0	0	0

Month	Ocular Impact	Time of Day				
		Early Morning *Sunrise to 9AM*	*Late Morning* *9AM to 11AM*	*Mid-Day* *11AM to 1PM*	*Early Afternoon* *1PM to 3PM*	*Late Afternoon* *3PM to Sunset*
		Range of Minutes Per Day				
September	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
October	Yellow	0	0	0	0	0
	Green	1 - 3	1 - 3	0	0	0
November	Yellow	0	0	0	0	2 - 43
	Green	0	2 - 5	0	0	0
December	Yellow	0	0	0	0	43 - 53
	Green	0	4 - 5	0	0	0

4.3.3 Analysis Results for Flight Approach to Runway 24

As detailed in Table 5, Analysis Results for Flight Approach to Runway 24, the Runway 24 approach path will experience glare in the "Yellow" ocular impact category for up to 78 minutes per day in April through August, and between 4 and 36 minutes per day in September. Glare in the less severe "Green" ocular impact category is predicted to be experienced by the Runway 24 approach from April through August, and last from 1 to 15 minutes per day during that timeframe. All of the glare for this receptor is received in the late afternoon hours.

As depicted in Figure 6, the vast majority of glare received by Flight Approach to Runway 24 is produced by the southwest quadrant of Analysis Group Q. The precise location and duration of glare received by this receptor can be found in Appendix A.

Table 5
Analysis Results for Flight Approach to Runway 24

Month	Ocular Impact	Time of Day				
		Early Morning *Sunrise to 9AM*	*Late Morning* *9AM to 11AM*	*Mid-Day* *11AM to 1PM*	*Early Afternoon* *1PM to 3PM*	*Late Afternoon* *3PM to Sunset*
		Range of Minutes Per Day				
January	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
February	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
March	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
April	Yellow	0	0	0	0	3 - 70
	Green	0	0	0	0	2 - 12
May	Yellow	0	0	0	0	70 - 76
	Green	0	0	0	0	11 - 14
June	Yellow	0	0	0	0	75 - 78
	Green	0	0	0	0	13 - 15
July	Yellow	0	0	0	0	72 - 78
	Green	0	0	0	0	13 - 14
August	Yellow	0	0	0	0	41 - 72
	Green	0	0	0	0	1 - 13
September	Yellow	0	0	0	0	4 - 36
	Green	0	0	0	0	0
October	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
November	Yellow	0	0	0	0	0
	Green	0	0	0	0	0
December	Yellow	0	0	0	0	0
	Green	0	0	0	0	0

4.3.4 Comparison of Results to Other Sources of Glare

Figure 7, Comparison of Results to Other Sources of Glare, shows samples of results from the analysis compared to the following three other sources of glare:

- Hazard due to viewing unfiltered sun (ForgeSolar, 2019)
- Fixed tilt photovoltaic system under conservative assumptions (Riley, 2011)
- Smooth water body under conservative assumptions (Riley, 2011)

In Figure 7, purple dots are shown to represent the maximum predicted glare from each analysis group that reported glare. The graph indicates that the glare produced by the project will not result in more ocular impact than either a fixed-tilt photovoltaic system or a smooth water body under conservative assumptions and significantly less impact than the hazards posed due to viewing the unfiltered sun.

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6 DOCUMENT PREPARERS

This Glare Analysis Report was prepared by Christopher Starbird and Joshua Saunders. Formatting was provided by David Mueller.

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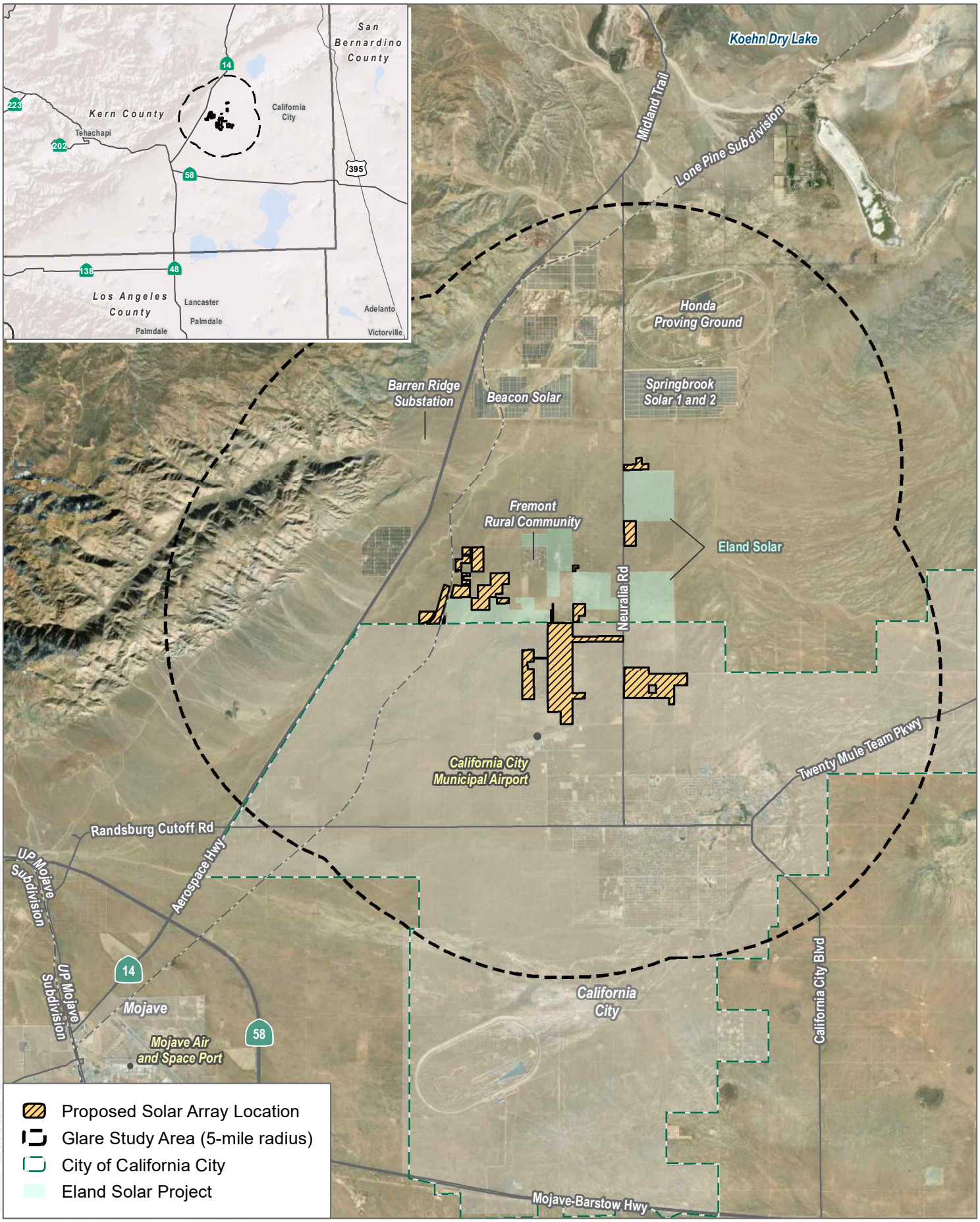

SOURCE: Esri, Digital Globe 2019, Open Street Map 2019

DUDEK

0 1.25 2.5 Miles

FIGURE 1

Project Location and Study Area

Kudu Solar

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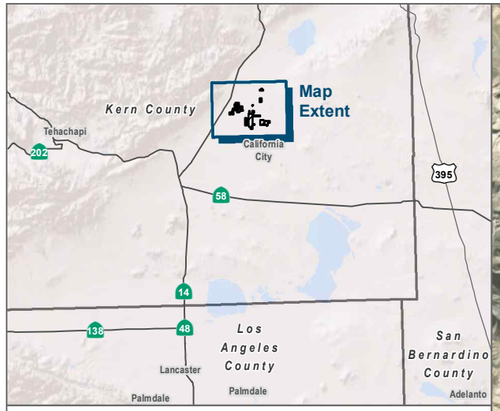

Proposed Solar Panel Development Area

Railways

Analysis Group

- Analysis Group A
- Analysis Group B
- Analysis Group C
- Analysis Group D
- Analysis Group E
- Analysis Group F
- Analysis Group G
- Analysis Group H
- Analysis Group I
- Analysis Group J
- Analysis Group K
- Analysis Group L
- Analysis Group M
- Analysis Group N
- Analysis Group O
- Analysis Group P
- Analysis Group Q

SOURCE: Esri and Digital Globe, Open Street Map 2019

DUDEK

0 2,000 4,000 Feet

FIGURE 2

Project Site Layout

Kudu Solar

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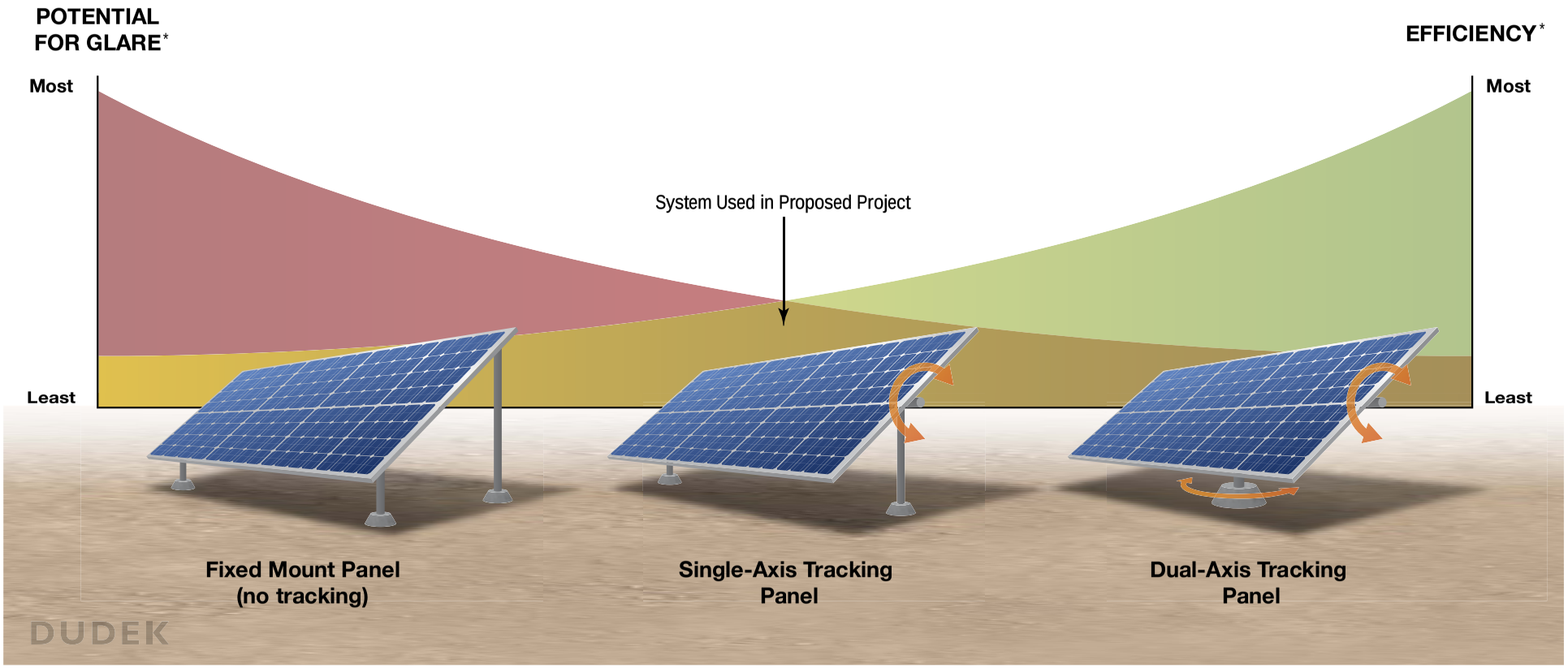

** Efficiency and glare relationships represented in this graphic have been exaggerated and are for illustrative purposes only.*

SOURCE: DUDEK 2020

DUDEK

FIGURE 3

Comparison of Photovoltaic Tracking Systems

Kudu Solar

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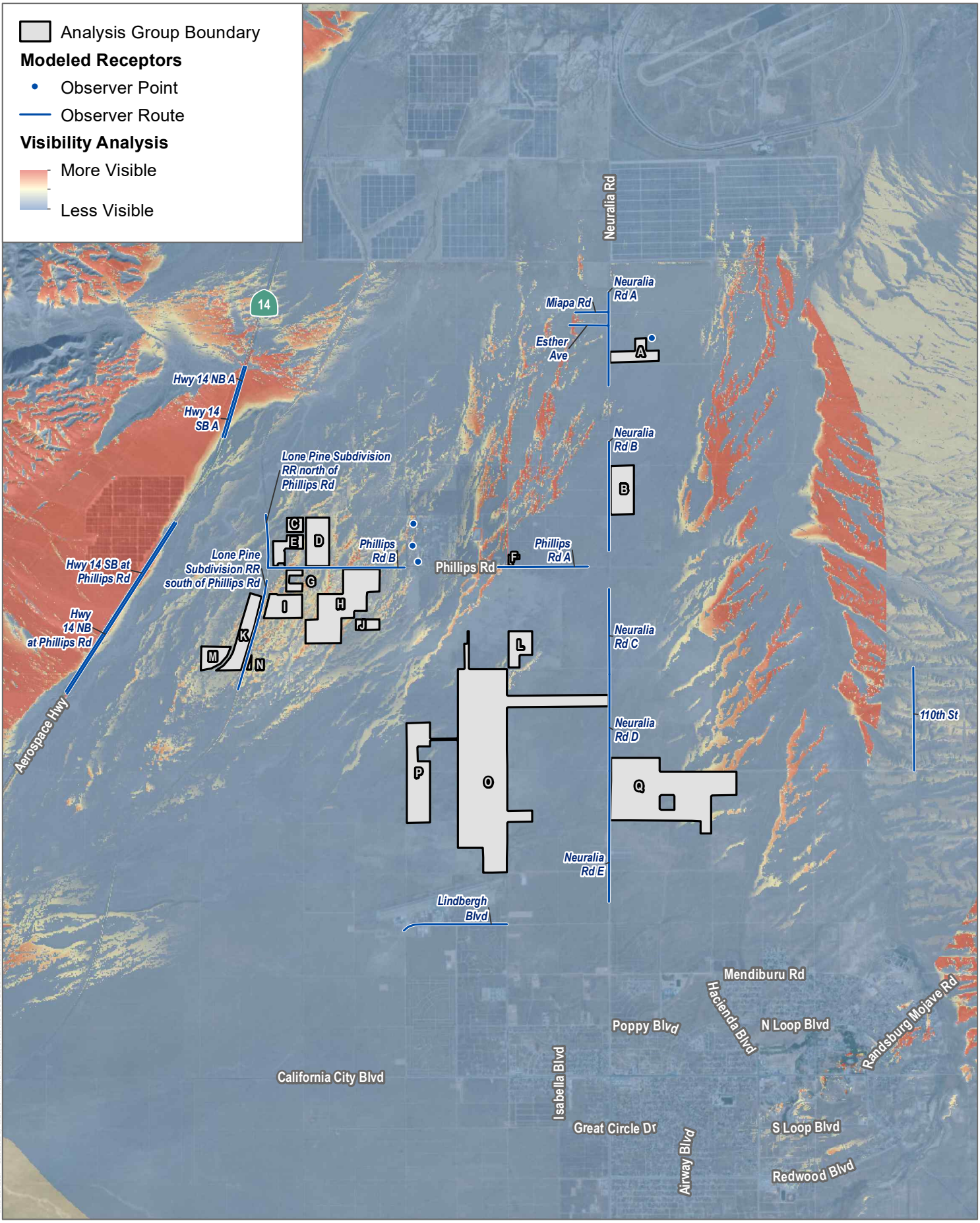

SOURCE: Esri and Digital Globe, Open Street Map 2019

DUDEK

0 0.625 1.25 Miles

FIGURE 4

Visibility Analysis and Modeled Receptor Locations

Kudu Solar

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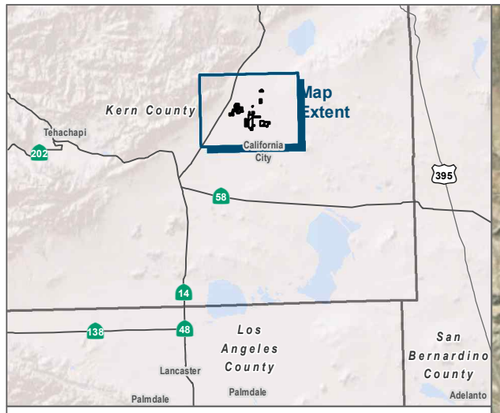

Proposed Solar Panel Development Area

Flight Path Receptor Route

Railways

SOURCE: Esri and Digital Globe, Open Street Map 2019

DUDEK

0 0.5 1 Miles

FIGURE 5

Air Traffic Receptor Locations

Kudu Solar

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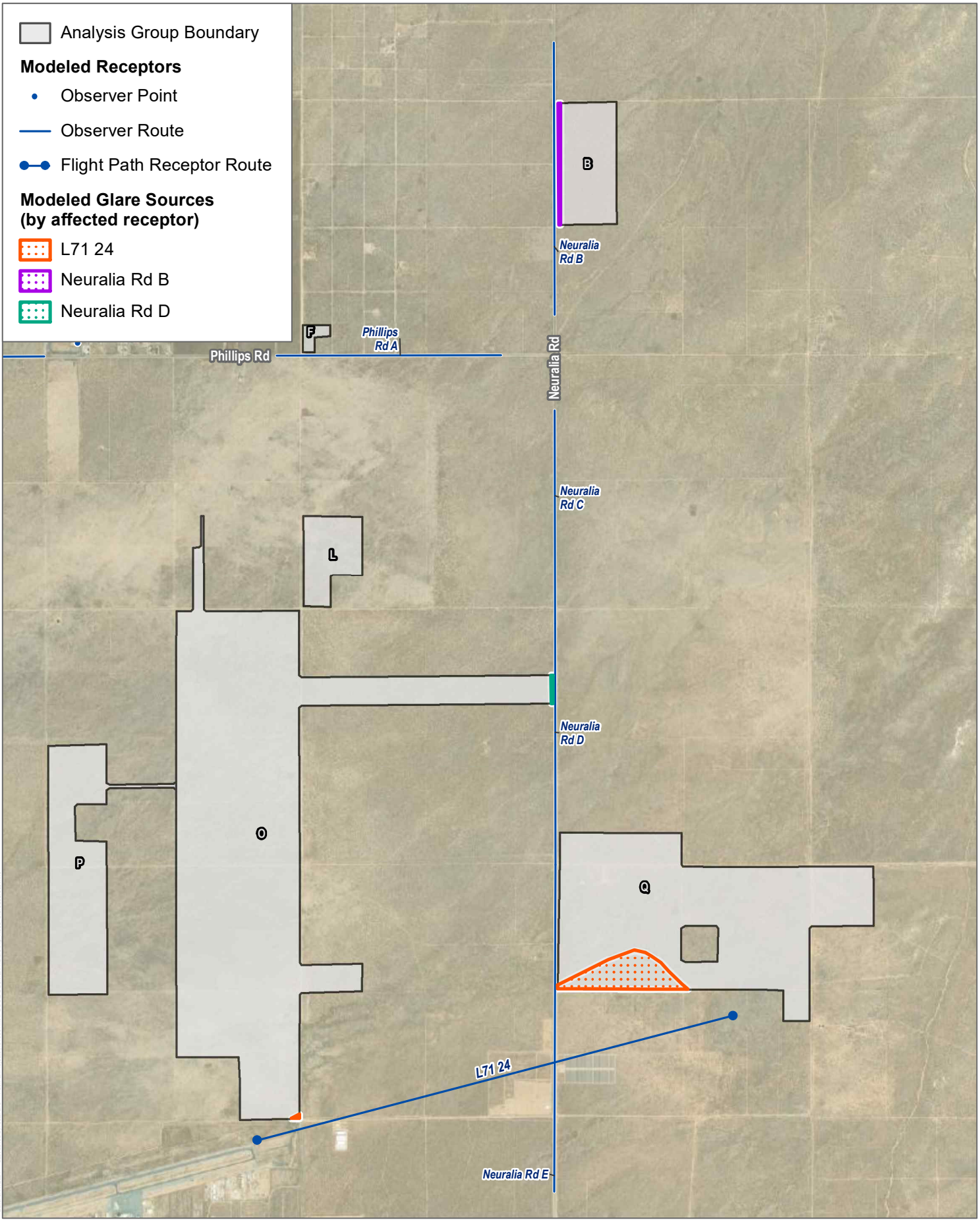

SOURCE: Esri and Digital Globe, Open Street Map 2019

DUDEK

0 0.25 0.5 Miles

FIGURE 6

Modeled Glare Sources

Kudu Solar

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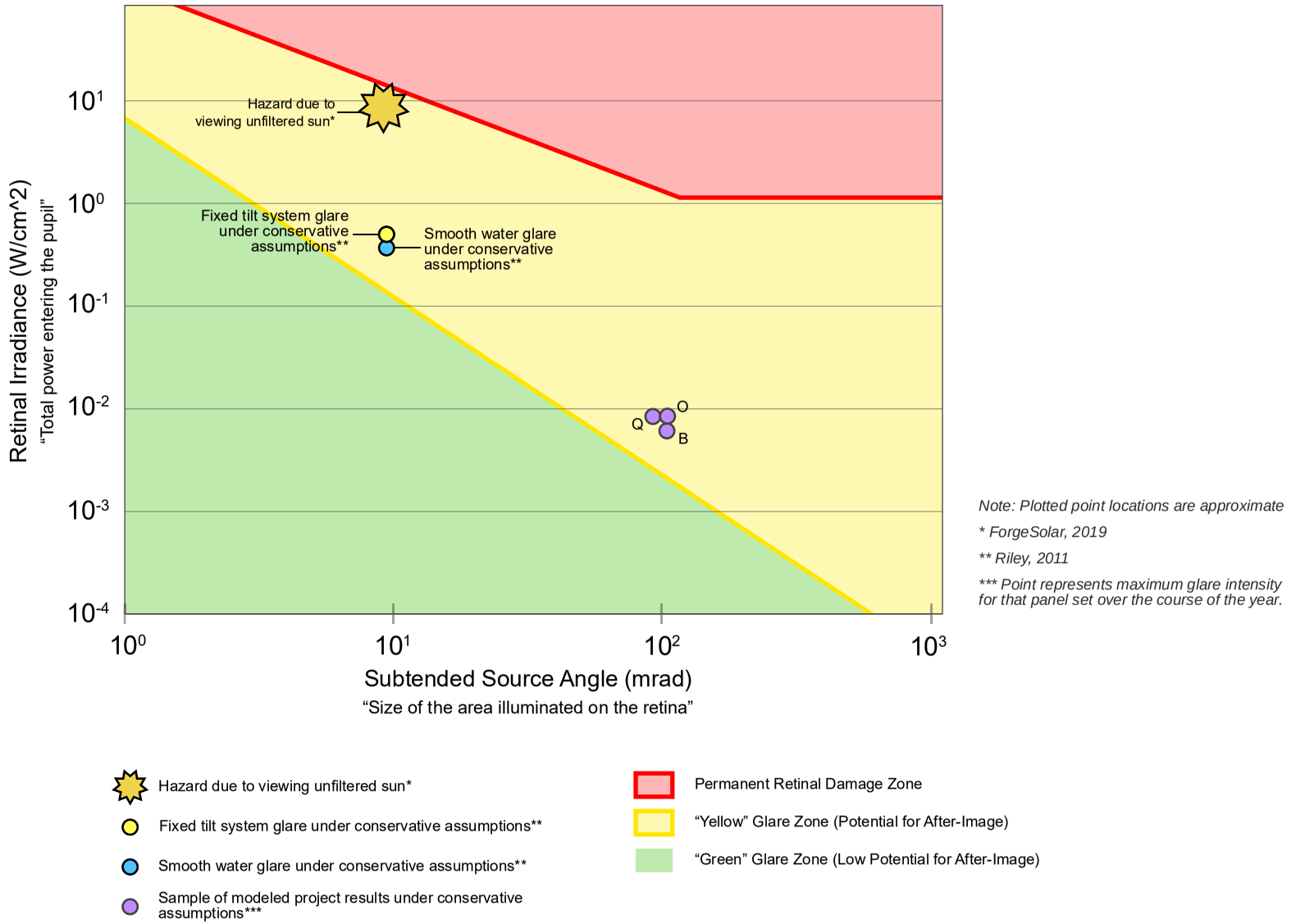

SOURCE: DUDEK 2021

FIGURE 7

Comparison of Results to Other Sources of Glare

Kudu Solar

DUDEK

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APPENDIX A

Detailed Modeling Results

Kudu, May 2021

Kudu Project Wide Analysis

Created May 21, 2021
Updated May 21, 2021
Time-step 1 minute
Timezone offset UTC-8
Site ID 54081.9572

Project type Advanced
Project status: active
Category 100 MW to 1 GW

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

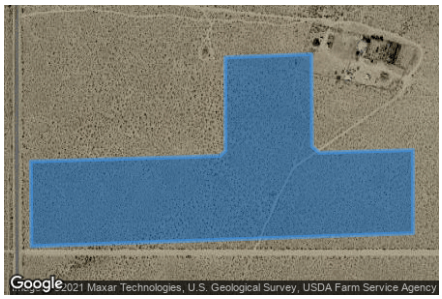
PV Name	Tilt	Orientation	"Green" Glare	"Yellow" Glare	Energy Produced
	deg	deg	min	min	kWh
A	SA tracking	SA tracking	0	0	-
B	SA tracking	SA tracking	271	3,352	-
C	SA tracking	SA tracking	0	0	-
D	SA tracking	SA tracking	0	0	-
E	SA tracking	SA tracking	0	0	-
F	SA tracking	SA tracking	0	0	-
G	SA tracking	SA tracking	0	0	-
H	SA tracking	SA tracking	0	0	-
I	SA tracking	SA tracking	0	0	-
J	SA tracking	SA tracking	0	0	-
K	SA tracking	SA tracking	0	0	-
L	SA tracking	SA tracking	0	0	-
M	SA tracking	SA tracking	0	0	-
N	SA tracking	SA tracking	0	0	-
O	SA tracking	SA tracking	522	4,365	-
P	SA tracking	SA tracking	0	0	-
Q	SA tracking	SA tracking	1,606	10,531	-

Component Data

PV Array(s)

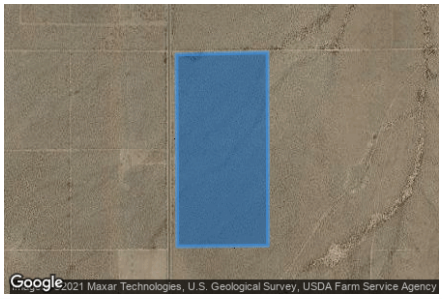
Total PV footprint area: 1,795.3 acres

Name: A
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: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 39.4 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	35.229778	-117.979384	2178.65	4.00	2182.65
2	35.229665	-117.979225	2179.55	4.00	2183.55
3	35.229714	-117.977144	2173.22	4.00	2177.22
4	35.228205	-117.977140	2176.30	4.00	2180.30
5	35.228143	-117.979384	2182.75	4.00	2186.75
6	35.228068	-117.982063	2189.80	4.00	2193.80
7	35.227970	-117.985613	2197.40	4.00	2201.40
8	35.229507	-117.985626	2192.30	4.00	2196.30
9	35.229590	-117.982063	2184.67	4.00	2188.67
10	35.229607	-117.981435	2187.40	4.00	2191.40
11	35.229698	-117.981306	2186.29	4.00	2190.29
12	35.231393	-117.981310	2181.21	4.00	2185.21
13	35.231451	-117.979396	2173.85	4.00	2177.85
14	35.229778	-117.979384	2178.65	4.00	2182.65

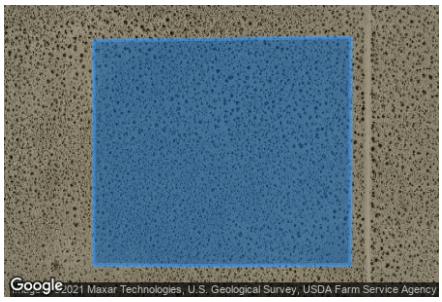
Name: B
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 57.8 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity 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	35.206234	-117.981505	2241.28	4.00	2245.28
2	35.206206	-117.985535	2251.46	4.00	2255.46
3	35.207661	-117.985543	2246.48	4.00	2250.48
4	35.212057	-117.985569	2237.52	4.00	2241.52
5	35.213165	-117.985575	2235.70	4.00	2239.70
6	35.213241	-117.981529	2224.68	4.00	2228.68
7	35.212056	-117.981525	2227.95	4.00	2231.95
8	35.209858	-117.981517	2232.93	4.00	2236.93
9	35.207660	-117.981510	2238.69	4.00	2242.69
10	35.206234	-117.981505	2241.28	4.00	2245.28

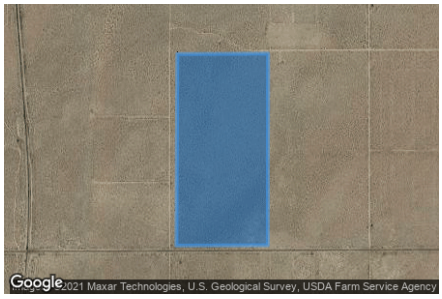
Name: C
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity 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	35.203695	-118.039225	2361.38	4.00	2365.38
2	35.203686	-118.040982	2363.69	4.00	2367.69
3	35.203697	-118.042077	2365.89	4.00	2369.89
4	35.205715	-118.042075	2358.92	4.00	2362.92
5	35.205746	-118.039221	2354.23	4.00	2358.23
6	35.203695	-118.039225	2361.38	4.00	2365.38



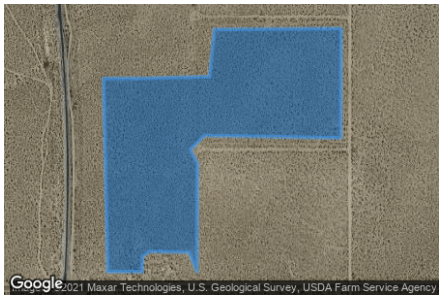
Name: D
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 60.1 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity 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	35.198815	-118.034690	2369.53	4.00	2373.53
2	35.198801	-118.038745	2377.48	4.00	2381.48
3	35.201062	-118.038732	2369.94	4.00	2373.94
4	35.203406	-118.038719	2361.42	4.00	2365.42
5	35.205750	-118.038705	2353.43	4.00	2357.43
6	35.205766	-118.034677	2345.53	4.00	2349.53
7	35.203407	-118.034681	2353.09	4.00	2357.09
8	35.201063	-118.034686	2362.55	4.00	2366.55
9	35.198815	-118.034690	2369.53	4.00	2373.53

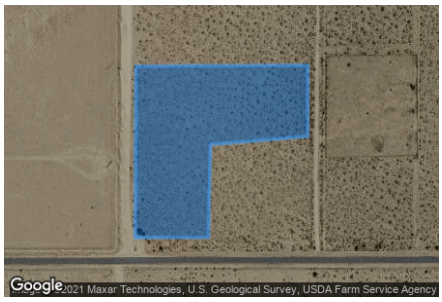


Name: E
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 31.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity 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	35.203256	-118.039226	2362.71	4.00	2366.71
2	35.201278	-118.039236	2371.23	4.00	2375.23
3	35.201320	-118.042270	2376.42	4.00	2380.42
4	35.201061	-118.042571	2377.89	4.00	2381.89
5	35.200814	-118.042415	2378.07	4.00	2382.07
6	35.198864	-118.042430	2388.13	4.00	2392.13
7	35.199211	-118.042601	2384.98	4.00	2388.98
8	35.199225	-118.043477	2385.07	4.00	2389.07
9	35.199137	-118.043633	2385.28	4.00	2389.28
10	35.198861	-118.043646	2385.76	4.00	2389.76
11	35.198859	-118.044411	2386.36	4.00	2390.36
12	35.202354	-118.044505	2375.52	4.00	2379.52
13	35.202357	-118.043659	2374.29	4.00	2378.29
14	35.202385	-118.042151	2371.84	4.00	2375.84
15	35.203242	-118.042042	2368.59	4.00	2372.59
16	35.203256	-118.039226	2362.71	4.00	2366.71

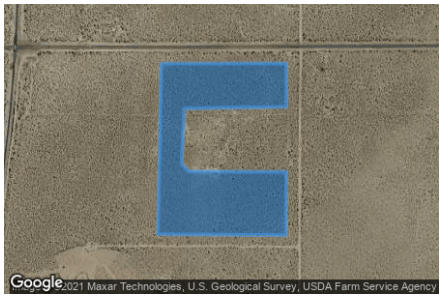


Name: F
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 5.0 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity with sun position? Yes
Correlate slope error with surface type? Yes
Slope error: 8.43 mrad



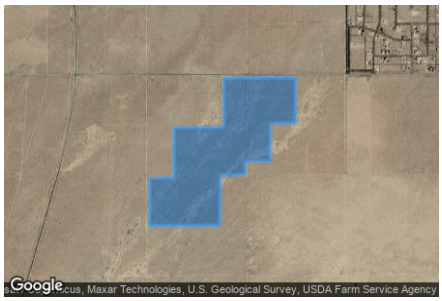
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.198919	-118.002594	2311.28	4.00	2315.28
2	35.198916	-118.003409	2312.46	4.00	2316.46
3	35.200462	-118.003400	2307.95	4.00	2311.96
4	35.200470	-118.001490	2305.34	4.00	2309.34
5	35.199828	-118.001493	2306.87	4.00	2310.87
6	35.199756	-118.002571	2308.56	4.00	2312.56
7	35.198919	-118.002594	2311.28	4.00	2315.28

Name: G
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: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 14.9 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



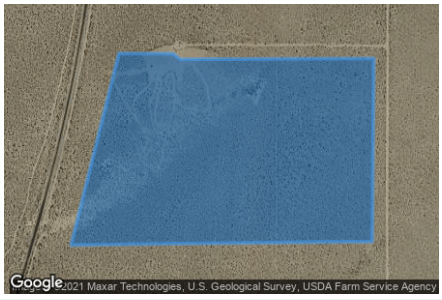
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.196324	-118.039349	2387.52	4.00	2391.52
2	35.195174	-118.039356	2388.81	4.00	2392.81
3	35.195191	-118.042205	2395.85	4.00	2399.85
4	35.198287	-118.042125	2389.73	4.00	2393.73
5	35.198292	-118.039350	2380.32	4.00	2384.32
6	35.197502	-118.039347	2383.90	4.00	2387.90
7	35.197471	-118.041617	2389.06	4.00	2393.06
8	35.196469	-118.041673	2389.56	4.00	2393.56
9	35.196332	-118.041517	2388.96	4.00	2392.96
10	35.196324	-118.039349	2387.52	4.00	2391.52

Name: H
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: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 176.8 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



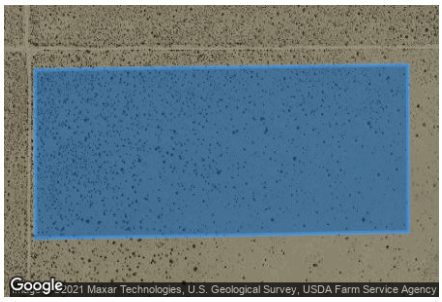
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.187779	-118.032579	2395.41	4.00	2399.41
2	35.187758	-118.038817	2409.85	4.00	2413.85
3	35.190072	-118.038795	2403.26	4.00	2407.26
4	35.191140	-118.038783	2399.43	4.00	2403.43
5	35.191218	-118.036642	2395.17	4.00	2399.17
6	35.194813	-118.036637	2384.90	4.00	2388.90
7	35.194818	-118.035622	2384.23	4.00	2388.23
8	35.194832	-118.032945	2378.87	4.00	2382.87
9	35.194837	-118.032358	2377.21	4.00	2381.21
10	35.194951	-118.032225	2376.24	4.00	2380.24
11	35.198383	-118.032223	2366.32	4.00	2370.32
12	35.198389	-118.030268	2362.67	4.00	2366.67
13	35.198398	-118.027591	2358.19	4.00	2362.19
14	35.198403	-118.025874	2354.22	4.00	2358.22
15	35.195163	-118.025878	2363.40	4.00	2367.40
16	35.195146	-118.027590	2368.33	4.00	2372.33
17	35.195079	-118.028071	2369.51	4.00	2373.51
18	35.194471	-118.028099	2371.63	4.00	2375.63
19	35.192425	-118.028110	2376.18	4.00	2380.18
20	35.192399	-118.030198	2381.17	4.00	2385.17
21	35.192272	-118.030351	2381.46	4.00	2385.46
22	35.191452	-118.030354	2382.76	4.00	2386.76
23	35.191389	-118.032514	2387.65	4.00	2391.65
24	35.190074	-118.032563	2391.40	4.00	2395.40
25	35.187779	-118.032579	2395.41	4.00	2399.41

Name: I
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: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 51.5 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	35.194821	-118.043820	2401.39	4.00	2405.39
2	35.194718	-118.043655	2400.71	4.00	2404.72
3	35.194734	-118.039360	2389.68	4.00	2393.68
4	35.191411	-118.039396	2399.89	4.00	2403.89
5	35.191373	-118.043653	2408.62	4.00	2412.62
6	35.191347	-118.046083	2415.65	4.00	2419.65
7	35.194825	-118.045022	2405.57	4.00	2409.57
8	35.194821	-118.043820	2401.39	4.00	2405.39

Name: J
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: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 15.3 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	35.189686	-118.027980	2380.55	4.00	2384.55
2	35.189660	-118.030018	2385.61	4.00	2389.61
3	35.191180	-118.030020	2382.73	4.00	2386.73
4	35.191224	-118.025883	2374.09	4.00	2378.09
5	35.189719	-118.025877	2377.23	4.00	2381.23
6	35.189686	-118.027980	2380.55	4.00	2384.55

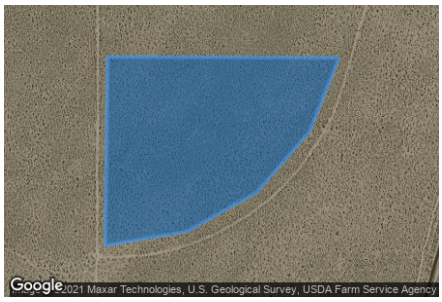
Name: K
Axis tracking: Single-axis rotation
Tracking axis orientation: 180.0 deg
Tracking axis tilt: 0.0 deg
Tracking axis panel offset: 0.0 deg
Maximum tracking angle: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 65.5 acres
Rated power: -
Panel material: Smooth glass with AR coating
Vary reflectivity 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	35.183962	-118.050068	2448.02	4.00	2452.02
2	35.183868	-118.054400	2454.06	4.00	2458.06
3	35.184614	-118.053046	2449.81	4.00	2453.81
4	35.185671	-118.051969	2444.14	4.00	2448.14
5	35.186490	-118.051477	2440.68	4.00	2444.68
6	35.187870	-118.050978	2436.24	4.00	2440.24
7	35.190068	-118.050194	2428.02	4.00	2432.02
8	35.192266	-118.049404	2421.59	4.00	2425.59
9	35.194908	-118.048441	2408.75	4.00	2412.75
10	35.194442	-118.046473	2408.25	4.00	2412.25
11	35.192267	-118.047130	2416.31	4.00	2420.31
12	35.190069	-118.047779	2422.59	4.00	2426.59
13	35.187871	-118.048601	2430.89	4.00	2434.89
14	35.185672	-118.049427	2439.89	4.00	2443.89
15	35.183962	-118.050068	2448.02	4.00	2452.02

Name: L
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: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 43.1 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

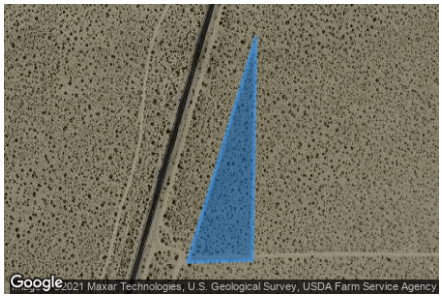
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.189475	-117.999251	2321.83	4.00	2325.83
2	35.186103	-117.999242	2332.29	4.00	2336.29
3	35.186122	-118.000813	2335.64	4.00	2339.64
4	35.186126	-118.001329	2337.19	4.00	2341.19
5	35.186028	-118.001461	2337.99	4.00	2341.99
6	35.184302	-118.001464	2341.41	4.00	2345.41
7	35.184336	-118.003346	2345.72	4.00	2349.72
8	35.187880	-118.003362	2334.21	4.00	2338.21
9	35.189505	-118.003369	2328.89	4.00	2332.89
10	35.189488	-118.000813	2324.47	4.00	2328.47
11	35.189475	-117.999251	2321.83	4.00	2325.83

Name: M
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: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 31.9 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



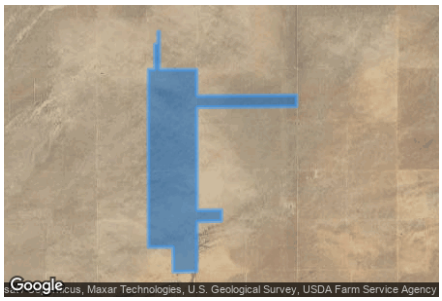
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.184155	-118.055215	2455.57	4.00	2459.57
2	35.183900	-118.057035	2460.44	4.00	2464.44
3	35.187297	-118.056984	2450.32	4.00	2454.32
4	35.187281	-118.051850	2440.29	4.00	2444.29
5	35.185950	-118.052505	2444.10	4.00	2448.10
6	35.184859	-118.053674	2450.85	4.00	2454.85
7	35.184155	-118.055215	2455.57	4.00	2459.57

Name: N
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: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 1.8 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



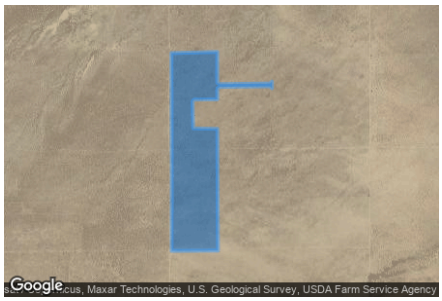
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.184001	-118.048284	2441.28	4.00	2445.29
2	35.183985	-118.049004	2443.83	4.00	2447.83
3	35.186025	-118.048245	2436.27	4.00	2440.27
4	35.184001	-118.048284	2441.28	4.00	2445.29

Name: O
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: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 674.9 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



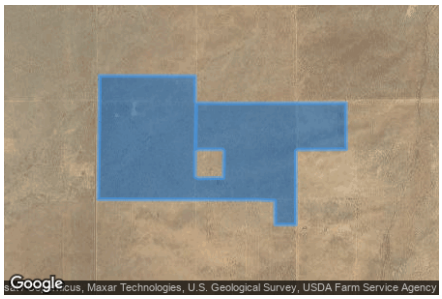
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.184155	-118.010306	2357.45	4.00	2361.45
2	35.184052	-118.010158	2357.92	4.00	2361.92
3	35.184050	-118.008845	2355.71	4.00	2359.71
4	35.184063	-118.003680	2347.32	4.00	2351.32
5	35.181286	-118.003677	2353.56	4.00	2357.56
6	35.180375	-118.003674	2353.82	4.00	2357.82
7	35.180257	-118.003490	2353.79	4.00	2357.79
8	35.180308	-117.995459	2337.02	4.00	2341.02
9	35.180368	-117.985940	2314.45	4.00	2318.45
10	35.178762	-117.985938	2317.58	4.00	2321.58
11	35.178693	-117.995459	2338.86	4.00	2342.86
12	35.178642	-118.003490	2358.36	4.00	2362.36
13	35.178517	-118.003673	2359.22	4.00	2363.22
14	35.176890	-118.003671	2360.06	4.00	2364.06
15	35.174692	-118.003659	2364.54	4.00	2368.55
16	35.172494	-118.003643	2366.35	4.00	2370.35
17	35.170296	-118.003624	2369.20	4.00	2373.20
18	35.168098	-118.003619	2369.97	4.00	2373.97
19	35.165900	-118.003624	2372.99	4.00	2376.99
20	35.163903	-118.003624	2379.00	4.00	2383.00
21	35.163775	-118.003490	2378.70	4.00	2382.70
22	35.163830	-117.999258	2370.68	4.00	2374.68
23	35.162257	-117.999280	2371.86	4.00	2375.86
24	35.162173	-118.003490	2382.46	4.00	2386.46
25	35.162062	-118.003621	2382.85	4.00	2386.85
26	35.161504	-118.003626	2382.83	4.00	2386.83
27	35.159306	-118.003636	2382.79	4.00	2386.79
28	35.157108	-118.003643	2386.04	4.00	2390.04
29	35.154990	-118.003647	2390.29	4.00	2394.29
30	35.154941	-118.006166	2396.45	4.00	2400.45
31	35.154910	-118.007801	2399.26	4.00	2403.26
32	35.157108	-118.007803	2394.57	4.00	2398.57
33	35.158490	-118.007885	2393.22	4.00	2397.22
34	35.158481	-118.012216	2403.25	4.00	2407.25
35	35.159306	-118.012219	2404.24	4.00	2408.24
36	35.161504	-118.012224	2402.87	4.00	2406.87
37	35.163702	-118.012227	2397.57	4.00	2401.57
38	35.168098	-118.012233	2396.67	4.00	2400.67
39	35.172494	-118.012249	2388.10	4.00	2392.10
40	35.176890	-118.012248	2377.97	4.00	2381.97
41	35.181286	-118.012230	2369.53	4.00	2373.53
42	35.184056	-118.012215	2363.04	4.00	2367.04
43	35.184054	-118.011210	2360.39	4.00	2364.39
44	35.184167	-118.011066	2359.43	4.00	2363.43
45	35.187709	-118.011077	2351.58	4.00	2355.58
46	35.187712	-118.010642	2351.10	4.00	2355.10
47	35.187813	-118.010518	2350.36	4.00	2354.36
48	35.189522	-118.010513	2346.53	4.00	2350.53
49	35.189522	-118.010321	2345.96	4.00	2349.96
50	35.184155	-118.010306	2357.45	4.00	2361.45

Name: P
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: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 133.5 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	35.174198	-118.017093	2395.72	4.00	2399.72
2	35.174102	-118.016875	2396.16	4.00	2400.16
3	35.174149	-118.012409	2384.53	4.00	2388.53
4	35.174286	-118.012251	2384.40	4.00	2388.40
5	35.173810	-118.012250	2383.72	4.00	2387.72
6	35.173947	-118.012412	2384.00	4.00	2388.00
7	35.173908	-118.016875	2396.41	4.00	2400.41
8	35.173799	-118.017096	2397.13	4.00	2401.13
9	35.173010	-118.017098	2397.07	4.00	2401.07
10	35.172990	-118.019143	2401.65	4.00	2405.65
11	35.172857	-118.019295	2402.37	4.00	2406.37
12	35.170915	-118.019236	2406.48	4.00	2410.48
13	35.170881	-118.017092	2403.04	4.00	2407.04
14	35.168097	-118.017080	2407.64	4.00	2411.64
15	35.163701	-118.017053	2412.43	4.00	2416.43
16	35.162105	-118.017043	2411.98	4.00	2415.98
17	35.162079	-118.021145	2421.92	4.00	2425.92
18	35.163700	-118.021146	2424.89	4.00	2428.89
19	35.168096	-118.021139	2415.98	4.00	2419.98
20	35.172492	-118.021155	2404.64	4.00	2408.64
21	35.176339	-118.021171	2398.19	4.00	2402.19
22	35.176421	-118.017099	2388.19	4.00	2392.19
23	35.174691	-118.017101	2394.51	4.00	2398.51
24	35.174198	-118.017093	2395.72	4.00	2399.72

Name: Q
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: 52.0 deg
Resting angle: 10.0 deg
Footprint area: 377.7 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	35.169389	-117.976911	2319.58	4.00	2323.58
2	35.169368	-117.974045	2318.26	4.00	2322.26
3	35.169393	-117.963620	2313.28	4.00	2317.28
4	35.168093	-117.963609	2304.07	4.00	2308.07
5	35.166037	-117.963595	2309.31	4.00	2313.32
6	35.166012	-117.967916	2325.63	4.00	2329.63
7	35.165896	-117.968075	2326.77	4.00	2330.77
8	35.160572	-117.968066	2324.34	4.00	2328.34
9	35.160561	-117.969901	2328.30	4.00	2332.30
10	35.162308	-117.969914	2333.18	4.00	2337.18
11	35.162370	-117.971371	2335.32	4.00	2339.32
12	35.162395	-117.982077	2338.89	4.00	2342.89
13	35.162408	-117.985617	2343.07	4.00	2347.07
14	35.165899	-117.985555	2338.91	4.00	2342.91
15	35.168097	-117.985515	2335.31	4.00	2339.31
16	35.170295	-117.985489	2332.66	4.00	2336.66
17	35.171373	-117.985488	2329.90	4.00	2333.90
18	35.171357	-117.979399	2320.18	4.00	2324.18
19	35.171350	-117.977008	2317.49	4.00	2321.49
20	35.169510	-117.977010	2320.23	4.00	2324.23
21	35.169389	-117.976911	2319.58	4.00	2323.58
22	35.164046	-117.977026	2336.45	4.00	2340.45
23	35.163925	-117.976724	2335.85	4.00	2339.85
24	35.163962	-117.974486	2330.42	4.00	2334.42
25	35.165898	-117.974438	2325.96	4.00	2329.96
26	35.166025	-117.974593	2326.38	4.00	2330.38
27	35.166030	-117.976723	2333.09	4.00	2337.09
28	35.165898	-117.977024	2332.69	4.00	2336.69
29	35.164046	-117.977026	2336.45	4.00	2340.45

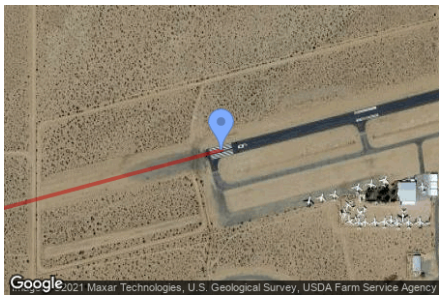
2-Mile Flight Path Receptor(s)

Name: L71 24
Description: None
Threshold height : 50 ft
Direction: 254.6 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.153275	-118.007221	2397.62	50.00	2447.62
2-mile point	35.160929	-117.973081	2334.81	666.33	3001.15

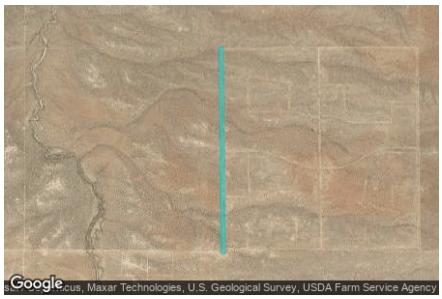
Name: L71 6
Description: None
Threshold height : 50 ft
Direction: 75.1 deg
Glide slope: 3.0 deg
Pilot view restricted? Yes
Vertical view restriction: 30.0 deg
Azimuthal view restriction: 50.0 deg

Point	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
Threshold	35.149292	-118.026126	2451.02	50.00	2501.02
2-mile point	35.141843	-118.060332	2572.83	481.72	3054.55



Route Receptor(s)

Name: 110th St
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	35.169544	-117.932631	2327.50	6.00	2333.50
2	35.184278	-117.932806	2309.27	6.00	2315.27

Name: Esther Ave
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	35.233309	-117.992778	2188.64	6.00	2194.64
2	35.233251	-117.985910	2182.49	6.00	2188.49

Name: Hwy 14 NB A
Route type One-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.217261	-118.052873	2344.60	6.00	2350.60
2	35.227347	-118.049170	2364.38	6.00	2370.38

Name: Hwy 14 NB at Phillips Rd
Route type One-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.180538	-118.080373	2524.40	6.00	2530.40
2	35.204964	-118.061341	2406.72	6.00	2412.72

Name: Hwy 14 SB A
Route type One-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.227393	-118.049592	2368.79	6.00	2374.79
2	35.217308	-118.053296	2349.55	6.00	2355.55

Name: Hwy 14 SB at Phillips Rd
Route type One-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.205069	-118.061739	2406.57	6.00	2412.57
2	35.180861	-118.080617	2523.56	6.00	2529.56

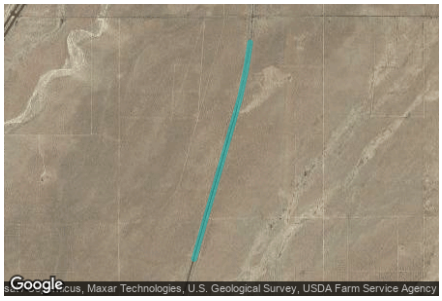
Name: Lindbergh Blvd
Route type Two-way
View angle: 50.0 deg

Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.147547	-118.003655	2410.81	6.00	2416.81
2	35.147547	-118.012423	2429.11	6.00	2435.11
3	35.147525	-118.018064	2440.54	6.00	2446.54
4	35.147479	-118.019704	2444.93	6.00	2450.93
5	35.147241	-118.020705	2447.50	6.00	2453.50
6	35.147081	-118.021051	2448.51	6.00	2454.51
7	35.146660	-118.021618	2451.60	6.00	2457.60

Name: Lone Pine Subdivision RR north of Phillips Rd
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	35.198569	-118.045368	2394.41	14.00	2408.41
2	35.200146	-118.045287	2387.84	14.00	2401.84
3	35.202481	-118.045392	2378.92	14.00	2392.92
4	35.206169	-118.045729	2364.46	14.00	2378.46

Name: Lone Pine Subdivision RR south of Phillips Rd
Route type Two-way
View angle: 50.0 deg

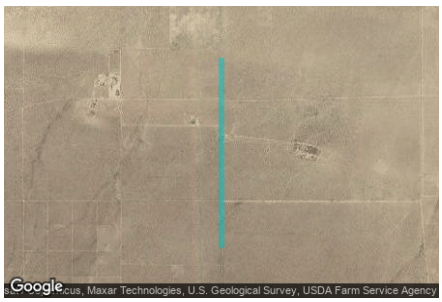


Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.181150	-118.050563	2455.62	14.00	2469.62
2	35.185309	-118.049107	2442.14	14.00	2456.14
3	35.190293	-118.047347	2422.87	14.00	2436.87
4	35.192702	-118.046510	2414.64	14.00	2428.64
5	35.194785	-118.045960	2406.56	14.00	2420.56
6	35.196739	-118.045594	2399.51	14.00	2413.51

Name: Miapa Rd
Route type Two-way
View angle: 50.0 deg

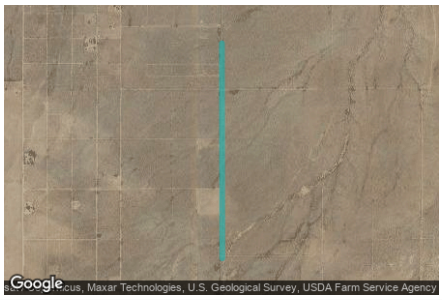
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.235146	-117.991734	2185.31	6.00	2191.31
2	35.235203	-117.985916	2175.25	6.00	2181.25

Name: Neuralia Rd A
Route type Two-way
View angle: 50.0 deg



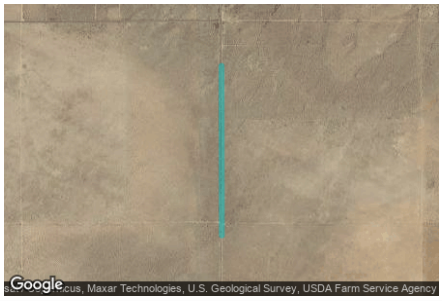
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.238029	-117.985919	2167.18	6.00	2173.18
2	35.224703	-117.985893	2207.88	6.00	2213.88

Name: Neuralia Rd B
Route type Two-way
View angle: 50.0 deg



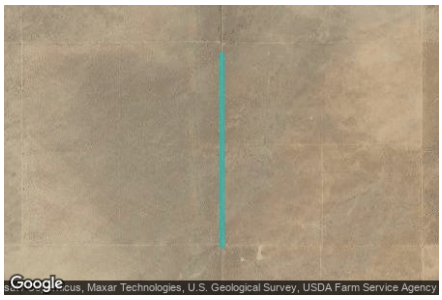
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.216649	-117.985875	2231.65	6.00	2237.65
2	35.201056	-117.985838	2265.20	6.00	2271.20

Name: Neuralia Rd C
Route type Two-way
View angle: 50.0 deg



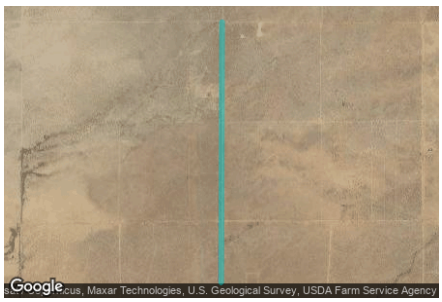
Vertex	Latitude	Longitude	Ground elevation	Height above ground	Total elevation
	deg	deg	ft	ft	ft
1	35.183336	-117.985795	2311.06	6.00	2317.06
2	35.195547	-117.985822	2276.08	6.00	2282.08

Name: Neuralia Rd D
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	35.183336	-117.985795	2311.06	6.00	2317.06
2	35.169515	-117.985773	2334.36	6.00	2340.36

Name: Neuralia Rd E
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	35.169515	-117.985773	2334.36	6.00	2340.36
2	35.150773	-117.985852	2368.24	6.00	2374.24

Name: Phillips Rd A
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	35.198693	-118.005226	2316.89	6.00	2322.89
2	35.198734	-117.989565	2277.78	6.00	2283.78

Name: Phillips Rd B
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	35.198569	-118.045368	2394.41	6.00	2400.41
2	35.198647	-118.021460	2344.92	6.00	2350.92

Discrete Observation Receptors

Number	Latitude	Longitude	Ground elevation	Height above ground	Total Elevation
	deg	deg	ft	ft	ft
OP 1	35.231479	-117.978314	2172.22	6.00	2178.22
OP 2	35.201689	-118.020119	2333.24	6.00	2339.24
OP 3	35.199400	-118.019108	2337.38	6.00	2343.38
OP 4	35.204880	-118.019963	2323.33	6.00	2329.33

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	
A	SA tracking	SA tracking	0	0	-	-
B	SA tracking	SA tracking	271	3,352	-	
C	SA tracking	SA tracking	0	0	-	-
D	SA tracking	SA tracking	0	0	-	-
E	SA tracking	SA tracking	0	0	-	-
F	SA tracking	SA tracking	0	0	-	-
G	SA tracking	SA tracking	0	0	-	-
H	SA tracking	SA tracking	0	0	-	-
I	SA tracking	SA tracking	0	0	-	-
J	SA tracking	SA tracking	0	0	-	-
K	SA tracking	SA tracking	0	0	-	-
L	SA tracking	SA tracking	0	0	-	-
M	SA tracking	SA tracking	0	0	-	-
N	SA tracking	SA tracking	0	0	-	-
O	SA tracking	SA tracking	522	4,365	-	
P	SA tracking	SA tracking	0	0	-	-
Q	SA tracking	SA tracking	1,606	10,531	-	

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
b (green)	77	22	0	0	0	0	0	0	0	11	60	101
b (yellow)	1070	64	0	0	0	0	0	0	0	0	700	1518
o (green)	128	71	10	0	0	0	0	0	0	53	111	149
o (yellow)	1101	74	0	0	159	435	304	9	0	0	733	1550
q (green)	0	0	0	111	396	427	421	251	0	0	0	0
q (yellow)	0	0	0	1429	2255	2300	2313	2030	204	0	0	0

PV & Receptor Analysis Results

Results for each PV array and receptor

A no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

No glare found

B potential temporary after-image

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	271	3352

Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

B - Receptor (L71 24)

No glare found

B - Receptor (L71 6)

No glare found

B - OP Receptor (OP 1)

No glare found

B - OP Receptor (OP 2)

No glare found

B - OP Receptor (OP 3)

No glare found

B - OP Receptor (OP 4)

No glare found

B - Route Receptor (110th St)

No glare found

B - Route Receptor (Esther Ave)

No glare found

B - Route Receptor (Hwy 14 NB A)

No glare found

B - Route Receptor (Hwy 14 NB at Phillips Rd)

No glare found

B - Route Receptor (Hwy 14 SB A)

No glare found

B - Route Receptor (Hwy 14 SB at Phillips Rd)

No glare found

B - Route Receptor (Lindbergh Blvd)

No glare found

B - Route Receptor (Lone Pine Subdivision RR north of Phillips Rd)

No glare found

B - Route Receptor (Lone Pine Subdivision RR south of Phillips Rd)

No glare found

B - Route Receptor (Miapa Rd)

No glare found

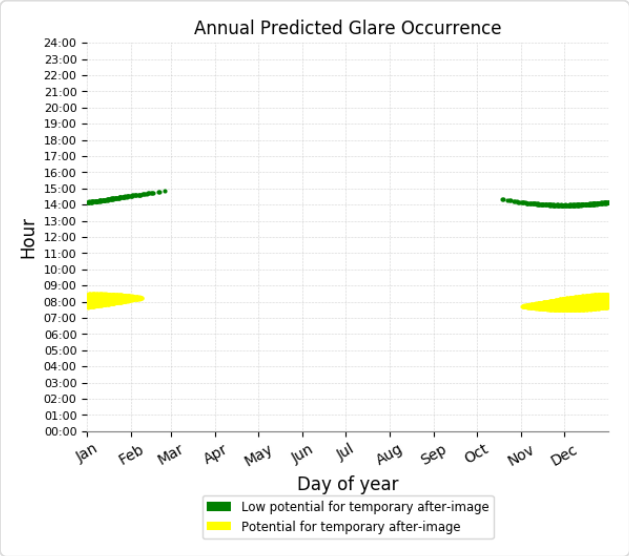
B - Route Receptor (Neuralia Rd A)

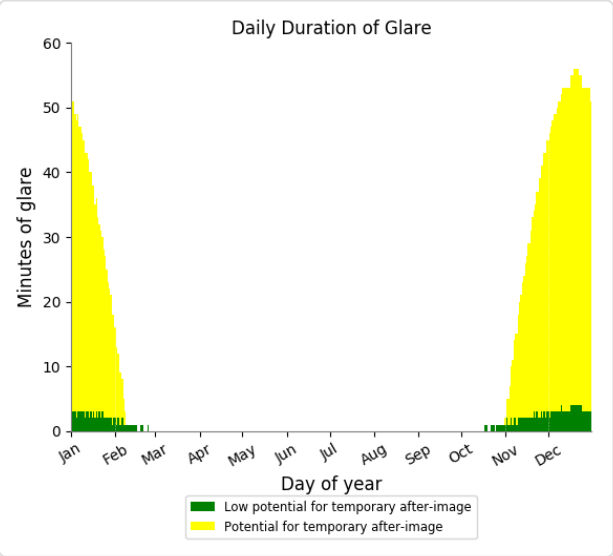
No glare found

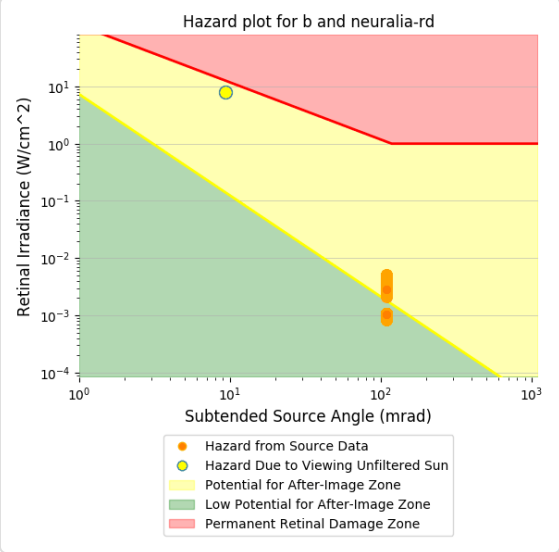
B - Route Receptor (Neuralia Rd B)

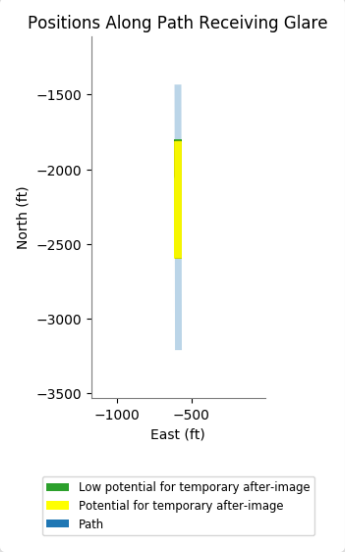
PV array is expected to produce the following glare for receptors at this location:

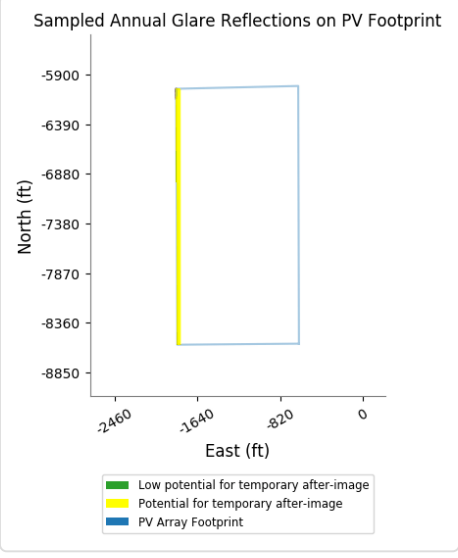
- 271 minutes of "green" glare with low potential to cause temporary after-image.
- 3,352 minutes of "yellow" glare with potential to cause temporary after-image.











B - Route Receptor (Neuralia Rd C)

No glare found

B - Route Receptor (Neuralia Rd D)

No glare found

B - Route Receptor (Neuralia Rd E)

No glare found

B - Route Receptor (Phillips Rd A)

No glare found

B - Route Receptor (Phillips Rd B)

No glare found

C no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

No glare found

D no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

No glare found

E no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

No glare found

F no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

No glare found

G no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

No glare found

H no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

No glare found

I no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

No glare found

J no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

No glare found

K no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

No glare found

L no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

No glare found

M no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

No glare found

N no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

No glare found

O potential temporary after-image

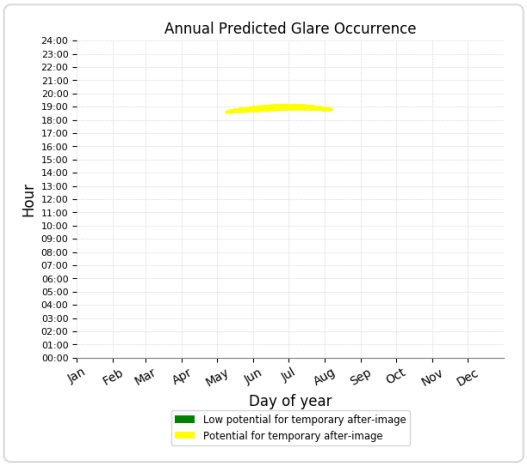
Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	907
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0

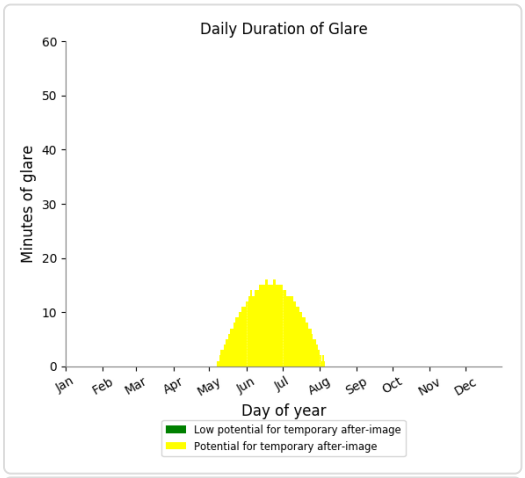
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	522	3458
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

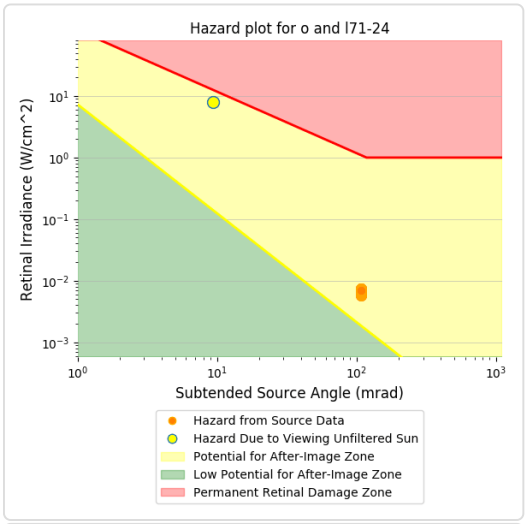
O - Receptor (L71 24)

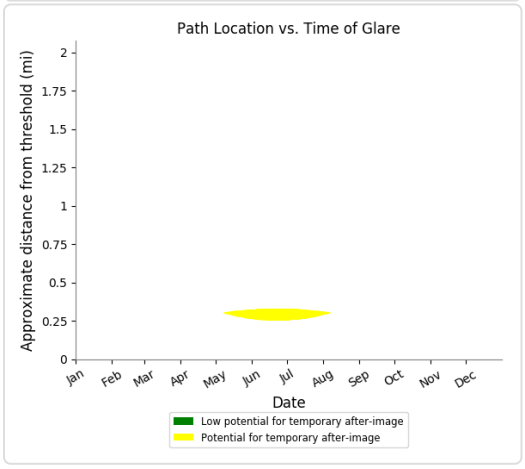
PV array is expected to produce the following glare for observers on this flight path:

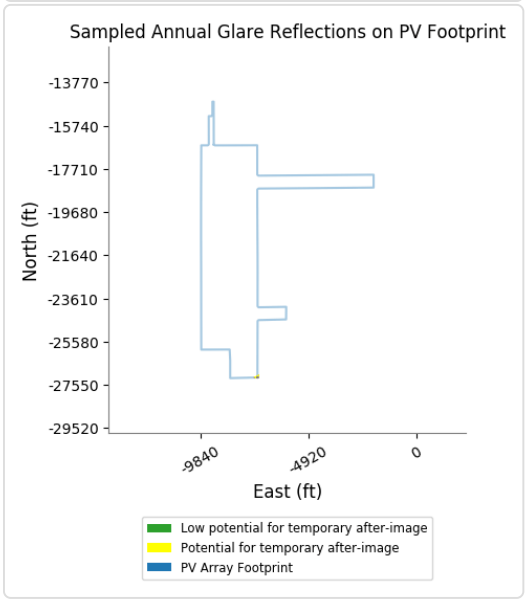
- 0 minutes of "green" glare with low potential to cause temporary after-image.
- 907 minutes of "yellow" glare with potential to cause temporary after-image.

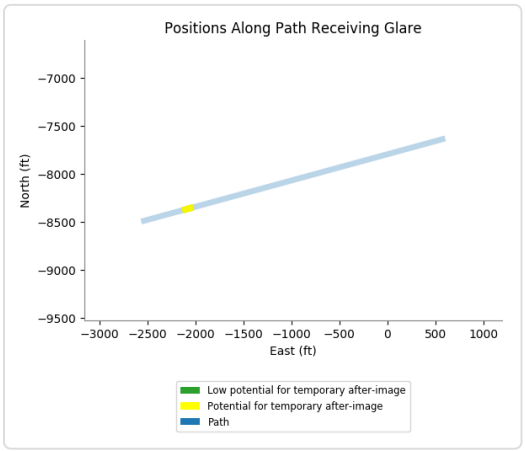












O - Receptor (L71 6)

No glare found

O - OP Receptor (OP 1)

No glare found

O - OP Receptor (OP 2)

No glare found

O - OP Receptor (OP 3)

No glare found

O - OP Receptor (OP 4)

No glare found

O - Route Receptor (110th St)

No glare found

O - Route Receptor (Esther Ave)

No glare found

O - Route Receptor (Hwy 14 NB A)

No glare found

O - Route Receptor (Hwy 14 NB at Phillips Rd)

No glare found

O - Route Receptor (Hwy 14 SB A)

No glare found

O - Route Receptor (Hwy 14 SB at Phillips Rd)

No glare found

O - Route Receptor (Lindbergh Blvd)

No glare found

O - Route Receptor (Lone Pine Subdivision RR north of Phillips Rd)

No glare found

O - Route Receptor (Lone Pine Subdivision RR south of Phillips Rd)

No glare found

O - Route Receptor (Miapa Rd)

No glare found

O - Route Receptor (Neuralia Rd A)

No glare found

O - Route Receptor (Neuralia Rd B)

No glare found

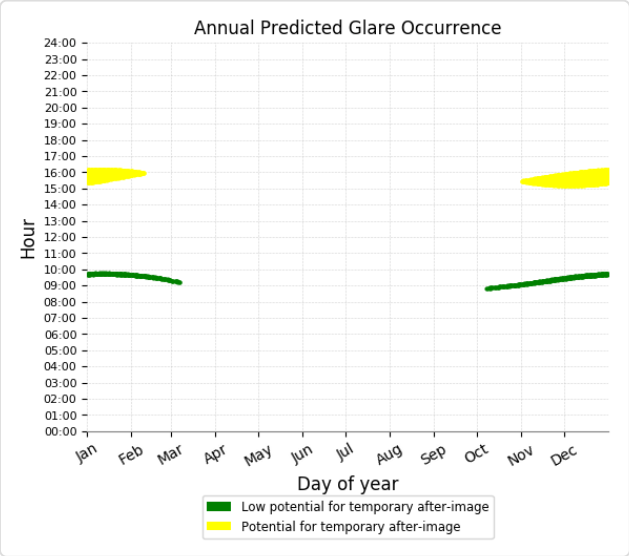
O - Route Receptor (Neuralia Rd C)

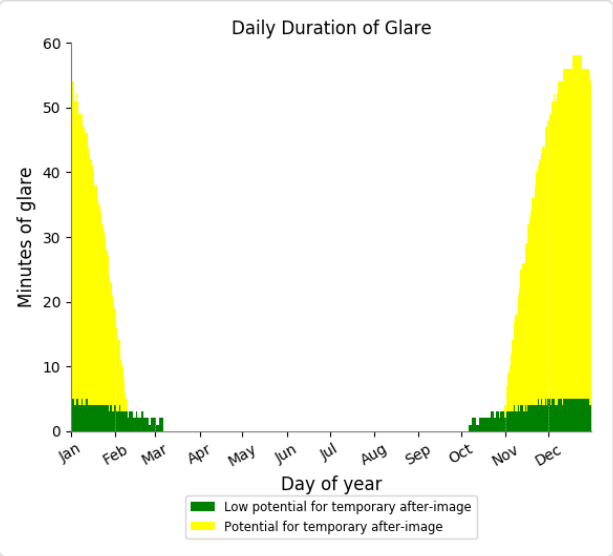
No glare found

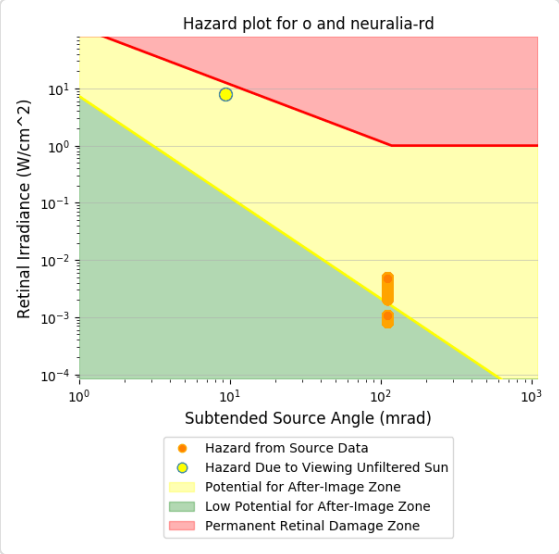
O - Route Receptor (Neuralia Rd D)

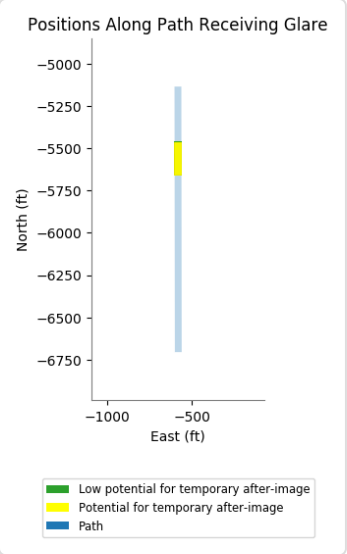
PV array is expected to produce the following glare for receptors at this location:

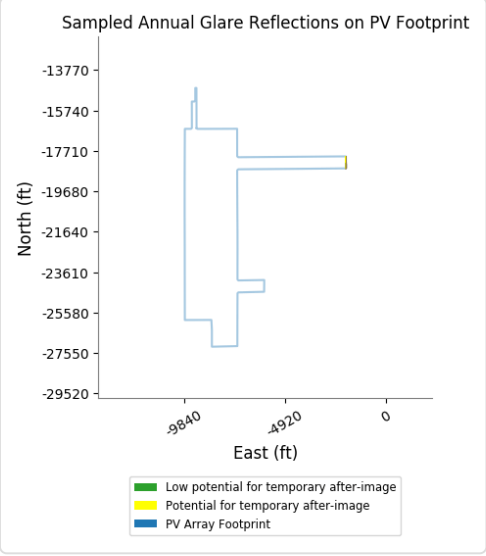
- 522 minutes of "green" glare with low potential to cause temporary after-image.
- 3,458 minutes of "yellow" glare with potential to cause temporary after-image.











O - Route Receptor (Neuralia Rd E)

No glare found

O - Route Receptor (Phillips Rd A)

No glare found

O - Route Receptor (Phillips Rd B)

No glare found

P no glare found

Component	Green glare (min)	Yellow glare (min)
FP: L71 24	0	0
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

No glare found

Q potential temporary after-image

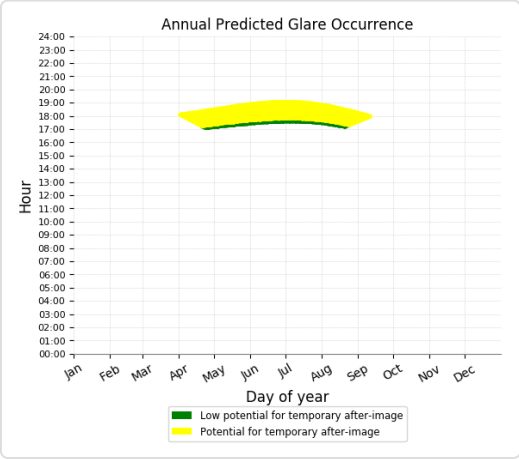
Component	Green glare (min)	Yellow glare (min)
FP: L71 24	1606	10531
FP: L71 6	0	0
OP: OP 1	0	0
OP: OP 2	0	0
OP: OP 3	0	0
OP: OP 4	0	0
Route: 110th St	0	0
Route: Esther Ave	0	0

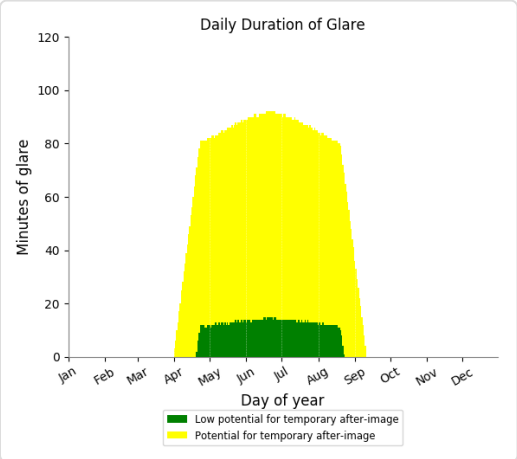
Route: Hwy 14 NB A	0	0
Route: Hwy 14 NB at Phillips Rd	0	0
Route: Hwy 14 SB A	0	0
Route: Hwy 14 SB at Phillips Rd	0	0
Route: Lindbergh Blvd	0	0
Route: Lone Pine Subdivision RR north of Phillips Rd	0	0
Route: Lone Pine Subdivision RR south of Phillips Rd	0	0
Route: Miapa Rd	0	0
Route: Neuralia Rd A	0	0
Route: Neuralia Rd B	0	0
Route: Neuralia Rd C	0	0
Route: Neuralia Rd D	0	0
Route: Neuralia Rd E	0	0
Route: Phillips Rd A	0	0
Route: Phillips Rd B	0	0

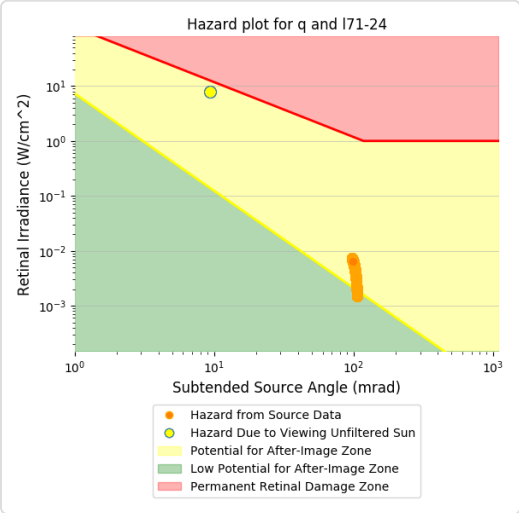
Q - Receptor (L71 24)

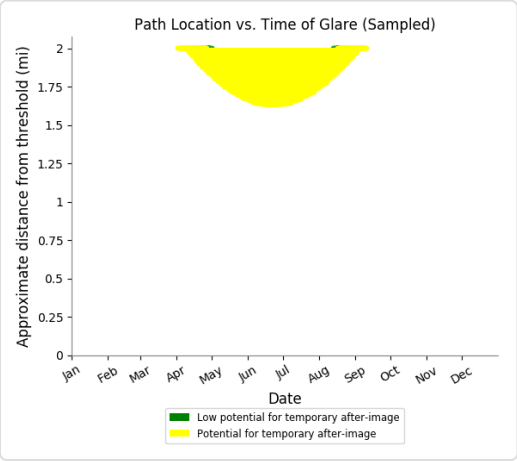
PV array is expected to produce the following glare for observers on this flight path:

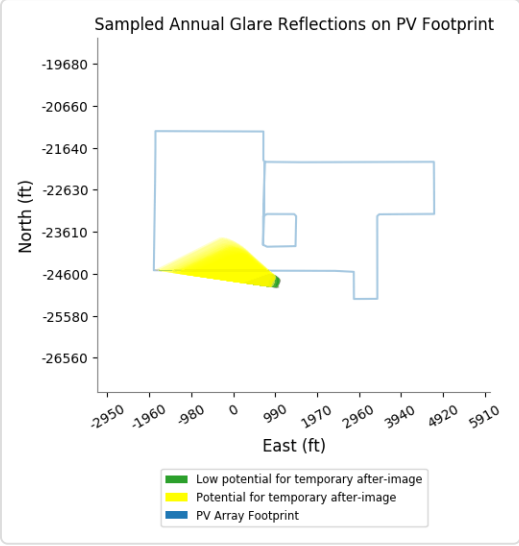
- 1,606 minutes of "green" glare with low potential to cause temporary after-image.
- 10,531 minutes of "yellow" glare with potential to cause temporary after-image.

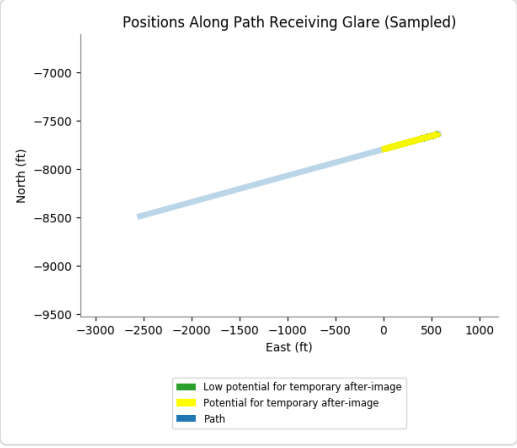












Q - Receptor (L71 6)

No glare found

Q - OP Receptor (OP 1)
No glare found

Q - OP Receptor (OP 2)
No glare found

Q - OP Receptor (OP 3)
No glare found

Q - OP Receptor (OP 4)
No glare found

Q - Route Receptor (110th St)
No glare found

Q - Route Receptor (Esther Ave)
No glare found

Q - Route Receptor (Hwy 14 NB A)
No glare found

Q - Route Receptor (Hwy 14 NB at Phillips Rd)
No glare found

Q - Route Receptor (Hwy 14 SB A)
No glare found

Q - Route Receptor (Hwy 14 SB at Phillips Rd)
No glare found

Q - Route Receptor (Lindbergh Blvd)
No glare found

Q - Route Receptor (Lone Pine Subdivision RR north of Phillips Rd)
No glare found

Q - Route Receptor (Lone Pine Subdivision RR south of Phillips Rd)
No glare found

Q - Route Receptor (Miapa Rd)
No glare found

Q - Route Receptor (Neuralia Rd A)
No glare found

Q - Route Receptor (Neuralia Rd B)
No glare found

Q - Route Receptor (Neuralia Rd C)
No glare found

Q - Route Receptor (Neuralia Rd D)
No glare found

Q - Route Receptor (Neuralia Rd E)

No glare found

Q - Route Receptor (Phillips Rd A)

No glare found

Q - Route Receptor (Phillips Rd B)

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 larg 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, nc 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.

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Appendix C-1

Air Quality and
Greenhouse Gas Assessment

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Air Quality and Greenhouse Gas Assessment

Kudu Solar Project

January 31, 2020

Prepared for:

69SV 8ME LLC
c/o 8minute Solar Energy
250 Sutter Street, Suite 600
San Francisco, CA 94108

Prepared by:

Stantec Consulting Services Inc.
100 California Street, Suite 1000
San Francisco, CA 94111

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Prepared by
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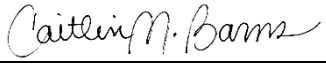
Zoryana Pope, Environmental Planner

Reviewed by
(signature)
Kate Gray, Senior Environmental Scientist

Reviewed by 
(signature)
Caitlin Barns, Senior Environmental Scientist

Approved by
(signature)
Elena Nuno, Senior Air Quality Scientist

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Abbreviations

°F	degrees Fahrenheit
µg/m^3	micrograms per cubic meter
AB	Assembly Bill
AC	alternating electrical current
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CARB	California Air Resources Board
CEQA	California Environmental Quality Act
CFC	chlorofluorocarbon
CH_4	Methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CUP	conditional use permit
DC	direct electrical current
DPM	diesel particulate matter
EKAPCD	Eastern Kern Air Pollution Control District
EPA	U.S. Environmental Protection Agency
ESS	energy storage system
FCAA	Federal Clean Air Act
gen-tie	generation tie
GHG	greenhouse gas

GWP	global warming potential
H_2S	hydrogen sulfide
IPCC	Intergovernmental Panel on Climate Change
Kern COG	Kern Council of Governments
Kern EDC	Kern Economic Development Corporation
kV	kilovolt
LADWP	Los Angeles Department of Water and Power
LOS	level of service
MDAB	Mojave Desert Air Basin
$MMTCO_2e$	million metric tons carbon dioxide equivalent
$MTCO_2e$	metric tons carbon dioxide equivalent
MW	Megawatt
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NO_2	nitrogen dioxide
NO_X	nitrogen oxide
O&M	operations and maintenance
PFC	Perfluorocarbon
Project	Kudu Solar Farm Project
PM	particulate matter
$PM_{2.5}$	Particulate matter less than 2.5 micrometers
PM_{10}	Particulate matter less than 10 micrometers
ppm	parts per million
PV	Photovoltaic
ROG	reactive organic gas

RPS	Renewables Portfolio Standard
SCAQMD	South Coast Air Quality Management District
TAC	toxic air contaminants
VMT	vehicle miles traveled

EXECUTIVE SUMMARY

This air quality and greenhouse gas (GHG) analysis was prepared to evaluate whether the estimated criteria air pollutant and GHG emissions generated from the Kudu Solar Project (Project) would cause significant impacts to air resources in the Project area. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.). The methodology follows the CEQA Implementation Guidelines prepared by the Eastern Kern Air Pollution Control District (EKAPCD) for quantification of emissions and evaluation of potential impacts to air resources (EKAPCD 1999). Methodology and thresholds for air quality and greenhouse gas impacts as set forth in the EKAPCD Implementation Guidelines and CEQA Greenhouse Gas Policy are used in this analysis. The EKAPCD screening thresholds and significance criteria are applicable to the Project based on the CEQA Lead Agency's determination, in its discretion, that such thresholds and significance criteria are supported by substantial evidence in the record.

69SV 8me LLC proposes to develop a photovoltaic (PV) energy facility and energy storage system (ESS) that is capable of producing up to 500 megawatts (MW) of alternating electrical current (AC) power, and 600 MW hours of storage capacity. Energy generated by the Project would be collected using up to 230 kilovolt (kV) collector lines that run underground and/or overhead to a dedicated project substation or to the Eland 1 Substation.

The Project is located in portions of unincorporated Kern County and California City, north of the California City Municipal Airport. The majority of the Project is bisected by Washburn Boulevard (which is also the California City Boundary) and Neuralia Road. The Project is comprised of 75 assessor's parcels totaling approximately 1,955 gross acres. Figure ES-1 shows the Project footprint.

Results of the air quality and GHG analyses indicate that the Project would result in less than significant impacts for all air quality and GHG impact criteria analyzed with the exception of Impact AIR-3: The Project would not expose sensitive receptors to substantial pollutant concentrations, which would result in less than significant impacts with the implementation of mitigation. Mitigation for this impact would include preparation of a Fugitive Dust Control Plan to control dust emissions and their effects on adjacent sensitive receptors, and Valley Fever Control Measures to minimize the exposure of personnel and the public to potential Valley Fever-containing dust.

1.0 INTRODUCTION

69SV 8me LLC is seeking approval of a conditional use permit (CUP) for the construction and operation of an up to 500 megawatt (MW) alternating electrical current (AC) utility-scale solar farm with energy storage, known as the Kudu Solar Project (Kudu or Project). 69SV 8ME LLC proposes to construct, own, and operate the Project and would secure CUPs from both Kern County and California City along with permits from other relevant agencies as required by law.

1.1 PROJECT INFORMATION

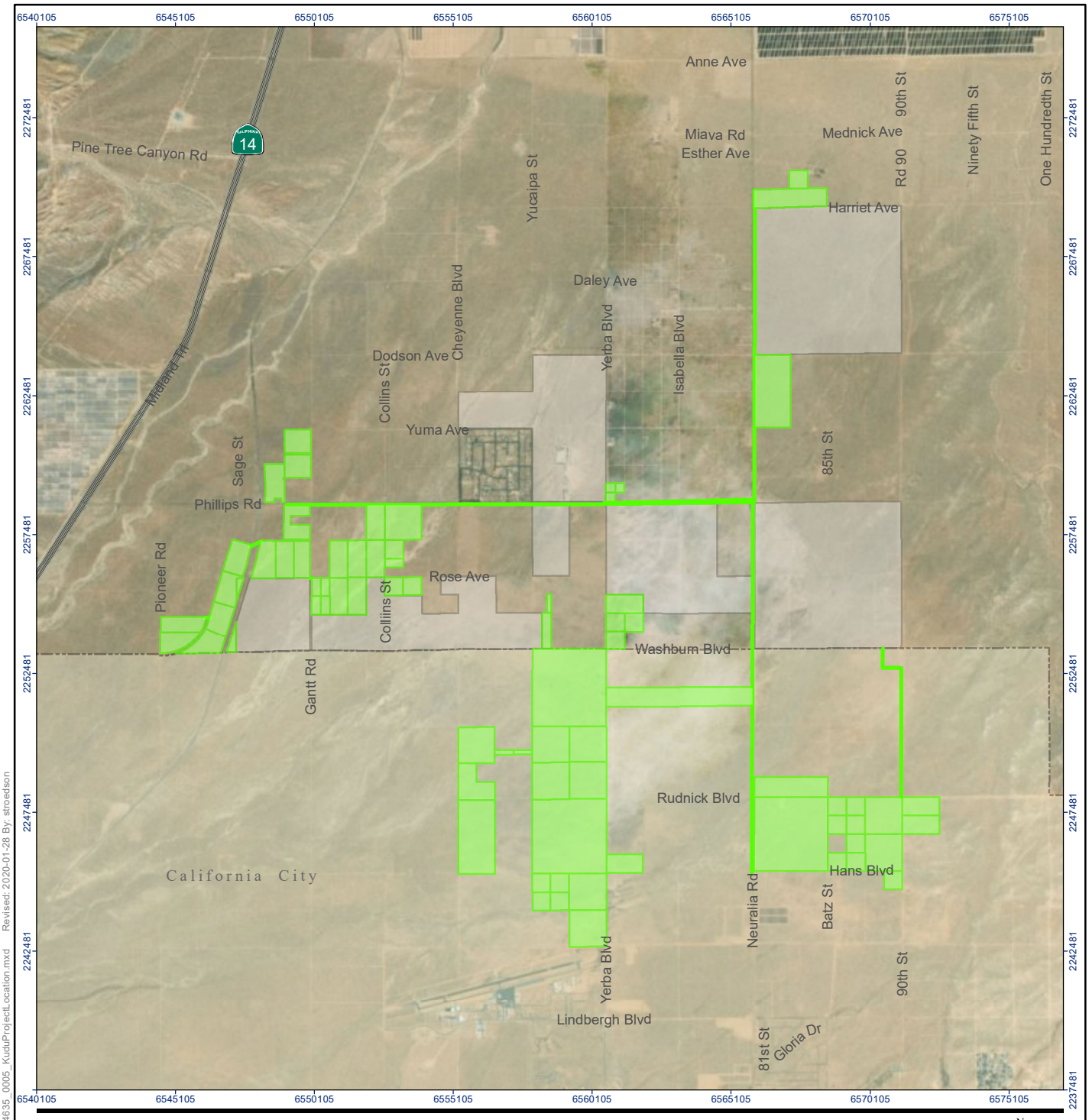
69SV 8me LLC (applicant) is seeking approval of a conditional use permits (CUPs) for the construction and operation of an up to 500 megawatt (MW)-alternating electrical current (AC) utility-scale solar farm with energy storage, known as the Kudu Solar Project (Project) in unincorporated Kern County and California City, California (Figure 1). The applicant proposes to construct, own, and operate the Project and would secure CUPs from both Kern County and California City along with permits from other relevant agencies as required by law.

1.1.1 Project Site Information

The Project is comprised of 75 assessor's parcels (Project area) totaling approximately 1,955 gross acres (Table 1.1-1) The permanent disturbance acreage associated with development of the solar facility and associated infrastructure (Project site) within the Project area would be less than the gross acreage of the Project area. The Project area is adjacent to the approved Eland 1 Solar Farm, south of the existing Springbok 1 & 2 Solar Farms, and southeast of the Los Angeles Department of Water and Power (LADWP) Beacon Solar facility. The topography of the Project area is relatively flat.

1.1.2 Location

The Project area is located in portions of unincorporated Kern County and California City, north of the California City Municipal Airport. The majority of the Project is bisected by Washburn Boulevard (which is also the California City boundary) and Neuralia Road (Figure 1-1).



Kudu Collector Route
Kudu Solar Project
Eland 1 Solar Project

0 0.5 1 Miles

(At original document size of 8.5x11)
1:63,360

N

Stantec

8MINUTE SOLAR ENERGY

Project Location
North of California City
Kern County, CA

Prepared by SET on 2020-01-28
TR by CS on 2020-01-28
IR by CB on 2020-01-28

Client/Project
8 Minute Solar Energy
Kudu Solar Project

185704635_0005

Figure No.
1

Title
Kudu Solar Project Location

Notes
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Project Data Sources: 8 Minute Solar Energy and Stantec
3. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

V:\18577\Active\185704635_Kudu_Bellefield\03_data\gis_cad\gis\185704635_0005_KuduProjectLocation.mxd Revised: 2020-01-28 By: stroedson

Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.

Table 1.1-1: Kudu Parcels

No.	APN	Acres
California City		
1	302-020-08	40.17
2	302-020-09	80.09
3	302-020-11	163.68
4	302-020-14	40.99
5	302-020-15	10.52
6	302-020-16	10.15
7	302-020-17	9.59
8	302-020-18	9.98
9	302-290-03	83.58
10	302-305-15	43.54
11	302-321-01	160.93
12	302-322-01	10.10
13	302-322-02	10.09
14	302-322-04	10.24
15	302-322-05	10.28
16	302-322-06	40.04
17	302-322-08	10.33
18	302-322-09	40.50
19	302-322-10	10.27
20	302-322-11	10.29
21	302-325-49	9.74
22	302-330-33	20.21
23	302-330-37	20.38
24	302-341-29	168.79
25	302-342-01	40.23
26	302-342-11	2.67
27	302-342-12	2.66
28	302-342-19	29.69
29	302-342-25	40.77
30	302-342-26	39.89
31	302-342-27	40.29
32	302-342-28	40.68
33	302-470-14	20.20

No.	APN	Acres
	California City Total	**1,281.51**
Unincorporated Kern County		
34	469-170-10	10.02
35	469-170-18	39.49
36	470-020-08	2.31
37	470-020-19	4.38
38	470-030-01	79.22
39	470-080-15	20.27
40	470-080-16	10.07
41	470-080-17	10.10
42	470-080-32	10.07
43	470-151-09	19.62
44	470-151-15	20.23
45	470-151-16	20.40
46	470-151-17	19.98
47	470-152-01	39.32
48	470-152-18	10.32
49	470-152-19	4.93
50	470-302-24	2.59
51	470-302-25	2.62
52	470-302-26	2.52
53	470-322-13	2.39
54	470-322-15	9.96
55	470-330-01	5.06
56	470-330-02	4.77
57	470-330-03	19.86
58	470-330-04	20.15
59	470-330-06	9.95
60	470-330-07	10.02
61	470-330-14	4.89
62	470-330-15	5.23
63	470-350-04	18.65
64	470-350-05	18.91
65	470-350-06	18.89
66	470-350-07	18.57
67	470-350-08	19.93

No.	APN	Acres
68	470-360-01	18.43
69	470-360-02	17.85
70	470-360-05	21.15
71	470-380-01	19.92
72	470-380-04	21.35
73	470-380-05	17.34
74	470-380-06	19.88
75	470-380-07	21.95
	Unincorporated Kern County Total	**673.55**
	Total	**1,955.06**

Note:
APN = Assessor Parcel Number

1.2 DESCRIPTION OF PROPOSED PROJECT

The applicant proposes to develop a photovoltaic (PV) energy facility and energy storage system (ESS) that is capable of producing up to 500 MW of AC power, and 600 MW hours (MWh) of storage capacity. Power generated by the Project would be collected using up to 230 kilovolt (kV) collector lines which run underground and/or overhead to a dedicated Project substation, or to the Eland 1 Substation. The Project may also share the Eland 1 generation tie- (gen-tie) line facilities, or gen-tie rights-of-way. The Eland 1 substation and gen-tie line have gone through environmental analysis and subsequent approval by Kern County and are not part of the Project.

Additionally, the Project may share an operations & maintenance (O&M) building, ESS, and/or transmission facilities, as necessary, with one or more nearby solar Projects, and/or may be remotely operated. Any unused O&M building, substation, and/or transmission facility areas onsite may be covered by solar panels under such scenarios.

The applicant has considered the following in its selection of the Project site for detailed evaluation:

- Land availability (approximately 1,955 gross acres)
- Land use zoning: primarily agriculture located away from high-density residential developments
- Proximity to interconnecting substation (approximately 7 miles away) and ability to share facilities with other solar Projects

Up to 20 full-time employees would operate the Project. Typically, most staff would work during the day shift (sunrise to sunset), and the remainder would work during the night shifts and weekends. If the Project shared O&M, substation, and/or transmission facilities with one or more nearby solar Projects, and/or became remotely, the Project's onsite staff could be reduced.

After the useful life of the Project, the panels would be disassembled from the mounting frames, and the Project site would be restored to its pre-development condition.

1.2.1 PV Module Configuration

The Project would use PV panels or modules[1] on mounting frameworks to convert sunlight into electricity. Individual panels would be installed on either fixed-tilt or tracker mount systems (single- or dual- axis, using galvanized steel or aluminum). If the panels are configured for fixed tilt, they would be oriented toward the south. For tracking systems, the panels would rotate to follow the sun over the course of the day. Although the panels could stand up to 20 feet high, depending on the mounting system used and county building codes, panels are expected to remain between 6 and 8 feet high.

The foundations for the mounting structures can extend up to 10 feet below ground, depending on the mounting structure, soil conditions, and wind loads, and may be encased in concrete or use small concrete footings. Final solar panel layout and spacing would be optimized for site characteristics and the desired energy production profile.

1.2.2 Inverter Stations

Direct Current (DC) energy is delivered from the panels via cables to inverter stations, generally located near the center of each block. Inverter stations convert the DC energy to AC energy, which can be dispatched to the transmission system. Inverter stations are typically comprised of one or more inverter modules with a rated power of up to 2 MW each, a unit transformer, and voltage switch gear. The unit transformer and voltage switch gear are housed in steel enclosures, while the inverter module(s) are housed in cabinets. Depending on the supplier selected, the inverter station may lie within an enclosed or canopied metal structure, typically on a skid or concrete mounted pad.

1.2.3 Energy Storage System

The Project may include one or more ESS, located at or near a substation/switchyard (onsite or shared) and/or at the inverter stations, or elsewhere onsite. Such large-scale ESSs would be up to 600 MW AC in capacity and occupy up to 25 acres in total area. ESSs consist of modular and scalable battery packs and battery control systems that conform to U.S. national safety standards. The ESS modules, which could include commercially available lithium or flow batteries, typically consist of International Organization of Standardization (ISO) standard containers (40 feet long by 8 feet wide by 8 feet high) housed in pad- or post-mounted, stackable metal structures, but may also be housed in a dedicated building(s) in compliance with applicable regulations. The maximum height of the structure is not expected to exceed 25 feet. The actual dimensions and number of energy storage modules and structures would vary depending on the application, supplier, and configuration chosen, as well as on offtaker/power purchase agreement requirements and on county building standards. The Project may share an ESS with one or more nearby solar Projects or may operate one or more standalone ESS facilities within the Project site.

[1] Including but not limited to bi-facial or concentrated photovoltaic (CPV) technology

1.2.4 Substation

Output from the inverter stations would be transferred via electrical conduits and electrical conductor wires to one or more Project substations or switchyards (collectively referred to as substations herein), or the Eland 1 Substation. The Project and any associated ESS would have their own dedicated substation equipment located either within the Project site, or within the Eland 1 Substation footprint. Dedicated equipment may incorporate several components, including auxiliary power transformers, distribution cabinets, revenue metering systems, a microwave transmission tower, and voltage switch gear. Each substation would occupy an area of up to approximately 5 acres, secured separately by a chain-link fence. The final location(s) of each component would be determined before the issuance of building permits.

Substations typically include a small control building (roughly 500 square feet) standing 10 feet tall. The building would either be prefabricated concrete or steel housing, with rooms for the voltage switch gear and metering equipment, a room for the station supply transformer, and a separate control technology room within which the main computer, intrusion detection system, and main distribution equipment are housed. Components of this building (e.g., control technology room and intrusion detection system) may instead be located at an O&M building below.

1.2.5 Transmission Line

Power generated by the Project would be transmitted to the Los Angeles Department of Water and Power (LADWP) Barren Ridge Substation via a 230 kV overhead and/or underground gen-tie. The Project intends to share the Eland 1 gen-tie line and right-of-way, which may require stringing additional line on the Eland 1 transmission structures, or increasing the capacity of the Eland 1 gen-tie by reconductoring the line with thicker cable. If the Project cannot share these facilities, a new gen-tie line would be developed within one of the routes previously analyzed in the Eland 1 Environmental Impact Report.

1.2.6 Water Usage

Water demand for panel washing and O&M use is not expected to exceed 50 acre-feet per year (afy). Water usage during construction, primarily for dust-suppression purposes, is not expected to exceed 400 acre-feet (af). It is anticipated that water would be obtained from existing onsite wells. Alternatively, water may be obtained from one or more offsite source(s) and delivered to the Project area via truck. If offsite water is used, it would likely be obtained from one of the nearby Springbok Projects, the Eland 1 Project, or from a commercial source. If the applicant determines that offsite water would be used, the applicant would submit a Will Serve Letter from the proposed offsite water purveyor(s). A small water treatment system may be installed to provide deionized water for panel washing.

1.2.7 Water Storage Tank(s)

One or more aboveground water storage tanks with a total capacity of up to 50,000 gallons may be placed onsite near the O&M building. The storage tank(s) near the O&M building would have the appropriate fire department connections to be used for fire suppression.

1.2.8 Operations and Maintenance Building

The Project may include an O&M building approximately 40 feet long by 80 feet wide, with associated onsite parking. The O&M building would be steel framed, with metal siding and roof panels. The O&M building may include the following:

1. Office
2. Repair building/parts storage
3. Control room
4. Restroom
5. Septic tank and leach field

Roads, driveways, and parking lot entrances would be constructed in accordance with Kern County and California City improvement standards. Parking spaces and walkways would be constructed in conformance with all California accessibility regulations.

1.2.9 Project Site Security and Fencing

The Project site would be enclosed within a chain link fence with barbed wire measuring up to 8 feet above finished grade. An intrusion alarm system would be integrated into the perimeter fence, with intrusion detection cabinets placed every 1,500 feet along the perimeter fence. An intrusions control unit or similar technology may include additional security measures including but not limited to barbed wire, low voltage fencing with warning reflective signage, controlled access points, security alarms, security camera systems, and security guard vehicle patrols to deter trespassing and/or unauthorized activities.

Gates would be maintained at the main entrances to the Project site to restrict access. Project site access would be provided to offsite emergency responders in the event of an after-hours emergency. Enclosure gates would be manually operated with a key provided in an identified key box location.

1.2.10 Project Lighting

Project lighting would be directed away from public rights-of-way and would be minimal. Site lighting may include motion sensor lights for added security purposes. Lighting would be of the lowest intensity, in compliance with any applicable regulations, measured at the property line after dark.

1.3 ANNUAL PRODUCTION

The Project would generate electrical power during daylight hours. Peak electricity demand in California corresponds with air conditioning use on summer afternoons when ambient temperatures are high. The Project's peak generating capacity corresponds to this time-period. There is no generating capacity between sunset and sunrise due to the lack of solar energy, though power may be released from the ESS at any time of day.

The Project would have a nominal output capacity of up to 500 MW AC and 600 MWh of storage capacity, sufficient to power roughly 240,000 homes and displacing 745,000 tons of carbon dioxide equivalent (CO_2e) per year when compared to a gas-fired power plant or 1,476,000 tons when compared to a coal-fired power plant.

1.4 CONSTRUCTION ACTIVITIES

Site preparation through construction, testing, and commercial operation, is expected to commence as early as Q4 2021 and would extend for 12 to 18 months.

Construction would include the following:

- site preparation
- grading and earthwork
- concrete foundations
- structural steel work
- electrical/instrumentation work
- collector line installation
- architecture and landscaping

No roads would be affected by the Project, except during construction. Construction traffic would access the site from Philips Road, Gantt Road, and Neuralia Road, or through the Eland 1 Project site. Up to 1,000 workers per day (during peak construction periods) would be required during the construction of the Project.

Heavy construction would occur between 6:00 AM and 5:00 PM, Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Some activities may continue 24 hours per day, seven days per week. Low-level noise activities may occur between 10:00 PM and 7:00 AM. Nighttime activities could include but are not limited to refueling equipment, staging materials, quality assurance and control, and commissioning.

Truck deliveries would normally occur during daylight. However, there would be offloading and/or transporting to the Project area on weekends and during evenings.

Earth-moving is expected to be limited to the construction of the access roads, O&M building, substation, ESS(s), and any stormwater protection or storage (detention) facilities. Final grading may include revegetation with low growing or applying earth-binding materials to disturbed areas.

1.5 WORK FORCE

Once the Project is constructed, maintenance would generally be limited to the following:

1. Cleaning of PV panels
2. Monitoring electricity generation
3. Providing site security
4. Facility maintenance: replacing or repairing inverters, wiring, and PV modules

The project would require up to 20 full-time O&M employees. If the project uses shared O&M, substation, ESS, and/or transmission facilities with any future projects share personnel would reduce O&M staff.

Introduction

The facility would operate seven days a week, 24 hours a day, generating electricity during normal daylight hours when the solar energy is available. Maintenance activities may occur seven days a week, 24 hours a day to ensure PV panel output when solar energy is available.

2.0 EXISTING CONDITIONS

Air quality is primarily determined by the type and amount of contaminants emitted into the atmosphere, the size and topography of the basin, and its meteorological conditions. Atmospheric conditions, such as wind speed, wind direction, and air temperature gradients, along with local topography, provide the link between air pollution emissions and air quality.

2.1 ATMOSPHERIC SETTING

The Project site will be located wholly within the Mojave Desert portion of Kern County, wholly within the Mojave Desert Air Basin (MDAB). The MDAB is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains that dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada Mountains to the north; air masses pushed onshore in southern California by differential heating are channeled through the MDAB. The MDAB is separated from the southern California coastal and central California valley regions by mountains (highest elevation about 10,000 feet) whose passes form the main channels for these air masses.

During the summer, the MDAB is generally influenced by a pacific subtropical high cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska as these frontal systems are weak and diffuse by the time that they reach the desert. Most desert moisture arrives from infrequent warm, moist, and unstable air masses from the south.

Kern County has an average annual temperature of 65.1 degrees Fahrenheit (°F), with an annual average high temperature of 76.8°F and an average annual low temperature of 53.4°F. Average annual rainfall in the county is 6.45 inches, and the County typically has an average of 274 sunny days per year (Kern EDC 2019).

2.2 AIR QUALITY ENVIRONMENT

2.2.1 Criteria Air Pollutants

As required by the Federal Clean Air Act (FCAA), the U.S. Environmental Protection Agency (EPA) has identified criteria pollutants and established National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. NAAQS have been established for ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide, suspended particulate matter (PM), and lead. Suspended PM has standards for both PM with an aerodynamic diameter of 10 micrometers or less (respirable PM, or PM_{10}) and PM with an aerodynamic diameter of 2.5 micrometers or less (fine PM, or $PM_{2.5}$). The California Air Resources Board (CARB) has established separate standards for the state (i.e., the California Ambient Air Quality Standards [CAAQS]). The CARB established CAAQS for all the federal pollutants and sulfates, hydrogen sulfide, and visibility-reducing particles.

For some of the pollutants, the identified air quality standards are expressed in more than one averaging time to address the typical exposures found in the environment. For example, CO is expressed as a 1-hour averaging time

and an 8-hour averaging time. Regulations have set NAAQS and CAAQS limits in parts per million (ppm) or micrograms per cubic meter (µg/m^3). The standards are presented in Table 2.2-1, and Appendix A provides descriptions of each.

Table 2.2-1: National and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	National Standards[b]	
			Primary[c]	Secondary[d]
Ozone	1 hour 8 hours	0.09 ppm 0.070 ppm	-- 0.070 ppm	-- 0.070 ppm
Carbon monoxide (CO)	1 hour 8 hours	20 ppm 9.0 ppm	35 ppm 9 ppm	-- --
Nitrogen dioxide (NO_2)	1 hour Annual Arithmetic Mean	0.18 ppm 0.030 ppm	0.100 ppm [e] 0.053 ppm	-- 0.053 ppm
Sulfur dioxide (SO_2)	1 hour 3 hours 24 hours Annual Arithmetic Mean	0.25 ppm -- 0.040 ppm --	0.075 ppm [f] -- 0.014 ppm 0.030 ppm	-- 0.5 ppm -- --
Particulate matter less than 10 microns (PM_{10})	24 hours Annual Arithmetic Mean	50 µg/m^3 20 µg/m^3	150 µg/m^3 --	150 µg/m^3 --
Particulate matter less than 2.5 microns ($PM_{2.5}$)	24 hours Annual Arithmetic Mean	-- 12 µg/m^3	35 µg/m^3 12 µg/m^3	35 µg/m^3 15 µg/m^3
Lead [g]	30-day Average Calendar Quarter Rolling 3-month Average	1.5 µg/m^3 -- --	-- 1.5 µg/m^3 0.15 µg/m^3	-- 1.5 µg/m^3 0.15 µg/m^3
Visibility reducing particles (VRP) [g]	8 hours	[h]	--	--
Sulfates	24 hours	25 µg/m^3	--	--
Hydrogen sulfide (H_2S)	1 hour	0.03 ppm	--	--
Vinyl chloride	24 hours	0.01 ppm	--	--

Notes:
ppm = parts per million
µg/m^3 = micrograms per cubic meter
-- = No standard has been adopted for this averaging time
[a] California Ambient Air Quality Standards for ozone, CO (except 8-hour Lake Tahoe), SO2 (1 and 24 hour), NO2, and particulate matter (PM10, PM2.5, and VRP), are values that are not to be exceeded. All others are not to be equaled or exceeded.
[b] National Ambient Air Quality Standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.
[c] Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health.
[d] Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[e] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 0.100 ppm.
[f] To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 0.075 ppm.
[g] CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
[h] Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

Source: CARB 2016

2.3 ATTAINMENT STATUS

In California, air quality management responsibilities exist at local, state, and federal levels of government. In general, air quality management planning programs developed during the past few decades have been in response to requirements established by the federal CAA. However, the enactment of the California Clean Air Act (CCAA) and its subsequent revisions has produced changes in the structure and administration of air quality management programs in California. The attainment status of the Project area is described below for federal and state criteria pollutants, which are described in more detail in Appendix A. A detailed description of the regulatory context for this Project is included in Appendix B.

2.3.1 Federal

The EPA has identified nonattainment and attainment areas for each criteria air pollutant. Under amendments to the FCAA, EPA has classified air basins or portions thereof as "attainment," "nonattainment," or "unclassifiable" based on whether or not the national standards have been achieved. EPA uses two categories to designate areas with respect to $PM_{2.5}$ and NO_2, which include the following: (1) does not meet the standard (nonattainment) and (2) cannot be classified or better than national standards (unclassifiable/attainment). EPA uses four categories to designate for SO_2, but the only two that are applicable in California are nonattainment or unclassifiable. EPA uses three categories to designate for PM_{10}: attainment, nonattainment, and unclassifiable.

The FCAA uses the classification system to design cleanup requirements appropriate for the severity of the pollution and to set realistic deadlines for reaching cleanup goals. If an air basin is not in federal attainment (that is, it does not meet federal standards) for a particular pollutant, the basin is classified as a marginal, moderate, serious, severe, or extreme nonattainment area based on the estimated time it would take to reach attainment. Nonattainment areas must take steps towards attainment by a specific timeline. Table 2.3-1 shows the federal attainment designations and classifications for the Project.

2.3.2 State

The state designation criteria specify four categories: nonattainment, nonattainment-transitional, attainment, and unclassified. A nonattainment designation indicates that one or more violations of the state standard have occurred. A nonattainment-transitional designation is a subcategory of nonattainment that indicates improving air quality with only occasional violations or exceedances of the state standard. In contrast, an attainment designation indicates that no violations of the state standard are available to evaluate attainment status. Finally, an unclassified designation

indicates either no air quality data or an incomplete set of air quality data. State attainment designations in the affected area are listed in Table 2.3-1.

Table 2.3-1: Designations/Classifications for the Project Area

Pollutant	State Designation (Classification)	Federal Designation (Classification)
Ozone – 1 Hour	Nonattainment	Attainment
Ozone – 8 Hour	Nonattainment	Nonattainment/Marginal
Inhalable coarse particles (PM_{10})	Nonattainment	Unclassifiable/Attainment
Fine particulate matter ($PM_{2.5}$)[b]	Unclassified	Unclassifiable/Attainment
Carbon Monoxide (CO)	Unclassified	Unclassifiable/Attainment
Nitrogen Dioxide (NO_2)	Attainment	Unclassified
Sulfur Dioxide	Attainment	Unclassified
Lead	Attainment	Unclassified/Attainment
Sulfates	Attainment	No Federal Standards
Hydrogen Sulfide	Unclassified	
Visibility Reducing Particles	Unclassified	

Source: CARB 2017

2.3.3 Toxic Air Contaminants

In addition to the above-listed criteria pollutants, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are emitted from stationary sources, area-wide sources, mobile sources, and natural sources. Assembly Bill (AB) 1807 sets forth a procedure for the identification and control of TACs in California and defines a TAC as an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or that may pose a present or potential hazard to human health. There are almost 200 compounds that have been designated as TACs in California. The ten TACs posing the greatest known health risk in California, primarily based on ambient air quality data, are acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, formaldehyde, methylene chloride, para-dichlorobenzene, perchloroethylene, and diesel particulate matter (DPM).

No ambient air quality standards have been developed for TACs because there are no safe exposure levels. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. The most recent available emissions from the top ten TACs in the MDAB are presented in Table 2.3-2. Detailed descriptions and human health effects of each TAC is presented in Appendix B.

Table 2.3-2: 2009 Toxic Air Contaminant Emissions in Mojave Desert Air Basin (tons per year)

Toxic Air Contaminant	County-MDAB				Total MDAB
	Kern	Los Angeles	Riverside	San Bernardino	
Acetaldehyde	180	84	52	349	180
Benzene	106	81	21	397	106
1, 3-Butadiene	59	21	4	111	59
Carbon Tetrachloride	0.01	< 0.01	0	0.07	0.01
Chromium (Hexavalent)	0.01	< 0.01	< 0.01	0.02	0.01
Para-Dichlorobenzene	6	15	1	20	6
Formaldehyde	476	202	107	799	476
Methylene Chloride	15	105	5	80	15
Perchloroethylene	16	41	4	98	16
Diesel particulate matter	495	269	289	1450	495

Notes:
2009 data is the most recent data available for toxic air contaminants
MDAB = Mojave Desert Air Basin
Source: CARB 2009

2.3.4 Valley Fever

Valley Fever or coccidioidomycosis is caused locally by the microscopic fungus *Coccidioides immitis*. Coccidioidomycosis was first discovered in the early 1890s and by 1900 was established as a fungal disease. After an outbreak in the 1930s in the San Joaquin Valley of California, this disease was given its common name “San Joaquin Valley Fever,” often shortened further to “Valley Fever.”

The *C. immities* fungus resides in the soil in southwestern United States, northern Mexico, and parts of Central and South America. Whereas all of Kern County is in the endemic area, the incident rate for Valley Fever in the MDAB is less than the incident rate in the San Joaquin Valley Air Basin, which has the highest incidence rate within California.

Infection occurs when the spores of the fungus are inhaled, often when contaminated soil is disturbed by human activities, such as construction and agricultural activities, and natural phenomena, such as windstorms, dust storms, and earthquakes. About 60 percent of infected persons have no symptoms. The remainder developed flu-like symptoms that can last for a month and tiredness that can sometimes last for weeks. Fewer than 1 percent of infected persons can develop disseminated disease that spreads outside the lungs to the brain, bone, and skin.

Without proper treatment, Valley Fever can lead to severe pneumonia, meningitis, and even death. Symptoms may appear between 1 and 4 weeks after exposure.

Diagnosis of Valley Fever is conducted through a sample of blood, other body fluid, or biopsy of affected tissue. Valley Fever is treatable with anti-fungal medicines and is not contagious. Once recovered from the disease, the individual is protected against reinfection. Persons at the highest risk from exposure are those with compromised immune systems, such as those with HIV and chronic pulmonary disease. Farmers, construction workers, and others who engage in activities that disturb the soil are at the highest risk for Valley Fever. Infants, pregnant women, diabetics, people of African, Asian, Latino or Filipino descent, and the elderly may be at increased risk for the Valley Fever infection spreading from the lungs to other tissue. Historically, people at risk for infection are individuals not already immune to the disease and whose jobs involve extensive contact with soil dust, such as construction or agricultural workers and archeologists.

During drought years, the number of organisms competing with *C. immitis* decreases, and the *C. immitis* remains alive, but dormant. When rain finally occurs, the fungal spores germinate and multiply more than usual because of a decreased number of other competing organisms. Later, the soil dries out in the summer and fall, and the fungi can become airborne, thereby increasing the chance of exposure and infection.

2.3.5 Asbestos

Asbestos is a naturally occurring mineral that was mined for its fiber strength and heat resistance for use in a variety of building construction materials for insulation and as a fire retardant. Asbestos is a known carcinogen, and inhalation of asbestos may result in the development of lung cancer or mesothelioma. Asbestos can only adversely affect humans in its fibrous form, and these fibers must be broken and dispersed into the air and then inhaled. CARB has regulated the amount of asbestos in crushed serpentinite (a mineral containing naturally occurring asbestos) used in surfacing applications, such as for gravel on unpaved roads, since 1990. Additional concerns were raised in 1998 about possible health hazards from activities that disturb rocks and soil containing asbestos and that could generate asbestos-laden dust. The CARB subsequently revised the asbestos limit for crushed serpentinite and ultramafic rock in surfacing applications from 5 percent to less than 0.25 percent and adopted a new rule requiring dust control measures for activities that disturb rock and soil containing naturally occurring asbestos.

2.4 GREENHOUSE GASES

Constituent gases that trap heat in the Earth's atmosphere are called greenhouse gases (GHGs), analogous to the way a greenhouse retains heat. GHGs play a critical role in the Earth's radiation budget by trapping infrared radiation emitted from the Earth's surface that would otherwise have escaped into space. Prominent GHGs contributing to this process include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and chlorofluorocarbons (CFCs). Detailed descriptions of these GHGs are provided in Appendix A.

Without the natural heat-trapping effect of GHG, a phenomenon known as the "Greenhouse Effect," the earth's surface would be about 34°F cooler. However, anthropogenic emissions of GHGs in excess of natural ambient concentrations have led to unnatural changes to the Earth's climate, collectively known as global warming or climate change, or, more accurately, global climate disruption. Emissions of these gases that induce global climate disruption

are attributable to human activities associated with industrial and manufacturing, utilities, transportation, residential, and agricultural sectors.

The global warming potential (GWP) is the potential of a gas or aerosol to trap heat in the atmosphere. Individual GHG compounds have varying GWP and atmospheric lifetimes. The reference gas for the GWP is CO_2, which possesses a GWP of 1. The calculation of the CO_2 equivalent (CO_2e) is a consistent methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent metric. Methane's warming potential of 28 indicates that methane has a 28 times greater warming affect than CO_2 on a molecular basis. The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time period. The time period usually used for GWPs is 100 years. GWPs for the three GHGs produced by the Project are presented in Table 2.4-1. A CO_2e is the mass emissions of an individual GHG multiplied by its GWP. GHGs are often presented in units called tonnes (i.e., metric tons) of CO_2e ($MTCO_2e$).

Table 2.4-1: Global Warming Potentials

Pollutant	GWP for 100-year time horizon	
	Second Assessment Report	Fifth Assessment Report
Carbon dioxide (CO_2)	1	1
Methane (CH_4)	21	28
Nitrous Oxide (N_2O)	31	265

Notes:

Current protocol is to use the fifth assessment values; however, the second assessment report values are also provided since they are the values used by many inventories and public documents.

GWP = global warming potential

Source: IPCC 2013

2.4.1 Greenhouse Gas Emission Levels

According to the EPA, in 2017, total GHG emissions in the U.S. from the land sector were estimated to be 6,456.7 million metric tons of CO_2e ($MMTCO_2e$) or 5,742.6 $MMTCO_2e$ after accounting for sequestration.

California has a larger percentage of its total GHG emissions coming from the transportation sector (47 percent) than the U.S. emissions (29 percent) and a smaller percentage of its total GHG emissions from the electricity generation sector (i.e., 11 percent in California vs. 31 percent for the U.S. as a whole).

In 2012, the San Joaquin Valley Air Pollution Control District prepared a Communitywide GHG Inventory for Kern County. Using the 2005 baseline GHG emissions, the 2020 emissions inventory was forecasted to be 27.3 $MMTCO_2e$, of which the electricity consumption sector represents 31 percent, followed by the fossil fuel sector at 26 percent. Table 2.4-2 presents the County's projected 2020 GHG emissions, minus sequestration.

Table 2.4-2: Projected 2020 Kern County GHG Emissions

Category	$MTCO_2e$
Electricity Consumption	8,572,261
Residential/Commercial/Industrial Combustion	1,689,414
Transportation	4,823,756
Fossil Fuels Industry	7,002,009
Industrial Processes	2,348,754
Waste Management	146,788
Agriculture Fugitives	2,652,616
Forestry and Land Use	14,669
Other Sources	22,442
Total	**27,272,709**

Notes:
$MTCO_2e$ = metric tons carbon dioxide equivalent
Source: Kern County 2012

2.4.2 Potential Environmental Effects

Worldwide, average temperatures are likely to increase by 3 degrees Celsius (°C) to 7°C by the end of the 21st century as a result of global climate change (IPCC 2013). However, a global temperature increase does not directly translate to a uniform increase in temperature in all locations on the Earth. Regional climate changes are dependent on multiple variables such as topography. One region of the Earth may experience increased temperature, increased incidents of drought, and similar warming effects, whereas another region may experience a relative cooling. According to the International Panel on Climate Change's Working Group II Report, climate change impacts to North America may include diminishing snowpack; increased evaporation, shoreline erosion, incidence of heat waves, and inundation from sea level rise; and an increase in the risk and frequency of wildfire and insect outbreaks. Ecosystems and species distributions are also anticipated to shift northward and to higher elevations.

2.4.3 Implications for California

The California Natural Resources Agency summarized the best known science on climate change impacts in seven sectors and provided recommendations on how to manage against those threats within the state. Generally, research indicates that California should expect overall hotter and drier conditions, a reduction in winter snow with concurrent increases in winter rains, increased average temperatures, accelerating sea-level rise, and increased incidents of extreme weather events such as heat waves, wildfires, droughts, and floods. Temperatures in California could increase 5°F by 2050 and 9°F by 2100. Precipitation is expected to decrease by 35 percent by 2050, and sea levels are expected to rise by 18 inches by 2050 and by 55 inches by 2100 (CNRA 2012).

2.5 BASELINE AIR QUALITY

2.5.1 Local Ambient Air Quality

California's ambient air monitoring network is one of the most extensive in the world with over 250 sites and 700 individual monitors measuring air pollutant levels across a diverse range of topography, meteorology, emissions, and air quality in California. Existing levels of ambient air quality and historical trends and projections in the Project are best documented by measurements made by these monitoring sites. The nearest monitoring site to the project is located approximately 14 miles southwest of the Project in the City of Mojave at 923 Poole Street.

The site measures ozone, PM_{10}, and $PM_{2.5}$. Data presented in Table 2.5-1 summarize 2016 through 2019 published monitoring data from the CARB's Aerometric Data Analysis and Management System for the Mojave–923 Poole Street Station (Mojave Station).

Table 2.5-1: Ambient Air Quality Modeling Summary

Air Pollutant	Averaging Time	Item	2016	2017	2018
Ozone	1 hour	Max 1 Hour (ppm)	0.104	0.097	0.111
		Days > State Standard (0.09 ppm)	2	1	8
	8 hour	Max 8 Hour (ppm)[1]	0.093	0.085	0.094
		Days > State Standard (0.070 ppm)	60	37	56
		Days > National Standard (0.070 ppm)	52	35	53
		Days > National Standard (0.075 ppm)	29	16	23
Inhalable coarse particles (PM_{10})	Annual	Annual Average (µg/m^3)	26.2	25.3	26.7
	24 hour	24 Hour (µg/m^3)[2]	139.2	93.4	93.1
		Days > State Standard (50 µg/m^3)	18.9	ID	ID
		Days > National Standard (150 µg/m^3)	0	0	0
Fine particulate matter ($PM_{2.5}$)	Annual	Annual Average (µg/m^3)[3]	7.4	5.5	7.1
	24 hour	24 Hour (µg/m^3)[4]	25.7	28.9	39.0
		Days > National Standard (35 µg/m^3)	0	0	2

Notes:

The Federal 1 hour Ozone Standard was revoked in June 2005; California retained a 1 hour Ozone Standard

Bold text indicates an exceedance

1. From the 2015 Federal Standard
2. From the Federal PM10 Standard
3. From the Federal PM2.5 Standard

> = exceed

$\mu g/m^3$ = micrograms per cubic meter

ID = insufficient data

max = maximum

National Standard = National Ambient Air Quality Standard

ppm = parts per million

State Standard = California Ambient Air Quality Standard

Sources: CARB 2019

The monitoring data demonstrates poor air quality in the Kern County portion of the MDAB. Specifically, the data shows that this region exceeds federal and state 8-hour ozone standards and the state 1-hour ozone standard numerous times each year. The state PM_{10} standard was exceeded in 2016. The federal PM_{10} standard was never exceeded, but the federal $PM_{2.5}$ standard was exceeded in 2018.

3.0 SIGNIFICANCE CRITERIA

The California Environmental Quality Act (CEQA) and the Eastern Kern Air Pollution Control District (EKAPCD) have established air pollution thresholds for projects to be evaluated, and to assist lead agencies in determining a project's significance.

3.1 CRITERIA POLLUTANTS

The EKAPCD CEQA Implementation Document and Kern County Environmental Checklist identify the following criteria as established in Appendix G of the CEQA Guidelines to determine if a project could potentially have a significant adverse effect to air quality. However, the CEQA Guidelines have been updated since the implementation of the Kern County Environmental Checklist, and these updated CEQA thresholds have been included below.

A project would have a significant adverse effect on air quality if it:

- Conflicts with or obstructs implementation of the applicable air quality plan;
- Results in cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or state ambient air quality standard. Specifically, if implementation of the project would exceed any of the following adopted thresholds of EKAPCD:
    - Operational and Area Sources:
        - Reactive organic gases (ROG) – 25 tons per year
        - Oxides of nitrogen (NO_X) – 25 tons per year
        - Oxides of sulfur (SO_X) – 27 tons per year for SO_X (as SO_2)
        - Particulate matter (PM_{10}) – 15 tons per year
    - Stationary Sources – as determined by District Rules:
        - 25 tons per year of any nonattainment pollutant
    - Operations – Indirect Sources (motor vehicles)
        - 137 pounds per day of ROG
        - 137 pounds per day of NO_X

    The above adopted thresholds are also used for the purposes of determining cumulative effects as the baseline for "considerable."
- Exposes the public (especially schools, day care centers, hospitals, retirement homes convalescence facilities, and residences) to substantial pollutant concentrations; or
- Results in other emissions (such as hose leading to odors) adversely affecting a substantial number of people.

As stated in Appendix G, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the above determinations.

3.2 GREENHOUSE GAS (GHG)/CLIMATE CHANGE

The EKAPCD CEQA Implementation Document and the state CEQA Guidelines, state that a project would have significant impacts on GHG emissions if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment or
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

The EKAPCD has not developed a quantified threshold of significance for GHG emissions, but a project found to contribute to a net decrease in GHG emissions and found to be consistent with the adopted CARB Scoping Plan is presumed to have less than significant GHG impacts.

In March 2012 the EKAPCD adopted an addendum to their CEQA Guidelines to address GHG impacts, including quantitative thresholds for determining significance of GHG emissions when EKAPCD is the CEQA lead agency. In these circumstances, a project is considered to have a significant project or cumulatively considerable impact if it generates 25,000 $MTCO_2e$ or more per year.

4.0 MODELING PARAMETER ASSUMPTIONS

4.1 MODEL SELECTION

The Project emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 (Appendix C). CalEEMod is a statewide land use emissions computer model designed to provide a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutants associated with both construction and operation of a variety of land use projects. The model quantifies direct emissions from construction and operations (including vehicle use), and indirect emissions, such as GHG emissions from energy use, solid waste disposal, vegetation planting and/or removal, and water use.

The model was developed in collaboration with the air districts in California. Default data (e.g., emission factors, trip lengths, meteorology, source inventory, etc.) have been provided by the various California air districts to account for local requirements and conditions. The model is an accurate and comprehensive tool for quantifying air quality impacts from land use projects throughout California. The model can be used for a variety of situations where an air quality analysis is necessary or desirable, such as CEQA documents.

4.1.1 Construction Modeling Assumptions

Construction of the Project would take approximately 12 months and may begin as early as the third quarter of 2021. Construction of the facility will be broken up into the following phases within a 12-month construction period as shown in Table 4.1-1.

- Phase 1: Site Preparation and Grading (84 work days)
- Phase 2: Tracker Foundations (125 work days)
- Phase 3: Underground Cabling (125 work days)
- Phase 4: Mechanical Installation (146 work days)
- Phase 5: Electrical/Instrumentation Work (167 work days)

Table 4.1-1: Kudu Construction Phasing and Schedule

Phase	Phase Type	Phase Start Date	Phase End Date	Number of Days per Week	Total Days
Site Preparation and Grading	Site Preparation	2021/10/04	2021/12/26	7	84
Tracker Foundations	Grading	2021/12/20	2022/04/23	7	125
Underground Cabling	Trenching	2022/02/28	2022/07/02	7	125
Mechanical Installation	Building Construction	2022/05/09	2022/10/01	7	146
Electrical/Instrumentation Work	Paving	2022/06/06	2022/11/19	7	167

Source: 8minute Solar Energy

Off-Road Construction Equipment

Construction emissions can vary substantially from day to day depending on the level of activity, the type of operation, and prevailing weather conditions. Construction emissions result from onsite and offsite activities. Onsite emissions principally consist of exhaust emissions from the activity levels of heavy-duty construction equipment, motor vehicle operation, and fugitive dust (mainly PM_{10}) from disturbed soil. Offsite emissions are caused by motor vehicle exhaust from delivery vehicles, worker traffic, and road dust (PM_{10} and $PM_{2.5}$). Table 4.1-2 lists the off-road equipment that would be used during each phase of construction.

Table 4.1-2: Kudu Construction Off-road Equipment

Phase	Off-Road Equipment	Quantity	Hours per day	Horse Power	Load Factor
Site Preparation and Grading	Crawler Tractors	1	4	212	0.43
	Graders	3	7	187	0.41
	Off-Highway Trucks	5	7	402	0.38
	Rollers	2	7	134	0.38
	Rough Terrain Forklifts	3	7	130	0.4
	Rubber Tired Dozers	3	8	247	0.4
	Rubber Tired Loaders	2	7	203	0.36
	Skid Steer Loaders	3	7	75	0.37
	Tractors/Loaders/Backhoes	4	8	97	0.37
Tracker Foundations	Air Compressors	1	7	78	0.48
	Excavators	7	7	158	0.38
	Generator Sets	3	7	84	0.74
	Graders	1	8	187	0.41
	Off-Highway Trucks	5	7	402	0.38
	Other Construction Equipment	1	2	172	0.42
	Rough Terrain Forklifts	5	7	100	0.4
	Rubber Tired Dozers	1	8	247	0.4
	Rubber Tired Loaders	1	7	203	0.36
	Scrapers	2	8	367	0.48
	Skid Steer Loaders	7	7	75	0.37
	Tractors/Loaders/Backhoes	2	8	97	0.37
Mechanical Installation	Air Compressors	15	7	78	0.48
	Cranes	1	7	231	0.29
	Forklifts	3	8	89	0.2
	Generator Sets	8	7	84	0.74
	Off-Highway Trucks	6	7	402	0.38

Phase	Off-Road Equipment	Quantity	Hours per day	Horse Power	Load Factor
	Other Construction Equipment	1	2	172	0.42
	Rough Terrain Forklifts	7	7	100	0.4
	Rubber Tired Loaders	3	7	203	0.36
	Skid Steer Loaders	1	7	75	0.37
	Tractors/Loaders/Backhoes	3	7	97	0.37
	Welders	1	8	46	0.45
Electrical /Instrumentation Work	Air Compressors	2	7	78	0.48
	Cranes	1	2	231	0.29
	Excavators	2	7	212	0.38
	Off-Highway Trucks	7	6	402	0.74
	Pavers	2	8	130	0.42
	Paving Equipment	2	8	132	0.36
	Rollers	2	8	80	0.38
	Rough Terrain Forklifts	4	7	100	0.4
	Rubber Tired Loaders	3	7	203	0.36
	Trenchers	2	7	78	0.5
Underground Cabling	Excavators	3	7	212	0.38
	Off-Highway Trucks	5	7	402	0.38
	Rollers	2	7	134	0.38
	Rubber Tired Loaders	1	7	203	0.36
	Skid Steer Loaders	3	7	75	0.37
	Trenchers	1	7	300	0.5

Source: 8minute Solar Energy

On-Road Mobile Sources

On-road mobile sources consist of employee and vendor vehicle trips. Stantec prepared a Traffic Analysis for the project to determine the number of vehicle trips that would be produced during construction. The number of vehicle trips varies by month depending on which construction phases are active, which affects the number of employees and materials delivery. The monthly trips were summarized for the entirety of the construction schedule by phase and divided by the total number of workdays to obtain the average daily trips for employees and vendors. Estimated trips buy phase are shown in Table 4.1-3.

Table 4.1-3: Kudu On-Road Vehicle Trips by Phase

		2021			2022										
Description	**Work Days**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**
Site Preparation & Grading	84	714	714	714											
Tracker Foundations	125			1,245	1,245	1,245	1,245	1,245							
Underground Cabling	125						56	56	56	56					
Mechanical Installation	146								56	56	56	56	56	56	
Underground Cabling	167									318	318	318	318	318	318
Total	647	714	714	1,958	1,245	1,245	1,301	1,301	112	431	374	374	374	374	318

Source: 8minute Solar Energy

4.1.2 Operational Modeling Assumptions

Once the project is constructed, maintenance would generally be limited to cleaning the PV panels, monitoring electricity generation, site security, and facility maintenance, including replacing or repairing inverters, wiring, and PV modules. The Project would require an operational staff of up to 20 full-time employees. It is possible that the project would share O&M, substation, ESS, and/or transmission facilities with future energy projects nearby, and in that case the number of onsite workers would be reduced. However, the model was run using a worst case scenario of 20 employees. Maintenance activities may occur seven days a week, 24 hours a day to ensure PV panel output when solar energy is available.

5.0 AIR QUALITY AND GREENHOUSE GAS IMPACT ANALYSIS

5.1 AIR QUALITY IMPACT ANALYSIS

Impact AIR-1 Conflict with or obstruct implementation of the applicable air quality plan?

Impact Analysis

Construction

Short-term increases in emissions would occur during the construction process. Construction-generated emissions are of temporary duration, lasting only as long as construction activities occur, but have the potential to represent a significant air quality impact. The construction of the Project would result in the temporary generation of emissions associated with various activities, including site preparation, grading, trenching, construction of roads, and installation of transmission lines, electrical infrastructure, substations, ESSs, solar array modules, and the O&M building. Emissions of fugitive dust would primarily be associated with ground-disturbing activities (e.g., site preparation, grading, trenching, etc.) and vehicle travel on unpaved surfaces. Emissions of ozone-precursor pollutants (ROG and NO_X) would largely be associated with off-road equipment use, and on-road vehicle operations associated with workers commuting to and from the Project and haul truck trips. Onsite vehicle parking areas for workers would be designated in areas that minimize vehicle travel distances, such as laydown areas located nearest the site access road and/or areas of primary construction activity. In addition, on-site worker trips would be limited to necessary activities only.

Estimated construction-generated emissions for 2021 and 2022 are summarized in Table 5.1-1. Construction emissions would not exceed any thresholds of significance. Emissions that do not exceed EKAPCD-recommended significance thresholds would be considered to have a less than significant impact and would therefore, not conflict with implementation of applicable air quality plans.

Table 5.1-1: Maximum Annual Construction Criteria Emissions (Unmitigated)

Year	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
	Tons Per Year					
2021	0.8	6.1	5.7	0.02	2.3	0.9
2022	3.4	23.8	27.9	0.09	4.4	1.9
EKAPCD Thresholds	25	25	N/A	27	15	N/A
Significant Impact?	No	No	N/A	No	No	N/A

Notes: CO = carbon monoxide; NO_X = nitrogen oxide; SO_2 = sulfur dioxide; $PM_{2.5}$ = particulate matter less than 2.5 micrometers; PM_{10} = particulate matter less than 10 micrometers; ROG = reactive organic gases

Operations

Consistency with air quality plans is typically conducted based on a comparison of Project-generated growth in employment, population, and vehicle miles traveled (VMT) within the region, which is used for development of the emissions inventories contained in the air quality plans. In addition, as noted above, projects that exceed applicable project-level CEQA significance thresholds would also be considered to have a potentially significant cumulative impact to regional air quality, which could interfere with regional air quality attainment and maintenance planning efforts.

While the Project would contribute to energy supply, which is one factor of population growth, the development of power infrastructure is a response to increased market demand and statewide regulatory mandates, including the Renewable Portfolio Standard (RPS) mandate, and is not a factor that induces new growth. Kern County planning documents already permit and anticipate a certain level of growth in the area of the Project along with attendant growth in energy demand. It is this anticipated growth that drives energy-production projects, not vice versa. The Project would supply energy to accommodate and support existing demand and projected growth, but it would not foster any new growth. Therefore, any link between the Project and growth in Kern County would be speculative.

Long-term increases in operational emissions of the ozone-precursor pollutants ROG and NO_X would equate to approximately 0.002 tons per year and 0.0002 tons per year, respectively. These emission increases would be negligible and would not exceed applicable significance thresholds of 25 tons per year for each pollutant. Furthermore, increases in operational emissions would likely be more than offset by displaced emissions from electricity generation.

Although displaced emissions may occur outside the air basin, operational emissions occurring within the basin would not exceed the EKAPCD-recommended significance thresholds. For these reasons, long-term operation of the Project would not conflict with implementation of applicable air quality plans. Therefore, this Project would not result in a large increase in employment that would significantly induce growth beyond levels assumed in existing Kern County planning documents.

Conclusion

The Project would not conflict with applicable air quality plans for the attainment or maintenance of ambient air quality standards.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is required.

Impact AIR-2	**Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard?**

Impact Analysis

With respect to cumulative air quality impacts, Kern County's Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports requires three steps for estimating the potential significance of cumulative impacts:

1. Evaluate localized impacts (Guideline Instruction 16a);
2. Evaluate consistency with existing air quality plans (Guideline Instruction 16b); and
3. Summarize CARB air basin emissions (Guideline Instruction 16c).

Localized Impacts

The criteria pollutant emissions generated during construction and operation by the Project would not exceed the applicable thresholds established by EKAPCD. As such, the Project would not result in an individual air quality impact during construction and operation of the PV solar facility. However, cumulative impacts could result if the Project's incremental effect combined with impacts of other past, present, and reasonably foreseeable future projects exceed the EKAPCD thresholds.

Cumulative impacts from the Project, when considered with nearby, reasonably foreseeable planned solar projects, would occur only during Project construction since Project operation emissions are expected to be negligible. After that, there would be minimal emissions and less than significant cumulative impacts during operation of the Project.

A cumulative project list was not provided for the Project. Future solar development, beyond what has been filed with Kern County, is speculative and therefore not considered as part of this analysis. It can be conservatively assumed that if the Project and additional solar projects would develop concurrently, construction activities would not contribute emissions of criteria pollutants (due to grading activities and the use of heavy-duty diesel equipment) that would be cumulatively considerable. Therefore, it can be assumed that temporary cumulative impacts would be less than significant with respect to localized construction emissions and would not interfere with attainment of applicable air quality standards.

With respect to operational emissions, the concurrent operation of the Project and other projects would not be anticipated to result in emissions that would be cumulatively considerable. Given the nature of solar projects, the primary source of criteria pollutant emissions would be generated during the construction phases. During operation, the only likely source of emissions for solar facilities would be limited to vehicular emissions associated with routine employee vehicle trips for maintenance and monitoring activities. Additionally, employee trips would also be made for the washing of PV surface panels, which would likely occur seasonally throughout the year. Overall, the combined operational emissions from the Project and other solar projects would not exceed EKAPCD CEQA thresholds. Therefore, no significant cumulative air quality impacts would occur with respect to localized operation emissions.

Consistency with Existing Air Quality Plans

The Kern Council of Governments (Kern COG) Regional Conformity Analysis Determination demonstrates that the regional transportation expenditure plans in the Kern County portion of the Mojave Desert air quality planning area will not hinder the efforts set out in CARB's State Implementation Plan for the area's nonattainment pollutant (ozone). The analysis uses an adopted regional growth forecast governed by both the adopted Kern COG Policy and Procedure Manual and a Memorandum of Understanding between the City of Bakersfield, County of Kern, and Kern COG.

Operation of the Project would not exceed any established EKAPCD emissions thresholds. During operations, the Project site is expected to be staffed by 20 operations personnel during normal weekday working hours. It is anticipated that these employees would be drawn from the existing Kern County population. The Project would not generate population, households, or substantial employment for any of the traffic analysis zones used to determine conformity. Therefore, the Project would be consistent with the adopted growth forecast and would be in conformance with the Kern COG Regional Conformity Analysis Determination.

CARB Air Basin Emissions

The inventory of air emissions in California is maintained by CARB. ROG, NO_X, and PM_{10} emissions data for both the MDAB and the subset that is the Kern County portion of the MDAB (i.e., the area that is under the jurisdiction of the EKAPCD) was obtained from the CARB Emission Inventory database. The data for both areas were obtained for the 2018 and 2021 Estimated Annual Average Emissions. Data for the Kern County portion of the MDAB are presented in Table 5.1-2 and for the entire MDAB in Table 5.1-3. Table 5.1-4 shows the emissions estimates for the Project. Included in these tables are the relative portions of the total inventory that fall into the four general categories of emissions. These categories are as follows:

- **Stationary Sources:** include non-mobile sources like power plants, refineries, and manufacturing facilities.
- **Areawide Sources:** those where the emissions are spread over a wide area, such as consumer products, fireplaces, road dust, and farming operations.
- **Mobile Sources:** include on-road sources like automobiles, motorcycles, and trucks and off-road sources like small off-road engines and equipment, off-road recreational vehicles, farm and construction equipment, forklifts, locomotives, commercial marine vessels, and marine pleasure craft.
- **Natural Sources:** non-manmade emission sources, which include biological and geological sources, wildfires, windblown dust, and biogenic emissions from plants and trees.

Table 5.1-2: Emissions within Kern County Portion of Mojave Desert Air Basin

Inventory Segment	2018 Emissions (Tons/Year)			2021 Emissions (Tons/Year)		
	ROG	NO_X	PM_{10}	ROG	NO_X	PM_{10}
Total Stationary Source Emissions	457.71	7,454.40	1,187.35	471.95	7,698.95	1,225.67
Percent Stationary Sources	0.13	0.65	0.20	0.13	0.69	0.21
Total Areawide Source Emissions	921.63	206.23	3,527.73	950.83	211.70	3,535.76
Percent Areawide Sources	0.25	0.02	0.60	0.27	0.02	0.60
Total Mobile Source Emissions	2,254.24	3,872.29	1,182.24	2,138.90	3,289.75	1,174.57
Percent Mobile Sources	0.62	0.34	0.20	0.60	0.29	0.20
Total Emissions	3,633.58	11,532.91	5,897.31	3,561.67	11,200.39	5,936.00

Notes: NO_X = nitrogen oxide; PM_{10} = particulate matter less than 10 micrometers; ROG = reactive organic gases

Table 5.1-3: Emissions within Mojave Desert Air Basin

Inventory Segment	2018 Emissions (Tons/Year)			2021 Emissions (Tons/Year)		
	ROG	NO_X	PM_{10}	ROG	NO_X	PM_{10}
Total Stationary Source Emissions	6,916.97	26,196.93	21,891.24	7,433.59	28,302.43	22,466.48
Percent Stationary Sources	0.33	0.49	0.43	0.36	0.56	0.42
Total Areawide Source Emissions	5,480.22	715.00	26,960.73	5,702.18	718.03	28,214.14
Percent Areawide Sources	0.26	0.01	0.52	0.27	0.01	0.53
Total Mobile Source Emissions	8,727.77	26,040.09	2,556.46	7,709.49	21,358.30	2,523.61
Percent Mobile Sources	0.41	0.49	0.05	0.37	0.42	0.05
Total Emissions	21,124.96	52,952.01	51,408.43	20,845.26	50,378.76	53,204.23

Notes: NO_X = nitrogen oxide; PM_{10} = particulate matter less than 10 micrometers; ROG = reactive organic gases

Table 5.1-4: Emission Projections – Kudu Solar Project, Kern County, and Mojave Desert Air Basin

Scenario	Emissions (Tons/Year)		
	ROG	NO_X	PM_{10}
Kudu Solar Project (max annual emissions)	3.4	23.8	4.4
Kern County portion of MDAB	3,561.67	11,200.39	5,936.00
Mojave Desert Air Basin	20,845.26	50,378.76	53,204.23
Kudu Solar Project Percent of Kern portion of MDAB	0.10%	0.21%	0.07%
Kudu Solar Project Percent of MDAB	0.02%	0.05%	0.01%

Notes: The emission estimates for Kern County and the MDAB are based on 2021 projections. The Kudu Solar Project emission estimates are for the construction during the years of 2021-2022.

NO_X = nitrogen oxide

PM_{10} = particulate matter less than 10 micrometers; ROG = reactive organic gases

As shown in Table 5.1-4, the Project's contribution to regional air emissions in Kern County and in the MDAB would be very small (non-cumulatively considerable) in terms of county- and region-wide emissions. When compliance with applicable rules such as the EKAPCD's required emissions controls are considered, the regional contribution to the cumulative impact would be negligible.

Because cumulative construction would not result in significant emissions of NO_X and PM_{10} for which the EKAPCD and surrounding air districts of the San Joaquin Valley and MDAB are in nonattainment (ozone, and PM_{10}), cumulative construction emissions would not result in a cumulatively considerable net increase. Because the Project would not result in significant operational emissions of criteria pollutants, the Project would not contribute to a long-term cumulative increase in criteria pollutants. In fact, the Project could result in a positive cumulative benefit to air quality in the region as it would introduce a non-fossil fuel-based energy source.

Conclusion

The construction of the Project would not result in cumulatively considerable net increase of NO_X and PM_{10} for which the region is in nonattainment under applicable federal or state ambient air quality standards (including releasing emissions that exceed quantitative thresholds for ozone precursors)

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is required.

Impact AIR-3 Expose sensitive receptors to substantial pollutant concentrations?

Impact Analysis

The term sensitive receptors refer to specific population groups, and the land uses where individuals would reside for long periods. Sensitive receptors located near the Project predominantly consist of rural residential dwellings located at varying distances from the Project site. The nearest sensitive receptors are approximately 0.4 mile from the northwestern portion of the Project.

Implementation of the Project would not result in the long-term operation of any emission sources that would adversely affect nearby sensitive receptors. However, short-term construction activities could result in temporary increases in pollutant concentrations. Pollutants of primary concern commonly associated with construction-related activities include TACs (i.e., DPM), asbestos, and fugitive dust. Within the Project area, the potential for increased occurrences of Valley Fever is also of concern. Localized air quality impacts associated with these pollutants are discussed in greater detail, as follows:

Toxic Air Contaminants

As noted above, implementation of the Project would not result in the long-term operation of any major onsite stationary sources of TACs. However, construction of the Project may result in temporary increases in emissions of DPM associated with the use of off-road diesel equipment. Health-related risks associated with diesel-exhaust emissions are primarily associated with long-term exposure and associated risk of contracting cancer. As such, the calculation of cancer risk associated with exposure of to TACs are typically calculated based on a long-term (e.g., 70-year) period of exposure. The use of diesel-powered construction equipment, however, would be temporary and episodic and would occur over a relatively large area. Construction activities would occur over an approximately 1-year construction period, which would constitute approximately 1.4 percent of the typical 70-year exposure period. In addition, the nearest receptors are approximately 0.4 mile from the Project. For these reasons and given the relatively high dispersive properties of DPM, exposure to construction-generated DPM would not be anticipated to exceed applicable thresholds (i.e., incremental increase in cancer risk of 10 in one million).

Naturally Occurring Asbestos

Naturally-occurring asbestos, which was identified by CARB as a TAC in 1986, is located in many parts of California and is commonly associated with ultramafic rock. The Project site is not located near any areas that are likely to contain ultramafic rock. As a result, risk of exposure to asbestos during the construction phase would be considered less than significant.

Construction Fugitive Dust

During construction (site preparation and grading), fugitive dust (PM_{10}) would be generated from site grading and other earth-moving activities. The majority of this fugitive dust would remain localized and would be deposited near the Project site. Mitigation Measure AIR-1 requires the preparation of a Fugitive Dust Control Plan in accordance with EKAPCD Rule 402. Implementation of Mitigation Measure AIR-1 would reduce potential impacts to less than significant level.

Carbon Monoxide

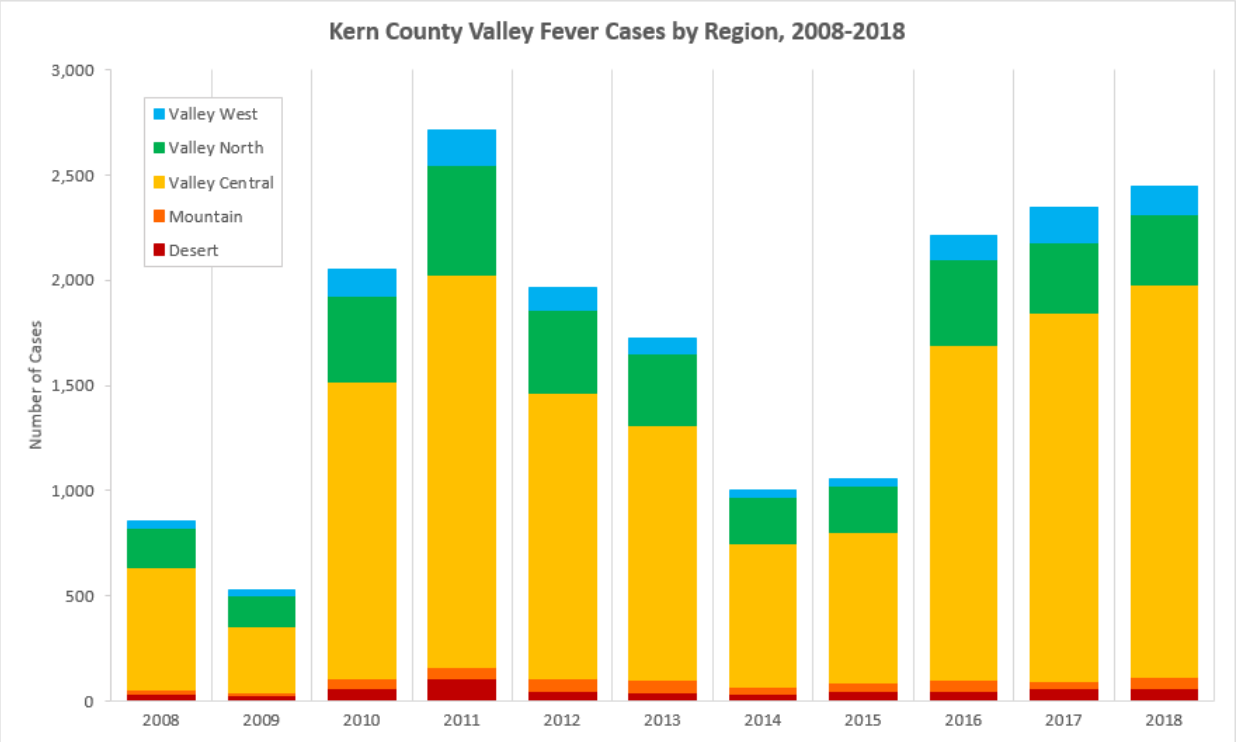
Localized concentrations of CO are typically associated with the idling of vehicles, particularly in highly congested areas. For this reason, the areas of primary concern are congested roadway intersections that experience high levels of vehicle traffic with degraded levels of service (LOSs). With regard to potential increases in CO concentrations that could potentially exceed applicable ambient air quality standards, signalized intersections that are projected to operate at an unacceptable LOS E or F are of particular concern.

Based on the traffic analysis prepared for this Project, nearby roadways would continue to operate at LOS C, and the two-lane highway segment would continue to operate at LOS D. As a result, the Project would not be anticipated to result in or contribute to unacceptable levels of service (i.e., LOS E or F). Implementation of the proposed Project would not be anticipated to result in a substantial increase in localized CO concentrations having the potential to exceed applicable ambient air quality standards. Localized concentrations of CO are, therefore, considered to be less than significant.

Valley Fever

Valley Fever is an infection caused by the fungus *Coccidioidomycosis*. Coccidioidomycosis spores can become airborne after contaminated soil and dust are disturbed. According to the Kern County Public Health Department's Valley Fever Website, the desert region of Kern County where the Project is located has a lower incidence rate compared to the other regions of the County (Kern County Public Health Services Department 2018)

Figure 5.1-1: Valley Fever Incidences – Kern County



Source: Kern County Public Health Services Department 2018

Nevertheless, construction activities would include ground-disturbing activities, which could result in an increased potential for exposure of nearby residents and onsite construction workers to airborne spores if they are present. As a result, the potential for increased exposure and contraction of Valley Fever would be considered to have a potentially significant impact. Mitigation Measure AIR-2 would require the inclusion of additional control measures into the Fugitive Dust Control Plan to address Valley Fever. Implementation of Mitigation Measure AIR-2 would reduce impacts to a less than significant level.

Level of Significance Before Mitigation

Potentially Significant Impact.

Mitigation Measures

MM AIR-1 **Fugitive Dust Control Plan.** A Fugitive Dust Control Plan shall be developed for the Project. The plan shall address short-term construction, long-term operational, and decommissioning activities. The plan shall be endorsed by the EKAPCD prior to the start of any earthmoving activity. The plan shall include all EKAPCD-recommended measures including but not limited to the following:

a) Vehicle speed for all onsite construction vehicles shall not exceed 15 miles per hour on any unpaved surface at the construction site. Signs identifying construction vehicle speed limits shall be posted along onsite roadways at the site entrance and exit and along unpaved site access roads.

b) All onsite unpaved roads and offsite unpaved Project-site access road(s) shall be effectively stabilized of dust emissions using water or EKAPCD-approved dust suppressants/palliatives sufficient to prevent wind-blown dust exceeding 20 percent opacity at nearby residences or public roads. If water is used, watering shall occur a minimum of three times daily, sufficient to keep soil moist along actively used roadways. During the dry season, unpaved road surfaces and vehicle parking and staging areas shall be watered immediately prior to periods of high use (e.g., worker commute periods, truck convoys, etc.) Reclaimed (non-potable) water shall be used to the extent available.

c) Reduce and/or phase the amount of the disturbed area (e.g., grading, excavation) where possible.

d) All disturbed areas shall be sufficiently watered or stabilized by an EKAPCD- approved methods to prevent excessive dust. On dry days, watering shall occur a minimum of three times daily on actively disturbed areas. Watering frequency shall be increased whenever wind speeds exceed 15 miles per hour or, as necessary, to prevent wind-blown dust exceeding 20 percent opacity at nearby residences or public roads. Reclaimed (non-potable) water shall be used to the extent available.

e) All clearing, grading, earth moving, and excavation activities will cease during periods when dust plumes of 20 percent or greater opacity affect public roads or nearby occupied structures.

f) All disturbed areas anticipated to be inactive for periods of 30 days or more shall be treated to minimize wind-blown dust emissions. Treatment may include but is not limited to the application of an EKAPCD-approved chemical dust suppressant, gravel, hydro-mulch, revegetation/seeding, or wood chips.

g) All active and inactive disturbed surface areas shall be compacted where feasible.

h) Limit equipment and vehicle access to disturbed areas.

i) Where applicable, permanent dust control measures shall be implemented as soon as possible following completion of any soil disturbing activities.

j) Stockpiles of dirt or other fine loose material shall be stabilized by watering or other appropriate methods sufficient to reduce visible dust emissions to a limit of 20 percent opacity. If necessary and where feasible, three-sided barriers shall be constructed around storage piles and/or piles shall be covered by use of tarps, hydro-mulch, woodchips, or other materials sufficient to minimize wind-blown dust.

k) Water shall be applied prior to and during the demolition of onsite structures sufficient to minimize wind-blown dust.

l) Where acceptable to the fire department, weed control will be accomplished by mowing instead of disking, thereby leaving the ground undisturbed and with a mulch covering.

m) All trucks hauling dirt, sand, soil, or other loose materials are to be covered or shall maintain at least 2 feet of freeboard (minimum vertical distance between top of the load and top of the trailer) in accordance with California Vehicle Code Section 23114.

n) Gravel pads, grizzly strips, or other material track-out control methods approved for use by the EKAPCD shall be installed where vehicles enter or exit unpaved roads onto paved roadways.

o) Haul trucks and off-road equipment leaving the site shall be washed with water or high-pressure air and/or use rocks/grates at the Project entry points when necessary to remove soil deposits and to minimize the track-out/deposition of soil onto nearby paved roadways.

p) Paved road surfaces located adjacent to the site access road(s), including adjoining paved aprons, shall be cleaned as necessary to remove visible accumulations of track-out material. If dry sweepers are used, the area shall be sprayed with water prior to sweeping to minimize the entrainment of dust. Reclaimed water shall be used to the extent available.

q) Portable equipment, 50 horsepower or greater, used during construction activities (e.g., portable generators, concrete batch plant) will require California statewide portable equipment registration (issued by CARB) or an EKAPCD permit.

r) The Fugitive Dust Control Plan shall identify a designated person or persons to monitor the fugitive dust emissions and enhance the implementation of the measures as necessary to minimize the transport of dust offsite and to ensure compliance with identified fugitive dust control measures. Their duty hours shall include holidays and weekend periods when work may not be in progress. The names and telephone numbers of such persons shall be provided to the EKAPCD Compliance Division prior to the start of any grading, earthwork, or demolition.

s) Signs shall be posted at the Project site entrance and written notifications shall be provided a minimum of 30 days prior to initiation of Project construction to residential land uses located within1,000 feet of the Project site. The signs and written notifications shall include the following information: (a) Project name; (b) anticipated construction schedule(s); and (c) telephone number(s) for designated construction activity monitor(s) or, if established, a complaint hotline.

t) The designated construction monitor will document and immediately notify EKAPCD of any air quality complaints received. If necessary, the 69SV 8ME LLC and/or contractor will coordinate with EKAPCD to identify any additional feasible measures and/or strategies to be implemented to address public complaints.

MM AIR-2 **Valley Fever Control Measures.** To minimize personnel and public exposure to potential Valley Fever-containing dust both on- and offsite, the following additional control measures shall be included in the Fugitive Dust Control Plan to be prepared for this Project:

a) Equipment, vehicles, and other items shall be thoroughly cleaned of dust before they are moved offsite to other work locations.

b) Wherever possible, grading and trenching work shall be phased so that earth-moving equipment is working well ahead or downwind of workers on the ground.

c) The area immediately behind grading or trenching equipment shall be sprayed with water before ground workers move into the area.

d) In the event that a water truck runs out of water before dust is sufficiently dampened, ground workers being exposed to dust are to leave the area until a full truck resumes water spraying.

e) All heavy-duty earth-moving vehicles shall be closed-cab and equipped with a high-efficiency particulate air-filtered system.

f) Workers shall receive training to recognize the symptoms of Valley Fever and shall be instructed to promptly report suspected symptoms of work-related Valley Fever to a supervisor. Evidence of training shall be provided to the Kern County Planning and Community Development Department within 24 hours of the training session.

g) A Valley Fever informational handout shall be provided to all onsite construction personnel. The handout shall, at a minimum, provide information regarding the symptoms, health effects, preventative measures, and treatment.

Level of Significance After Mitigation

Less Than Significant Impact.

Impact AIR-4 Create objectionable odors affecting a substantial number of people?

Impact Analysis

Land uses that commonly emit odorous compounds include dairies, agricultural uses, wastewater treatment plants, chemical plants, food processing facilities, composting, refineries, and fiberglass molding facilities. The Project includes the construction and operation of PV facilities, which would not result in the emission of odorous compounds. According to the 2017 Ozone Attainment Plan prepared by EKAPCD, wind direction in the Air Basin travels from the northwest to southeast and then is transported north. This transport direction would help fugitive dust

and odorous diesel emissions generated from construction activities move away from nearby receptors, thus reducing nuisance and annoyances. Additionally, construction activities would be temporary and would be controlled by the implementation of PM_{10} control measures in accordance with EKAPCD Rule 402. The operational phase of the Project would not emit any odorous compounds.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is required.

5.2 GREENHOUSE GAS IMPACTS

Impact GHG-1	**Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

Impact Analysis

Construction and operation of the Project would result in GHG emissions. The Project would generate GHG emissions during construction and routine operational activities at the site. During construction, GHG emissions would be generated from operation of both on-road and off-road equipment. Table 5.2-1 provides a summary of construction GHG emissions.

Table 5.2-1: Total Annual Amortized GHG Emissions

	Operational Emissions $MTCO_2e$
2021	1,850
2022	7,702
Total	**9,552**
Amortized Construction Emissions	**318**
SCAQMD CEQA/GHG Threshold	*10,000*
EKAPCD CEQA/GHG Threshold	*25,000*
Significant Impact?	No

Notes:
CEQA = California Environmental Quality Act
EKAPCD = Eastern Kern Air Pollution Control District
GHG = greenhouse gas
$MTCO_2e$ = metric tons carbon dioxide equivalent
SCAQMD = South Coast Air Quality Management District

Once operational, emissions associated with the Project would be limited to vehicle trips associated with routine maintenance and monitoring activities at each of the sites. These emissions would be negligible and therefore are not addressed further.

EKAPCD has not established a CEQA significance threshold for construction or operation-related GHG emissions where it is not the Lead Agency. EKAPCD has established a threshold of 25,000 $MTCO_2e$ for projects where it is the Lead Agency. The South Coast Air Quality Management District (SCAQMD) has also adopted a threshold for industrial projects of 10,000 $MTCO_2e$ per year for the sum of annual operational GHG emissions and total construction GHG emissions amortized over 30 years.

As shown in Table 5.2-1, the Project would be below the EKAPCD and SCAQMD thresholds for total Project emissions and well below the thresholds after amortizing the construction emissions. Therefore, the GHG emissions from the proposed Project would not have significant impacts on climate change.

Solar projects are an integral part of CARB's emission reduction strategy presented in the Scoping Plans. The 2017 Scoping Plan specifically addresses critical complementary measures directed at emission sources that are included in the cap-and-trade program that are designed to achieve cost-effective emissions reductions while accelerating the necessary transition to the low-carbon economy. One of these measures was the RPS, which was to promote multiple objectives, including diversifying the electricity supply by accelerating the transformation of the electricity sector, including investment in the transmission infrastructure and system changes to allow integration of large quantities of intermittent wind and solar generation. Therefore, this Project complies with an approved GHG emission reduction plan and is presumed to have less-than-significant GHG impacts.

Displacement of Greenhouse Gases

The proposed renewable source of energy could displace electricity generated by fossil fuel combustion and provide low-GHG electricity to consumers. The estimated reduction in GHG emissions through electricity displacement is calculated by assuming that the solar power displaces electricity generated by dispatchable natural-gas fired combined-cycle power plants and that the Project has a capacity factor of 26 percent. Natural gas energy requirements for generation by combined-cycle power plants and emission factors from the Climate Registry were used to estimate the displaced emissions. At 500 MW, the Project would displace 398,439 $MTCO_2e$.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is required.

Impact GHG-2	**Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

Impact Analysis

RPS has continued to evolve with increasing requirements on utilities to increase their percentage of renewable energy. The current renewable energy goals for California are as follows:

- 33 percent by the end of 2020
- 50 percent by the end of 2030

A key prerequisite to reaching these goals would be to provide sufficient electric transmission lines to renewable resource zones and system changes to allow integration of large quantities of intermittent wind and solar generation. The Project would help the state meet these goals by generating up to 500 MW of power to add to California's current renewable portfolio. Therefore, in this regard, the Project would help the state meet its goals under AB 32 and Senate Bill 350.

The Project would also be consistent with the county's policy to encourage solar development to conserve fossil fuels and improve air quality. In summary, the Project would not conflict with any applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions. This would be a less than significant impact.

Level of Significance Before Mitigation

Less Than Significant Impact.

Mitigation Measures

No mitigation is required.

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Appendix A REGULATORY CONTEXT

REGULATORY CONTEXT

In California, air quality management responsibilities exist at local, state, and federal levels of government. In general, air quality management planning programs developed during the past few decades have been in response to requirements established by the federal CAA. However, the enactment of the California Clean Air Act (CCAA) and its subsequent revisions has produced changes in the structure and administration of air quality management programs in California.

REGULATORY AGENCIES

Environmental Protection Agency

EPA is the federal agency responsible for overseeing state air programs as they relate to the FCAA, approving the state implementation plans (SIPs), establishing NAAQS and setting emission standards for mobile sources under federal jurisdiction. The EPA has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented.

California Air Resources Board

CARB is the state agency responsible for establishing CAAQS, adopting and enforcing emission standards for various sources, including mobile sources (except where federal law preempts their authority), fuels, consumer products, and TACs. CARB is also responsible for providing technical support to California's 35 local air districts, which are organized at the county or regional level, overseeing local air district compliance with state and federal law, approving local air plans and submitting the SIP to EPA. CARB also regulates mobile emission sources in California, such as construction equipment, trucks, and automobiles.

For the purposes of managing air quality in California, the California Health & Safety Codes gave CARB the responsibility to, "based upon similar meteorological and geographic conditions and consideration for political boundary lines whenever practicable," divide the state into air basins. Kern County is located within the MDAB.

Eastern Kern Air Pollution Control District

The air pollution control agency for the Kern County portion of the MDAB is the Eastern Kern Air Pollution Control District (EKAPCD). EKAPCD develops plans and implement control measures in their jurisdiction. These controls primarily affect stationary sources such as factories and plants. EKAPCD implements air quality programs required by state and federal mandates, enforces rules and regulations based on air pollution laws, and educates businesses and residents about their role in protecting air quality. EKAPCD is also responsible for managing and permitting existing, new, and modified sources of air emissions within the MDAB portion of Kern County.

REGULATORY ENVIRONMENT

EKAPCD Rules and Regulations

EKAPCD has primary responsibility for regulating stationary sources of air pollution situated within its jurisdictional boundaries. EKAPCD established and enforces rules and regulations based on federal and state air pollution laws. Applicable rules are as follows (EKAPCD 2019):

Rule 401 – Visible Emissions: Rule 401 of the EKAPCD's rules and regulations addresses discharge into the atmosphere of visible emissions from any single source. Visible emissions are described by the EKAPCD as a plume of dust or exhaust created by humanmade or natural sources. A violation is a discharge for a period or periods aggregating more than 3 minutes in any 1 hour which is:

A. As dark or darker in shade as designated as No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or

B. Of such opacity as to obscure an observer's view to a degree equal to or greater that does smoke described in Subsection A or 20 percent opacity.

Rule 402 – Fugitive Dust: Rule 402 of the EKAPCD's rules and regulations addresses significant humanmade dust sources from large operations. A large operation is defined as, "any active operation, including vehicle movement on unpaved roadways, on property involving in excess of 100 contiguous acres of disturbed surface area, or any earth-moving activity exceeding a daily volume of 7,700 cubic meters (10,000 cubic yards) three times during the most recent 365-day period." Rule 402 applies to specified bulk storage, earthmoving, construction and demolition, and humanmade conditions resulting in wind erosion, and contains the following requirements:

1. A person shall not cause or allow emissions of fugitive dust from any active operation to remain visible in the atmosphere beyond the property line of the emission source, excluding unpaved roadways.

2. A person shall utilize one or more Reasonably Available Control Measures to minimize fugitive dust emissions from each source type that is part of any active operation, including unpaved roadways.

3. A person shall not cause or allow downwind PM_{10} ambient concentrations to increase more than 50 $\mu g/m^3$ above downwind concentrations as determined by simultaneous upwind and downwind sampling utilizing high-volume particulate matter samplers or other EPA-approved equivalent method(s).

4. No person shall conduct a large operation without either: (1) conducting onsite PM_{10} air quality monitoring and associated recordkeeping; or (2) filing for and obtaining an approved fugitive dust emission control plan.

Rule 419 – Nuisance: Rule 419 states that a person shall not discharge from any source whatsoever such quantities of contaminants or other material that cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or that endanger the comfort, repose, health, or safety of such persons or the public or that cause or have a natural tendency to cause injury or damage to business or property.

Additionally, EKAPCD has determined commercial solar power plants generate fugitive dust emissions (PM_{10}) in eastern Kern County. Therefore, in accordance with Rule 201 (Permits Required) and 210.1 (New and Modified Stationary Source Review, NSR), the EKAPCD is requiring that each commercial solar facility obtain a District Air permit.

To assist in compliance with EKAPCD rules, including fugitive dust (Rule 402), the EKAPCD is requesting that each facility install upwind and downwind particulate matter air monitoring. The particulate matter air monitors will be used to assist solar facility operators in showing and maintaining compliance with EKAPCD rules and regulations.

EKAPCD Air Quality Plans

In Eastern Kern County, the entire area is under one ozone attainment strategy, but PM_{10} attainment strategies have been subdivided into the Indian Wells Valley area, the Kern River/Cummings Valley area, and the rest of the EKAPCD area. The Indian Wells Valley and the Kern River/Cummings Valley areas are considered separate planning areas for PM_{10} and have their own attainment strategies. The proposed project is not in either of these special areas, is in the unclassifiable/attainment area of EKAPCD, and therefore is not under the jurisdiction of any PM_{10} attainment plan.

Ozone Attainment Plan

In 2012, a portion of EKAPCD was classified “Marginal” non-attainment pursuant to the 2008 8-hour Ozone NAAQS Air Quality Designations. However, EKAPCD failed to meet the 0.075 ppm standard by the applicable attainment date and was reclassified as “Moderate” nonattainment effective June 3, 2016. As a result, EKAPCD was required to submit a SIP revision for the nonattainment area by January 1, 2017, which showed compliance with statutory and regulatory conditions applicable to the Moderate classification.

EKAPCD, in partnership with the CARB, conducted photochemical modeling along with supplemental analyses to determine whether EKAPCD could attain the 2008 Ozone NAAQS by the Moderate deadline. Modeling indicated that EKAPCD would not meet the 0.075 ppm standard by the Moderate deadline but could attain it by 2020, the attainment date for “Serious” nonattainment areas. Pursuant to Section 181(b)(3) of the CAA “Voluntary Reclassification”, the EKAPCD requested CARB formally submit a request to EPA asking for voluntary reclassification of the EKAPCD from “Moderate” to “Serious” non-attainment for the 2008, 8-hour Ozone NAAQS and revise the attainment date to December 31, 2020. A 2017 Ozone Attainment Plan was adopted by the EKAPCD on July 27, 2017, and forwarded the plan to CARB for consideration (EKAPCD 2017). On September 28, 2017 CARB adopted this 2017 Ozone Attainment Plan as a revision to the California SIP.

Kern County

The policies, goals, and implementation measures in the Kern County General Plan Land Use, Open Space and Conservation Element applicable to air quality as related to the project are provided below (Kern County 2004).

Goal: General Provisions

1. Ensure that the county can accommodate anticipated future growth and development while maintaining a safe and healthful environment and a prosperous economy by preserving valuable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.

Policies

18. The air quality implications of new discretionary land use proposals shall be considered in approval of major developments. Special emphasis will be placed on minimizing air quality degradation in the desert to enable effective military operations and in the valley region to meet attainment goals.

19. In considering discretionary projects for which an Environmental Impact Report must be prepared pursuant to the California Environmental Quality Act (CEQA), the appropriate decision making body, as part of its deliberations, will ensure that:

(a) All feasible mitigation to reduce significant adverse air quality impacts have been adopted; and

(b) The benefits of the proposed project outweigh any unavoidable significant adverse effects on air quality found to exist after inclusion of all feasible mitigation. This finding shall be made in a statement of overriding considerations and shall be supported by factual evidence to the extent that such a statement is required pursuant to CEQA.

20. The County shall include fugitive dust control measures as a requirement for discretionary projects and as required by the adopted rules and regulations of the San Joaquin Valley Unified Air Pollution Control District and the Kern County Air Pollution Control District on ministerial permits.

21. The County shall support air districts efforts to reduce PM_{10} and $PM_{2.5}$ emissions.

Implementation Measures

F. All discretionary permits shall be referred to the appropriate air district for review and comment.

G. Discretionary development projects involving the use of tractor-trailer rigs shall incorporate diesel exhaust reduction strategies including but not limited to:

(a) Minimizing idling time.

(b) Electrical overnight plug-ins.

H. Discretionary projects may use one or more of the following to reduce air quality effects:

(a) Pave dirt roads within the development.

(b) Pave outside storage areas.

(c) Provide additional low VOC producing trees on landscape plans.

(d) Use of alternative fuel fleet vehicles or hybrid vehicles.

(e) Use of emission control devices on diesel equipment.

(f) Develop residential neighborhoods without fireplaces or with the use of

(g) EPA certified, low emission natural gas fireplaces.

(h) Provide bicycle lockers and shower facilities onsite.

(i) Increase the amount of landscaping beyond what is required in the Zoning Ordinance (Ch. 19.86).

(j) The use and development of park and ride facilities in outlying areas.

(k) Other strategies that may be recommended by the local air pollution control districts.

CLIMATE CHANGE

Federal Climate Change Legislation

The federal government is taking a number of common-sense steps to address the challenge of climate change. EPA collects various types of GHG emissions data. This data helps policy makers, businesses, and EPA track GHG emissions trends and identify opportunities for reducing emissions and increasing efficiency. EPA has been collecting a national inventory of GHG emissions since 1990 and in 2009 established mandatory reporting of GHG emissions from large GHG emissions sources.

EPA is also getting GHG reductions through partnerships and initiatives; evaluating policy options, costs, and benefits; advancing the science; partnering internationally and with states, localities, and tribes; and helping communities adapt.

State Climate Change Legislation

Executive Order S 3-05

On June 1, 2005, the Governor issued Executive Order S 3-05, which set the following GHG emission reduction targets:

By 2010, reduce GHG emissions to 2000 levels;
By 2020, reduce GHG emissions to 1990 levels;
By 2050, reduce GHG emissions to 80 percent below 1990 levels.
To meet these targets, the Climate Action Team prepared a report to the Governor in 2006 that contains recommendations and strategies to help ensure that the targets in Executive Order S-3-05 are met.

Assembly Bill 32 (AB 32)

California AB 32, also known as the Global Warming Solutions Act of 2006 (codified in the California Health and Safety Code, Division 25.5), requires CARB to establish a statewide GHG emissions cap for 2020 based on 1990 emission levels. AB 32 required CARB to adopt regulations that identify and require selected sectors or categories of emitters of GHGs to report and verify their statewide GHG emissions, and CARB is authorized to enforce compliance with the program. Under AB 32, CARB was also required to adopt a statewide GHG emissions limit equivalent to the statewide GHG emissions levels set in 1990, which must be achieved by 2020. The 2020 GHG emissions limit is 431 $MMTCO_2e$.

Toward achieving the maximum technologically feasible and cost-effective GHG emission reductions, AB 32 permits the use of market-based compliance mechanisms and requires CARB to monitor compliance with and enforce any rule, regulation, order, emission limitation, emissions reduction measure, or market-based compliance mechanism that it adopts. CARB has adopted nine early action measures for implementation, including the following:

Ship electrification at ports
Reduction of high global-warming-potential gases in consumer products
Heavy-duty vehicle GHG emission reduction (aerodynamic efficiency)
Reduction of perfluorocarbons from semiconductor manufacturing
Improved landfill gas capture, reduction of hydroflourocarbon-134a from do-it-yourself motor vehicle servicing
Sulfur hexafluoride reductions from the non-electric sector, a tire inflation program, and a low-carbon fuel standard

Climate Change Scoping Plan

In December 2008, CARB approved the AB 32 Scoping Plan outlining the state's strategy to achieve the 2020 GHG emissions limit. The Scoping Plan estimates a reduction of 174 $MMTCO_2e$ (about 191 million U.S. tons) from the transportation, energy, agriculture, forestry, and high climate-change-potential sectors, and proposes a comprehensive set of actions designed to reduce overall GHG emissions in California, improve the environment, reduce dependence on oil, diversify California's energy sources, save energy, create new jobs, and enhance public health. The Scoping Plan must be updated every 5 years to evaluate the implementation of AB 32 policies to ensure that California is on track to achieve the 2020 GHG reduction goal. The First Update to the Climate Change Scoping Plan was approved by the CARB on May 22, 2014. In 2016, the Legislature passed Senate Bill (SB) 32, which codified a 2030 GHG emissions reduction target of 40 percent below 1990 levels. With SB 32, the Legislature passed companion legislation AB 197, which provides additional direction for developing the Scoping Plan. On December 14, 2017, the CARB approved the Second Update to the Climate Change Scoping Plan, the 2017 Climate Change Scoping Plan: The Strategy for Achieving California's 2030 Greenhouse Gas Target (CARB 2018).

Renewables Portfolio Standard

In 2002, a state law established the basic policy framework for the increased use of renewable energy resources in California, known as the Renewables Portfolio Standard (RPS). Specific requirements were established for investor-owned utilities, including a 20 percent target and provisions for the types of renewable resources that could be used to meet the target. The major eligible renewable energy resources, as defined by the California Energy Commission, include biomass, geothermal, solar, wind, and small hydroelectric facilities. Under the law, publicly-owned utilities (POUs) were directed to pursue voluntary actions to increase the use of renewable energy in their portfolios, but were allowed the flexibility to define their targets and the types of resources that could meet those targets. The Energy Commission and the California Public Utilities Commission work collaboratively to implement the RPS.

In 2006, new state policy heightened the need to increase the use of renewable energy as part of the state's GHG reduction efforts. In April 2011, Governor Brown signed SB X1-2 that revised the RPS target to be 33 percent renewables by 2020. The new RPS standards apply to all electricity retailers in the state, including POUs, investor-owned utilities, electricity service providers, and community choice aggregators. In October 2015, Governor Brown signed SB 350, which expands and increases the target of the RPS program to 50 percent by the end of 2030. SBs X1-2 and 350 included new enforcement provisions and direct CARB to collect financial penalties for any Notice of Violation issued by the California Energy Commission to a POU for its failure to comply with requirements of the state's RPS Program. Lastly, in 2018, SB 100 was signed into law, which again increased the RPS program to 60 percent by 2030 and requires all the state's electricity to come from carbon-free resources by 2045.

Senate Bill 375 (SB 375)

SB 375 passed the Senate on August 30, 2008 and was signed by the Governor on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions and contributes more than 40 percent of the GHG emissions in California, with automobiles and light trucks alone contributing almost 30 percent. SB 375 indicates that GHGs from automobiles and light trucks can be reduced by new vehicle technology. However, significant reductions from changed land use patterns and improved transportation are also necessary. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

Executive Order B-30-15

On April 29, 2015, the Governor issued Executive Order (EO) B-30-15, which added an interim target of GHG emissions reductions to help ensure that the state meets its 80 percent reduction by 2050 as set in EO S-3-05. The interim target is reducing GHG emissions by 40 percent by 2030. It also directs state agencies to update the Scoping Plan, update the Adaptation Strategy every 3 years, and take climate change into account in their planning and investment strategies. Additionally, it requires that the state's Five-Year Infrastructure Plan will take current and future climate change impacts into account in all infrastructure projects.

Executive Order B-18-12

EO-B-18-12 calls for significant reductions in state agencies' energy purchases and GHG emissions. The EO included a Green Building Action Plan, which provided additional details and specific requirements for the implementation of the EO.

Local Climate Change Policy

Eastern Kern Air Pollution Control District (EKAPCD)

The EKAPCD CEQA GHG Policy 42 adopted in 2012 establishes the process of evaluating new or modified stationary source GHG emissions impacts on global climate change for purposes of CEQA. However, since this policy specifically addresses projects where the EKAPCD has discretionary approval authority over new stationary source projects and serves as lead CEQA review agency when determining GHG emissions significance, the policy does not apply to the proposed project.

Appendix B AIR POLLUTANT AND GREENHOUSE GAS DESCRIPTIONS

CRITERIA AIR POLLUTANTS

Ozone

Ozone is not usually emitted directly into the air but is created at ground level by a chemical reaction between nitrogen oxides (NO_X) and volatile organic compounds (VOC), or reactive organic gases (ROG), in the presence of sunlight. For the most part, VOC and ROG are synonymous. Both are those portions of organic gases (i.e., hydrocarbons) that are reactive enough to be a concern with the formation of ozone. Sources of primary NO_X and ROG emissions are discussed below.

Ground-level ozone is the primary constituent of smog. Sunlight and hot weather cause ground-level ozone to form with the greatest concentrations usually occurring downwind from urban areas. Ozone is subsequently considered a regional pollutant.

Breathing ozone can trigger a variety of health problems, including chest pain, coughing, throat irritation, and congestion. It can worsen bronchitis, emphysema, and asthma. Ground-level ozone also can reduce lung function and inflame the linings of the lungs. Repeated exposure may permanently scar lung tissue. Ground-level ozone can also cause substantial damage to vegetation and other physical materials.

Because NO_X and ROG are ozone precursors, the health effects associated with ozone are also indirect health effects associated with significant levels of NO_X and ROG emissions.

Nitrogen Oxides (NOx)

NO_X is the generic term for a group of highly reactive gases that contain nitrogen and oxygen. While most NO_X is colorless and odorless, concentrations of nitrogen dioxide (NO_2) can often be seen as a reddish-brown layer over many urban areas. NO_X forms when carbon-based fuel is burned at high temperatures as in a combustion process. The primary sources of NO_X in Eastern Kern County are from on-road motor vehicles and industrial processes, which account for approximately 40 percent of the anthropogenic (human caused) NO_X emissions. Approximately 77 percent of the total on-road NO_X comes from heavy-duty diesel trucks, and 85 percent of the NO_X from industrial processes comes from mineral processing industries.

NO_X reacts with other pollutants to form ground-level ozone, nitrate particles, acid aerosols, and NO_2, which can cause respiratory problems. NO_X and the pollutants formed from NO_X can be transported over long distances by prevailing winds. Therefore, controlling NO_X is often most effective if done from a regional perspective, rather than focusing on the nearest sources.

Current scientific evidence links short-term NO_2 exposures ranging from 30 minutes to 24 hours with adverse respiratory effects, including airway inflammation in healthy people and increased respiratory symptoms in people with asthma. Also, studies show a connection between breathing elevated short-term NO_2 concentrations and increased visits to emergency departments and hospital admissions for respiratory issues, especially asthma.

Carbon Monoxide (CO)

Carbon monoxide (CO) is a colorless, odorless gas produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). CO levels tend to be highest during winter and periods of low wind speed

when meteorological conditions favor the accumulation of pollutants. This occurs when relatively low inversion levels trap pollutants near the ground and concentrate CO.

The primary source of CO in Eastern Kern County is from on-road motor vehicles, which contribute 35 percent of the total anthropogenic CO, of which 50 percent is generated by light-duty cars and trucks, and another 19 percent is generated by motorcycles. Other off-road engines and vehicles (primarily aircraft and off-road construction equipment) contribute another 22 percent. Higher levels of CO generally occur in areas with heavy traffic congestion and dissipate quickly.

CO is essentially inert to plants and materials but can have significant effects on human health. CO gas enters the body through the lungs, dissolves in the blood, and creates a solid bond to hemoglobin, not allowing it to form a loose bond with CO_2, which is essential to the CO_2/oxygen exchange to occur. Therefore, this firm binding reduces available oxygen in the blood and oxygen delivery to the body's organs and tissues.

Reactive Organic Gases (ROG)

ROGs or VOCs are defined as any compound of carbon, excluding CO, CO_2, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, that participates in atmospheric photochemical reactions. There are no state or national ambient air quality standards for ROG because they are not classified as criteria pollutants. However, they are regulated because a reduction in ROG emissions reduces certain chemical reactions that contribute to the formulation of ozone. ROGs are also transformed into organic aerosols in the atmosphere, which contribute to higher fine particulate matter less than 10 micrometers (PM_{10}) and lower visibility. In addition, some compounds that make up ROG are also toxic, like the carcinogen benzene, and are often evaluated as part of a toxic risk assessment.

ROG emissions primarily result from incomplete fuel combustion and the evaporation of chemical solvents and fuels. In Eastern Kern County, the primary source of ROG is from natural sources, primarily biogenic, making up approximately 65 percent of the total ROG emissions. Of the anthropogenic sources, approximately 42 percent come from other mobile sources (primarily aircraft), and 34 percent from on-road motor vehicles (primarily light duty cars and trucks and heavy-duty diesel trucks).

Particulate Matter

Particulate matter (PM) is a mixture of microscopic solids and liquid droplets suspended in air. This pollution is made up of many components, including acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores).

In Eastern Kern County, 72 percent of the total PM_{10} emissions come from the category labeled Miscellaneous Processes. The largest portions of the PM_{10} emissions from the Miscellaneous Processes category come from fugitive windblown dust (50 percent of the total for Miscellaneous Processes), construction and demolition (15 percent), and managed burning and disposal (14 percent).

Whereas a significant portion of PM_{10} emissions come from soil dislocation processes, fine particulate matter less than 2.5 micrometers ($PM_{2.5}$) is smaller and is more often a result of particulates coming from combustion sources. Subsequently, Miscellaneous Processes only represent 34 percent of the total $PM_{2.5}$, with managed burning and disposal (47 percent of Miscellaneous Processes) and fugitive dust being the main Miscellaneous Processes contributors. The category of Other Mobile Sources contributes approximately 19 percent of the total $PM_{2.5}$, with the vast majority coming from aircraft (94 percent of the Other Mobile Sources total).

The size of particles is directly linked to their potential for causing health problems. Small particles less than 10 micrometers in diameter, or PM_{10}, pose the greatest problems, because they can get deep into lungs and the bloodstream. Being even smaller, $PM_{2.5}$ will travel further into the lungs. Exposure to such particles can affect both lungs and heart. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including the following:

- premature death in people with heart or lung disease,
- nonfatal heart attacks,
- irregular heartbeat,
- aggravated asthma,
- decreased lung function, and
- increased respiratory symptoms, such as irritation of the airways, coughing or difficulty breathing.

Sulfur Dioxide (SO2)

Sulfur dioxide (SO_2) is one of a group of highly reactive gasses known as sulfur oxides. SO_2 is a colorless, irritating gas with a rotten egg smell formed primarily by the combustion of sulfur-containing fossil fuels. Nationwide, the largest sources of SO_2 emissions are from fossil fuel combustion at power plants and other industrial facilities. In Eastern Kern County, 92 percent of SO_2 emissions comes from industrial processes, of which 92 percent is from the mineral processes industry.

Current scientific evidence links short-term exposures to SO_2 ranging from 5 minutes to 24 hours with an array of adverse respiratory effects, including bronchoconstriction and increased asthma symptoms. These effects are particularly serious for asthmatics at elevated ventilation rates (e.g., while exercising or playing). SO_X can also react with other compounds in the atmosphere to form small particles. These particles penetrate deeply into sensitive parts of the lungs and can cause or worsen respiratory disease, such as emphysema and bronchitis, and can aggravate existing heart disease, leading to increased hospital admissions and premature death.

Lead

Lead is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. The health effects of lead poisoning include loss of appetite, weakness, apathy, and miscarriage; it can also cause lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract.

Gasoline-powered automobile engines were a major source of airborne lead by the use of leaded fuels. The use of leaded fuel has been mostly phased out with the result that ambient concentrations of lead have dropped dramatically.

Hydrogen Sulfide (H_2S)

Hydrogen sulfide (H_2S) is a colorless gas with the odor of rotten eggs. It is formed during bacterial decomposition of sulfur-containing organic substances. Also, it can be present in sewer gas and some natural gas and can be emitted as the result of geothermal energy exploitation. In Kern County, H_2S is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. H_2S is extremely hazardous in high concentrations, especially in enclosed spaces (800 parts per million [ppm] can cause death). The Occupational Safety and Health Administration regulates workplace exposure to H_2S.

Sulfates

Sulfates are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds primarily occur from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and is subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological processes.

The state sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardiopulmonary disease. Sulfates are particularly effective in degrading visibility, and due to the fact that they are usually acidic, can harm ecosystems and damage materials and property.

Visibility Reducing Particles

Visibility reducing particles are a mixture of suspended particulate matter consisting of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary greatly in shape, size, and chemical composition and can be made up of many different materials, such as metals, soot, soil, dust, and salt.

The standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Vinyl Chloride

Vinyl chloride (chloroethene), a chlorinated hydrocarbon, is formed when other substances, such as trichloroethane, trichloroethylene, and tetrachloro-ethylene, are broken down. Vinyl chloride is used to make polyvinyl chloride, which is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials. Vinyl chloride is a colorless gas with a mild, sweet odor.

Short-term exposure to high levels of vinyl chloride in air causes central nervous system effects such as dizziness, drowsiness, and headaches. Long-term exposure to vinyl chloride through inhalation and oral exposure causes in liver damage. Cancer is a major concern from exposure to vinyl chloride via inhalation. Vinyl chloride exposure has been shown to increase the risk of angiosarcoma, a rare form of liver cancer in humans.

TOXIC AIR CONTAMINANTS

The California Air Resources Board (CARB) prepares identification reports on candidate substances under consideration for listing as toxic air contaminants (TACs). The reports and summaries describe the uses and the extent of emissions in California resulting in public exposure, together with their potential health effects.

Acetaldehyde (C_2H_4O)

Acetaldehyde is directly emitted into the atmosphere and also formed in the atmosphere from photochemical oxidation. Sources include combustion processes such as exhaust from mobile sources and fuel combustion from stationary internal combustion engines, boilers, and process heaters. In California, photochemical oxidation is the largest source of acetaldehyde concentrations in the ambient air. Approximately 30 percent of the statewide acetaldehyde emissions can be attributed to on-road motor vehicles, with an additional 50 percent attributed to other mobile sources, such as construction and mining equipment, aircraft, recreational boats, and agricultural equipment.

Area-wide sources of emissions, which contribute 18 percent of the statewide acetaldehyde emissions, include the burning of wood in residential fireplaces and wood stoves. Stationary sources contribute 2 percent of the statewide acetaldehyde emissions.

Acetaldehyde is an irritant of the skin, eyes, mucous membranes, throat, and respiratory tract. Symptoms of exposure to this compound include nausea, vomiting, headache, dermatitis, and pulmonary edema (fluid in the lungs). These effects may be delayed. Acetaldehyde has a generally narcotic action, and large doses cause death by respiratory paralysis. It may also cause drowsiness, delirium, hallucinations, and brain damage. Exposure may also cause slow mental response; severe damage to the mouth, throat, and stomach; accumulation of fluid in the lungs; chronic respiratory disease; kidney and liver damage; throat irritation; dizziness; and reddening and swelling of the skin. It may also cause photophobia. Liquid splashed in the eyes may cause a burning sensation, tearing, blurred vision, and transient conjunctivitis.

Benzene (C_6H_6)

Benzene is highly carcinogenic and occurs throughout California. In addition to being a carcinogen, benzene also has non-cancerous health impacts. Current estimates show that approximately 87 percent of the benzene emitted in California comes from motor vehicles, including from evaporative leakage and unburned fuel exhaust. The predominant sources of total benzene emissions in the atmosphere are gasoline fugitive emissions and gasoline motor vehicle exhaust. Approximately 47 percent of the statewide benzene emissions can be attributed to on-road motor vehicles, with an additional 40 percent attributed to other mobile sources such as recreational boats, off-road recreational vehicles, and lawn and garden equipment.

People who breathe in high levels of benzene may develop drowsiness, dizziness, rapid or irregular heartbeat, headaches, tremors, confusion, and/or death (at very high levels) within minutes to several hours of exposure. Benzene works by causing cell malfunction. Blood is highly impacted from long-term (a year or more) exposure to benzene. Benzene can inhibit the production of red blood cells, causing anemia; can damage the immune system by changing levels of antibodies in the blood and reducing white blood cell counts, leading to increased risk of infection; and can cause excessive bleeding.

Although the health risk from benzene is still substantial, emissions have been reduced significantly over the last decade and will be reduced further in California through a progression of regulatory measures and control technologies.

1,3-Butadiene (vinyl ethylene) (C_6H_6)

In California, 1,3-butadiene has been identified as a carcinogen. The majority of 1,3-butadiene emissions come from incomplete combustion of gasoline and diesel fuels. Mobile sources account for 53 percent of total statewide emissions. Area sources, such as agricultural waste burning, open burning associated with forest management, and woodstoves and fireplaces, contribute to approximately 21 percent of statewide emissions.

Exposure to the butadiene vapors can cause neurological effects, such as blurred vision, fatigue, headache, and vertigo, at very high levels. Dermal exposure of humans to 1,3- butadiene may lead to frostbite. The gas irritates the eyes, nose, and throat. An acute dose can cause central nervous system damage, blurred vision, nausea, fatigue, headache, decreased pulse rate and blood pressure, and loss of consciousness. Long-term exposures at lower levels can damage the heart and lungs.

Carbon Tetrachloride (tetrachloromethane) (CCl_4)

In California, carbon tetrachloride has been identified as a carcinogen, central nervous system depressant, and mild eye and respiratory tract irritant. Primary sources of carbon tetrachloride in California include chemical and allied product manufacturers and petroleum refineries. Unlike many of the other TACs, carbon tetrachloride is emitted primarily by sources other than motor vehicles, and there are virtually no emissions within California. However, because carbon tetrachloride persists in the atmosphere for decades—the estimated atmospheric lifetime is 50 years—background concentrations still pose a health risk.

Accidental acute exposure incidents and animal experiments indicate that carbon tetrachloride can produce liver and kidney damage and have numerous effects on the nervous system. Chronic exposure of humans in occupational settings has produced neurological effects and liver damage. Adverse health effects other than cancer are not expected to occur due to inhalation of carbon tetrachloride at current atmospheric concentrations. Peak exposure concentrations and measured ambient concentrations are at least two orders of magnitude lower than those concentrations that are associated with chronic adverse health effects in occupational settings or which have produced acute effects in animal experiments.

Hexavalent Chromium (Cr VI)

In California, hexavalent chromium (Cr VI) has been identified as a carcinogen. The principal acute effects are renal toxicity, gastrointestinal hemorrhage, and intravascular hemolysis. Fuel combustion from mobile sources is the largest source of Cr VI emissions. Combustion from stationary sources is also a large source of emissions. Chrome plating is no longer the primary source of Cr VI emissions in the state. Cr VI emissions from plating have declined significantly from previous toxic inventories due to many platers switching to the use of trivalent chromium (Cr III) in place of Cr VI.

Chromium primarily occurs in the environment in two valence states, Cr III and Cr VI. Exposure may occur from natural or industrial sources of chromium. Cr III is much less toxic than Cr VI. The respiratory tract is also the major target organ for Cr III toxicity, like Cr VI. Cr III is an essential element in humans. The body can detoxify some amount of Cr VI to Cr III.

The respiratory tract is the major target organ for acute and chronic Cr VI toxicity from inhalation. Shortness of breath, coughing, and wheezing were reported from a case of acute exposure to Cr VI, while perforations and ulcerations of the septum, bronchitis, decreased pulmonary function, pneumonia, and other respiratory effects have been noted from chronic exposure. Human studies have clearly established that inhaled Cr VI results in an increased risk of lung cancer. Animal studies have shown Cr VI to cause lung tumors via inhalation exposure.

para-Dichlorobenzene ($C_6H_4Cl_2$)

In California, para-dichlorobenzene, also called 1,4-dichlorobenzene, has been identified as a carcinogen. Long-term inhalation exposure may also affect the liver, skin, and central nervous system in humans. Para-dichlorobenzene is a chlorinated aromatic hydrocarbon first registered for use in the United States in 1942 as a fumigant insecticide and repellent. Para-dichlorobenzene turns directly from a solid into a gas in a process called sublimation.

The primary sources of para-dichlorobenzene include consumer products such as non-aerosol insect repellents and solid and gel air fresheners. These sources contribute to 99 percent of statewide para-dichlorobenzene emissions. People who have been exposed to para-dichlorobenzene have experienced nausea, vomiting, dizziness, fatigue, and

headaches. Para-dichlorobenzene vapor can also irritate the eyes and nasal passages. It may also cause kidney and liver damage in pets.

Formaldehyde (HCHO)

Formaldehyde is directly emitted into the atmosphere and formed in the atmosphere as a result of photochemical oxidation. Photochemical oxidation is the largest source of formaldehyde concentrations in California. Directly emitted formaldehyde is a product of incomplete combustion. One of the primary sources of formaldehyde is vehicular exhaust. Formaldehyde is used in resins, fumigants, and soil disinfectants, and can be found in many consumer products as an antimicrobial agent. About 82 percent of direct formaldehyde emissions are estimated to come from the combustion of fossil fuels from mobile sources.

A number of adverse health effects have been associated with formaldehyde exposure. Acute effects include irritation of the skin, eyes, and mucous membranes, and nausea and headaches. Skin contact with formaldehyde can induce long-term allergic dermal sensitization, and limited evidence suggests that inhalation of high concentrations of formaldehyde can cause respiratory tract sensitization. Adverse health effects other than cancer are not expected to occur at mean statewide outdoor ambient concentrations. However, there is sufficient evidence that adverse acute health effects may result from exposure to levels found in indoor environments for those sensitive to formaldehyde.

Methylene Chloride (Dichloromethane) (CH_2Cl_2)

In California, methylene chloride has been identified as a carcinogen. Chronic exposure can lead to bone marrow, hepatic, and renal toxicity. Methylene chloride is used as a solvent, a blowing and cleaning agent in the manufacture of polyurethane foam and plastic fabrication, and as a solvent in paint stripping operations. Paint removers account for the largest use of methylene chloride in California, where methylene chloride is the main ingredient in many paint stripping formulations.

Ethylene chloride acts mainly on the nervous system in humans and animals, temporarily impacting visual, auditory, and motor functions. These effects are reversible once exposure ceases. Human data are inconclusive regarding methylene chloride and cancer; however, animal studies have shown increases in liver and lung cancer and benign mammary gland tumors following the inhalation of methylene chloride.

Perchloroethylene (Tetrachloroethylene) (C_2Cl_4)

In California, perchloroethylene (PERC) has been identified as a carcinogen. PERC vapors are irritating to the eyes and respiratory tract. Following chronic exposure, workers have shown signs of liver toxicity and kidney dysfunction and neurological disorders.

PERC is used as a solvent, primarily in dry cleaning operations. PERC is also used in degreasing operations, paints and coatings, adhesives, aerosols, specialty chemical production, printing inks, silicones, rug shampoos, and laboratory solvents. In California, the stationary sources that have reported emissions of PERC are dry cleaning plants, aircraft part and equipment manufacturers, and fabricated metal product manufacturers. These stationary sources account for 57 percent of the statewide emissions of perchloroethylene. Areawide sources contribute approximately 43 percent. The primary areawide sources include consumer products such as automotive brake cleaners and tire sealants and inflators.

Breathing PERC for short periods of time can adversely affect the human nervous system. Effects range from dizziness, fatigue, headaches, and sweating to incoordination and unconsciousness. Contact with PERC liquid or vapor irritates the skin, the eyes, the nose, and the throat. These effects are not likely to occur at levels of PERC that are normally found in the environment. Breathing PERC over longer periods of time can cause liver and kidney damage in humans. Workers exposed repeatedly to large amounts of PERC in air can also experience memory loss and confusion. Laboratory studies show that PERC causes kidney and liver damage and cancer in animals exposed repeatedly by inhalation and by mouth. Repeat exposure to large amounts of PERC in air may likewise cause cancer in humans.

Diesel Particulate Matter

The exhaust from diesel-fueled engines is a complex mixture of gases, vapors, and particles, many of which are known human carcinogens. More than 40 diesel exhaust components are listed by the state and federal government as TACs or hazardous air pollutants, respectively. In California, diesel engine exhaust has been identified as a carcinogen. Most researchers believe that diesel exhaust particles contribute the majority of the risk because the particles in the exhaust carry many harmful organics and metals.

Diesel particulate matter is emitted from both mobile and stationary sources. In California, on-road diesel-fueled vehicles contribute approximately 38 percent of the statewide total, with an additional 60 percent attributed to other mobile sources, such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources contribute to about 1 percent of total diesel particulate matter.

Diesel exhaust includes over 40 substances that are listed by the EPA as hazardous air pollutants and by CARB as TACs. Fifteen of these substances are listed by the International Agency for Research on Cancer as carcinogenic to humans or as a probable or possible human carcinogen. These substances include acetaldehyde, antimony compounds arsenic, benzene, beryllium compounds, bis(2-ethylhexyl)phthalate, dioxins and dibenzofurans, formaldehyde, inorganic lead, mercury compounds, nickel, particulate organic matter (Including polycyclic aromatic hydrocarbons), and styrene.

A number of adverse short-term health effects have been associated with exposures to diesel exhaust. Occupational exposures to diesel exhaust particles have been associated with significant cross-shift decreases in lung function. Increased cough, labored breathing, chest tightness, and wheezing have been associated with exposure to diesel exhaust in bus garage workers. A significant increase in airway resistance and increases in eye and nasal irritation were observed in human volunteers following 1-hour chamber exposure to diesel exhaust.

Diesel engines are a major source of fine-particle pollution. The elderly and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to fine-particle pollution. Numerous studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Because children’s lungs and respiratory systems are still developing, they are also more susceptible than healthy adults to fine particles. Exposure to fine particles is associated with an increased frequency of childhood illnesses. It can also reduce lung function in children.

GREENHOUSE GASES

Carbon Dioxide (CO2)

CO_2 is a colorless, odorless gas consisting of molecules made up of two oxygen atoms and one carbon atom. CO_2 is produced when an organic carbon compound (such as wood) or fossilized organic matter, (such as coal, oil, or natural gas) is burned in the presence of oxygen. CO_2 is removed from the atmosphere by CO_2 "sinks", such as seawater, ocean-dwelling plankton, forests, and grasslands. Under certain circumstances, however, these sinks can also be a source of CO_2. Whereas the biosphere and ocean achieve a natural balance of CO_2 production and absorption, humankind has altered the natural carbon cycle since the industrial revolution. Beginning in the mid-1700s, the burning of coal, oil, natural gas, and wood has increased globally. Prior to the industrial revolution, concentrations of CO_2 were stable between 275 and 285 (ppm). The National Oceanic and Atmospheric Administration (NOAA's) Earth System Research Laboratory indicates that global concentrations of CO_2 were 405.1 ppm in March 2016, an increase that matched the record jump observed in 2015 (NOAA 2017). The 6-year, 6-ppm surge in CO_2 between 2015 and 2017 is unprecedented in the observatory's 59-year record. And, it was a record fifth consecutive year that CO_2 rose by 2 ppm or greater. These concentrations of CO_2 far exceed the natural range over the last 650,000 years (180 to 300 ppm) as determined from ice cores.

Methane (CH_4)

CH_4 is a colorless, odorless, combustible, non-toxic gas consisting of molecules made up of four hydrogen atoms and one carbon atom. CH_4 is the main constituent of natural gas, a fossil fuel. CH_4 is released when organic matter decomposes in low oxygen environments. Natural sources include decomposition processes generated by wetlands, swamps and marshes, termites, and oceans. Human sources include the mining of fossil fuels and transportation of natural gas, digestive processes in ruminant animals such as cattle, rice paddies, and buried waste in landfills. Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of CH_4. Other anthropogenic sources include fossil fuel combustion and biomass burning.

Nitrous Oxide (N_2O)

N_2O is a colorless, non-flammable gas with a sweetish odor, commonly known as "laughing gas", and sometimes used as an anesthetic. N_2O is naturally produced in the oceans and in rainforests. Manmade sources of N_2O include agricultural fertilizers, nylon and nitric acid production, cars with catalytic converters, and the burning of organic matter. Concentrations of N_2O also began to rise at the beginning of the industrial revolution.

Chlorofluorocarbons (CFCs)

CFCs are gases formed synthetically by replacing all hydrogen atoms in CH_4 or ethane with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the Earth's surface). CFCs were first synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. In the 1970s, scientists discovered that CFCs destroy stratospheric ozone, leading to thinning of the Earth's protective ozone layer. Since then there has been an ongoing global effort to halt their production, which has been extremely successful, so much so that levels of the major CFCs are now remaining steady or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years.

Hydroflurocarbons (HFCs)

Hydrofluorocarbons (HFCs) are synthesized chemicals that are used as a substitute for CFCs. Out of all of the GHGs, HFCs are one of three groups with the highest GWP. HFCs are synthesized for applications such as automobile air conditioners and refrigerants.

Perfluorocarbons (PFCs)

Perfluorocarbons (PFCs) have stable molecular structures and do not break down through the chemical processes in the lower atmosphere. High-energy ultraviolet rays are able to destroy the compounds only in the upper atmosphere. Consequently, PFCs have very long lifetimes – between 10,000 and 50,000 years. The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

Sulfur Hexafluoride (SF_6)

Sulfur hexafluoride (SF_6) is a manmade and extremely potent GHG. SF_6 is very persistent, with an atmospheric lifetime of more than a thousand years. Thus, a relatively small amount of SF_6 can have a significant long-term impact on global climate. SF_6 is used primarily by the electric power industry. Because of its inertness and dielectric properties, it is the industry's preferred gas for electrical insulation, current interruption, and arc quenching (to prevent fires) in the transmission and distribution of electricity. SF_6 is used extensively in high-voltage circuit breakers and switchgear, and in the magnesium metal casting industry.

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Appendix C CALEEMOD RESULTS

CalEEMod Version: CalEEMod.2016.3.2

Kudu Solar Project - Kern-Mojave Desert County, Annual

Kudu Solar Project

1.0 Project Characteristics

Kern-Mojave Desert County, Annual

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	2,135.00	User Defined Unit	2,135.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	32
Climate Zone	3			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Site Acreage

Construction Phase - Worst-case construction schedule - 12 months

Off-road Equipment - Based on equipment list

Off-road Equipment - Based on equipment list

Off-road Equipment - Based on equipment list

Off-road Equipment - Based on equipment list

Off-road Equipment - Based on equipment list

Trips and VMT - Based on traffic study. Heavy duty vehicles = 70% Hauling and 30% Vendor

Grading -

Vehicle Trips - Based on assumption of 20 operational empolyees per day = 40 trips

Landscape Equipment -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	6,000.00	84.00
tblConstructionPhase	NumDays	15,500.00	125.00
tblConstructionPhase	NumDays	155,000.00	146.00
tblConstructionPhase	NumDays	11,000.00	167.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblLandUse	LotAcreage	0.00	2,135.00
tblOffRoadEquipment	HorsePower	158.00	212.00
tblOffRoadEquipment	HorsePower	158.00	212.00
tblOffRoadEquipment	HorsePower	80.00	134.00
tblOffRoadEquipment	HorsePower	80.00	134.00
tblOffRoadEquipment	HorsePower	100.00	130.00
tblOffRoadEquipment	HorsePower	65.00	75.00
tblOffRoadEquipment	HorsePower	65.00	75.00
tblOffRoadEquipment	HorsePower	65.00	75.00
tblOffRoadEquipment	HorsePower	65.00	75.00
tblOffRoadEquipment	HorsePower	78.00	300.00
tblOffRoadEquipment	LoadFactor	0.38	0.74
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	7.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	8.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblOffRoadEquipment	UsageHours	8.00	7.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00

tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripLength	20.00	40.00
tblTripsAndVMT	HaulingTripNumber	0.00	3,276.00
tblTripsAndVMT	HaulingTripNumber	0.00	5,250.00
tblTripsAndVMT	HaulingTripNumber	0.00	876.00
tblTripsAndVMT	HaulingTripNumber	0.00	2,338.00
tblTripsAndVMT	HaulingTripNumber	0.00	876.00
tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripLength	6.60	40.00
tblTripsAndVMT	VendorTripNumber	0.00	16.00
tblTripsAndVMT	VendorTripNumber	0.00	18.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripLength	16.80	40.00
tblTripsAndVMT	WorkerTripNumber	65.00	595.00
tblTripsAndVMT	WorkerTripNumber	90.00	1,115.00
tblTripsAndVMT	WorkerTripNumber	0.00	40.00
tblTripsAndVMT	WorkerTripNumber	68.00	275.00
tblTripsAndVMT	WorkerTripNumber	38.00	40.00
tblVehicleTrips	CC_TL	6.60	40.00
tblVehicleTrips	CNW_TL	6.60	40.00
tblVehicleTrips	CW_TL	14.70	40.00
tblVehicleTrips	HO_TL	0.00	40.00

tblVehicleTrips	HS_TL	0.00	40.00
tblVehicleTrips	HW_TL	0.00	40.00
tblVehicleTrips	ST_TR	0.00	0.02
tblVehicleTrips	SU_TR	0.00	0.02
tblVehicleTrips	WD_TR	0.00	0.02

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.8242	6.0688	5.6995	0.0204	2.1298	0.2119	2.3417	0.7543	0.1953	0.9497	0.0000	1,843.8340	1,843.8340	0.2431	0.0000	1,849.9120
2022	3.3597	23.7850	27.9041	0.0861	3.4548	0.9233	4.3781	0.9906	0.8680	1.8586	0.0000	7,668.2788	7,668.2788	1.3446	0.0000	7,701.8928
Maximum	**3.3597**	**23.7850**	**27.9041**	**0.0861**	**3.4548**	**0.9233**	**4.3781**	**0.9906**	**0.8680**	**1.8586**	**0.0000**	**7,668.2788**	**7,668.2788**	**1.3446**	**0.0000**	**7,701.8928**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.8242	6.0688	5.6995	0.0204	2.1298	0.2119	2.3417	0.7543	0.1953	0.9497	0.0000	1,843.8332	1,843.8332	0.2431	0.0000	1,849.9112
2022	3.3597	23.7850	27.9041	0.0861	3.4548	0.9233	4.3781	0.9906	0.8680	1.8586	0.0000	7,668.2733	7,668.2733	1.3446	0.0000	7,701.8873
Maximum	**3.3597**	**23.7850**	**27.9041**	**0.0861**	**3.4548**	**0.9233**	**4.3781**	**0.9906**	**0.8680**	**1.8586**	**0.0000**	**7,668.2733**	**7,668.2733**	**1.3446**	**0.0000**	**7,701.8873**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	10-4-2021	1-3-2022	7.1648	7.1648
2	1-4-2022	4-3-2022	7.0825	7.0825
3	4-4-2022	7-3-2022	7.9055	7.9055
4	7-4-2022	9-30-2022	9.4529	9.4529
		Highest	9.4529	9.4529

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.8200e-003	1.8000e-004	0.0196	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0382	0.0382	1.0000e-004	0.0000	0.0407
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.8200e-003**	**1.8000e-004**	**0.0196**	**0.0000**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0382**	**0.0382**	**1.0000e-004**	**0.0000**	**0.0407**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Area	1.8200e-003	1.8000e-004	0.0196	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0382	0.0382	1.0000e-004	0.0000	0.0407
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.8200e-003**	**1.8000e-004**	**0.0196**	**0.0000**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0382**	**0.0382**	**1.0000e-004**	**0.0000**	**0.0407**

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation and Grading	Site Preparation	10/4/2021	12/26/2021	7	84	
2	Tracker Foundations	Grading	12/20/2021	4/23/2022	7	125	
3	Underground Cabling	Trenching	2/28/2022	7/2/2022	7	125	
4	Mechanical Installation	Building Construction	5/9/2022	10/1/2022	7	146	
5	Electrical/Instrumentation Work	Paving	6/6/2022	11/19/2022	7	167	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

Site Preparation and Grading	Crawler Tractors	1	4.00	212	0.43
Site Preparation and Grading	Graders	3	7.00	187	0.41
Site Preparation and Grading	Off-Highway Trucks	5	7.00	402	0.38
Site Preparation and Grading	Rollers	2	7.00	134	0.38
Site Preparation and Grading	Rough Terrain Forklifts	3	7.00	130	0.40
Site Preparation and Grading	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation and Grading	Rubber Tired Loaders	2	7.00	203	0.36
Site Preparation and Grading	Skid Steer Loaders	3	7.00	75	0.37
Site Preparation and Grading	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Tracker Foundations	Air Compressors	1	7.00	78	0.48
Tracker Foundations	Excavators	7	7.00	158	0.38
Tracker Foundations	Generator Sets	3	7.00	84	0.74
Tracker Foundations	Graders	1	8.00	187	0.41
Tracker Foundations	Off-Highway Trucks	5	7.00	402	0.38
Tracker Foundations	Other Construction Equipment	1	2.00	172	0.42
Tracker Foundations	Rough Terrain Forklifts	5	7.00	100	0.40
Tracker Foundations	Rubber Tired Dozers	1	8.00	247	0.40
Tracker Foundations	Rubber Tired Loaders	1	7.00	203	0.36
Tracker Foundations	Scrapers	2	8.00	367	0.48
Tracker Foundations	Skid Steer Loaders	7	7.00	75	0.37
Tracker Foundations	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Mechanical Installation	Air Compressors	15	7.00	78	0.48
Mechanical Installation	Cranes	1	7.00	231	0.29
Mechanical Installation	Forklifts	3	8.00	89	0.20
Mechanical Installation	Generator Sets	8	7.00	84	0.74
Mechanical Installation	Off-Highway Trucks	6	7.00	402	0.38
Mechanical Installation	Other Construction Equipment	1	2.00	172	0.42
Mechanical Installation	Rough Terrain Forklifts	7	7.00	100	0.40
Mechanical Installation	Rubber Tired Loaders	3	7.00	203	0.36
Mechanical Installation	Skid Steer Loaders	1	7.00	75	0.37
Mechanical Installation	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Mechanical Installation	Welders	1	8.00	46	0.45

Electrical/Instrumentation Work	Air Compressors	2	7.00	78	0.48
Electrical/Instrumentation Work	Cranes	1	2.00	231	0.29
Electrical/Instrumentation Work	Excavators	2	7.00	212	0.38
Electrical/Instrumentation Work	Off-Highway Trucks	7	6.00	402	0.74
Electrical/Instrumentation Work	Pavers	2	8.00	130	0.42
Electrical/Instrumentation Work	Paving Equipment	2	8.00	132	0.36
Electrical/Instrumentation Work	Rollers	2	8.00	80	0.38
Electrical/Instrumentation Work	Rough Terrain Forklifts	4	7.00	100	0.40
Electrical/Instrumentation Work	Rubber Tired Loaders	3	7.00	203	0.36
Electrical/Instrumentation Work	Trenchers	2	7.00	78	0.50
Underground Cabling	Excavators	3	7.00	212	0.38
Underground Cabling	Off-Highway Trucks	5	7.00	402	0.38
Underground Cabling	Rollers	2	7.00	134	0.38
Underground Cabling	Rubber Tired Loaders	1	7.00	203	0.36
Underground Cabling	Skid Steer Loaders	3	7.00	75	0.37
Underground Cabling	Trenchers	1	7.00	300	0.50

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 and Grading	26	595.00	16.00	3,276.00	40.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT
Tracker Foundations	36	1,115.00	18.00	5,250.00	40.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT
Mechanical Installation	49	40.00	2.00	876.00	40.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT
Electrical/Instrumentation Work	27	275.00	6.00	2,338.00	40.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT
Underground Cabling	15	40.00	2.00	876.00	40.00	40.00	40.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation and Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.8284	0.0000	0.8284	0.4246	0.0000	0.4246	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3969	4.1824	2.5718	6.4600e-003		0.1747	0.1747		0.1607	0.1607	0.0000	567.2141	567.2141	0.1835	0.0000	571.8003
Total	**0.3969**	**4.1824**	**2.5718**	**6.4600e-003**	**0.8284**	**0.1747**	**1.0030**	**0.4246**	**0.1607**	**0.5853**	**0.0000**	**567.2141**	**567.2141**	**0.1835**	**0.0000**	**571.8003**

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	0.0208	0.6606	0.1085	2.3700e-003	0.0565	2.5000e-003	0.0590	0.0155	2.3900e-003	0.0179	0.0000	225.9210	225.9210	7.4300e-003	0.0000	226.1067
Vendor	7.5300e-003	0.2032	0.0408	8.3000e-004	0.0245	9.7000e-004	0.0255	7.0600e-003	9.3000e-004	7.9900e-003	0.0000	79.0957	79.0957	1.7600e-003	0.0000	79.1398
Worker	0.2618	0.1942	1.8852	7.1400e-003	0.7452	4.6900e-003	0.7499	0.1979	4.3200e-003	0.2022	0.0000	646.6198	646.6198	0.0143	0.0000	646.9781
Total	**0.2901**	**1.0580**	**2.0345**	**0.0103**	**0.8261**	**8.1600e-003**	**0.8343**	**0.2204**	**7.6400e-003**	**0.2281**	**0.0000**	**951.6365**	**951.6365**	**0.0235**	**0.0000**	**952.2246**

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					0.8284	0.0000	0.8284	0.4246	0.0000	0.4246	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	0.3969	4.1824	2.5718	6.4600e-003		0.1747	0.1747		0.1607	0.1607	0.0000	567.2135	567.2135	0.1835	0.0000	571.7997
Total	**0.3969**	**4.1824**	**2.5718**	**6.4600e-003**	**0.8284**	**0.1747**	**1.0030**	**0.4246**	**0.1607**	**0.5853**	**0.0000**	**567.2135**	**567.2135**	**0.1835**	**0.0000**	**571.7997**

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	0.0208	0.6606	0.1085	2.3700e-003	0.0565	2.5000e-003	0.0590	0.0155	2.3900e-003	0.0179	0.0000	225.9210	225.9210	7.4300e-003	0.0000	226.1067
Vendor	7.5300e-003	0.2032	0.0408	8.3000e-004	0.0245	9.7000e-004	0.0255	7.0600e-003	9.3000e-004	7.9900e-003	0.0000	79.0957	79.0957	1.7600e-003	0.0000	79.1398
Worker	0.2618	0.1942	1.8852	7.1400e-003	0.7452	4.6900e-003	0.7499	0.1979	4.3200e-003	0.2022	0.0000	646.6198	646.6198	0.0143	0.0000	646.9781
Total	**0.2901**	**1.0580**	**2.0345**	**0.0103**	**0.8261**	**8.1600e-003**	**0.8343**	**0.2204**	**7.6400e-003**	**0.2281**	**0.0000**	**951.6365**	**951.6365**	**0.0235**	**0.0000**	**952.2246**

3.3 Tracker Foundations - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2018	0.0000	0.2018	0.0378	0.0000	0.0378	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0628	0.6422	0.5653	1.1900e-003		0.0273	0.0273		0.0253	0.0253	0.0000	104.4097	104.4097	0.0309	0.0000	105.1819
Total	**0.0628**	**0.6422**	**0.5653**	**1.1900e-003**	**0.2018**	**0.0273**	**0.2291**	**0.0378**	**0.0253**	**0.0631**	**0.0000**	**104.4097**	**104.4097**	**0.0309**	**0.0000**	**105.1819**

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	3.2000e-003	0.1016	0.0167	3.7000e-004	0.0701	3.9000e-004	0.0704	0.0175	3.7000e-004	0.0178	0.0000	34.7571	34.7571	1.1400e-003	0.0000	34.7856
Vendor	1.2100e-003	0.0327	6.5600e-003	1.3000e-004	3.9400e-003	1.6000e-004	4.0900e-003	1.1400e-003	1.5000e-004	1.2800e-003	0.0000	12.7118	12.7118	2.8000e-004	0.0000	12.7189
Worker	0.0701	0.0520	0.5047	1.9100e-003	0.1995	1.2600e-003	0.2007	0.0530	1.1600e-003	0.0541	0.0000	173.1047	173.1047	3.8400e-003	0.0000	173.2006
Total	**0.0745**	**0.1863**	**0.5279**	**2.4100e-003**	**0.2735**	**1.8100e-003**	**0.2753**	**0.0716**	**1.6800e-003**	**0.0732**	**0.0000**	**220.5736**	**220.5736**	**5.2600e-003**	**0.0000**	**220.7052**

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					0.2018	0.0000	0.2018	0.0378	0.0000	0.0378	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0628	0.6421	0.5653	1.1900e-003		0.0273	0.0273		0.0253	0.0253	0.0000	104.4096	104.4096	0.0309	0.0000	105.1818
Total	**0.0628**	**0.6421**	**0.5653**	**1.1900e-003**	**0.2018**	**0.0273**	**0.2291**	**0.0378**	**0.0253**	**0.0631**	**0.0000**	**104.4096**	**104.4096**	**0.0309**	**0.0000**	**105.1818**

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	3.2000e-003	0.1016	0.0167	3.7000e-004	0.0701	3.9000e-004	0.0704	0.0175	3.7000e-004	0.0178	0.0000	34.7571	34.7571	1.1400e-003	0.0000	34.7856

Vendor	1.2100e-003	0.0327	6.5600e-003	1.3000e-004	3.9400e-003	1.6000e-004	4.0900e-003	1.1400e-003	1.5000e-004	1.2800e-003	0.0000	12.7118	12.7118	2.8000e-004	0.0000	12.7189
Worker	0.0701	0.0520	0.5047	1.9100e-003	0.1995	1.2600e-003	0.2007	0.0530	1.1600e-003	0.0541	0.0000	173.1047	173.1047	3.8400e-003	0.0000	173.2006
Total	**0.0745**	**0.1863**	**0.5279**	**2.4100e-003**	**0.2735**	**1.8100e-003**	**0.2753**	**0.0716**	**1.6800e-003**	**0.0732**	**0.0000**	**220.5736**	**220.5736**	**5.2600e-003**	**0.0000**	**220.7052**

3.3 Tracker Foundations - 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					0.5060	0.0000	0.5060	0.2049	0.0000	0.2049	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5202	5.0682	5.1465	0.0112		0.2100	0.2100		0.1954	0.1954	0.0000	983.5654	983.5654	0.2906	0.0000	990.8312
Total	**0.5202**	**5.0682**	**5.1465**	**0.0112**	**0.5060**	**0.2100**	**0.7160**	**0.2049**	**0.1954**	**0.4003**	**0.0000**	**983.5654**	**983.5654**	**0.2906**	**0.0000**	**990.8312**

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	0.0282	0.8604	0.1512	3.4000e-003	0.0883	3.0400e-003	0.0913	0.0241	2.9100e-003	0.0270	0.0000	323.0747	323.0747	0.0103	0.0000	323.3329
Vendor	0.0107	0.2819	0.0578	1.2500e-003	0.0371	1.2800e-003	0.0384	0.0107	1.2200e-003	0.0119	0.0000	118.6066	118.6066	2.5300e-003	0.0000	118.6699
Worker	0.6144	0.4375	4.3494	0.0174	1.8785	0.0115	1.8900	0.4988	0.0106	0.5093	0.0000	1,570.7580	1,570.7580	0.0322	0.0000	1,571.5642
Total	**0.6533**	**1.5798**	**4.5584**	**0.0220**	**2.0039**	**0.0158**	**2.0197**	**0.5335**	**0.0147**	**0.5482**	**0.0000**	**2,012.4393**	**2,012.4393**	**0.0451**	**0.0000**	**2,013.5670**

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					0.5060	0.0000	0.5060	0.2049	0.0000	0.2049	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5202	5.0682	5.1465	0.0112		0.2100	0.2100		0.1954	0.1954	0.0000	983.5643	983.5643	0.2906	0.0000	990.8300
Total	**0.5202**	**5.0682**	**5.1465**	**0.0112**	**0.5060**	**0.2100**	**0.7160**	**0.2049**	**0.1954**	**0.4003**	**0.0000**	**983.5643**	**983.5643**	**0.2906**	**0.0000**	**990.8300**

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	0.0282	0.8604	0.1512	3.4000e-003	0.0883	3.0400e-003	0.0913	0.0241	2.9100e-003	0.0270	0.0000	323.0747	323.0747	0.0103	0.0000	323.3329
Vendor	0.0107	0.2819	0.0578	1.2500e-003	0.0371	1.2800e-003	0.0384	0.0107	1.2200e-003	0.0119	0.0000	118.6066	118.6066	2.5300e-003	0.0000	118.6699
Worker	0.6144	0.4375	4.3494	0.0174	1.8785	0.0115	1.8900	0.4988	0.0106	0.5093	0.0000	1,570.7580	1,570.7580	0.0322	0.0000	1,571.5642
Total	**0.6533**	**1.5798**	**4.5584**	**0.0220**	**2.0039**	**0.0158**	**2.0197**	**0.5335**	**0.0147**	**0.5482**	**0.0000**	**2,012.4393**	**2,012.4393**	**0.0451**	**0.0000**	**2,013.5670**

3.4 Underground Cabling - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2550	2.2503	2.0762	6.6700e-003		0.0834	0.0834		0.0767	0.0767	0.0000	585.3667	585.3667	0.1893	0.0000	590.0997

Total	**0.2550**	**2.2503**	**2.0762**	**6.6700e-003**		**0.0834**	**0.0834**		**0.0767**	**0.0767**	**0.0000**	**585.3667**	**585.3667**	**0.1893**	**0.0000**	**590.0997**

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	5.2100e-003	0.1588	0.0279	6.3000e-004	0.0151	5.6000e-004	0.0157	4.1500e-003	5.4000e-004	4.6800e-003	0.0000	59.6320	59.6320	1.9100e-003	0.0000	59.6797
Vendor	1.3100e-003	0.0347	7.1000e-003	1.5000e-004	4.5600e-003	1.6000e-004	4.7100e-003	1.3100e-003	1.5000e-004	1.4600e-003	0.0000	14.5780	14.5780	3.1000e-004	0.0000	14.5858
Worker	0.0244	0.0174	0.1726	6.9000e-004	0.0746	4.6000e-004	0.0750	0.0198	4.2000e-004	0.0202	0.0000	62.3341	62.3341	1.2800e-003	0.0000	62.3661
Total	**0.0309**	**0.2108**	**0.2076**	**1.4700e-003**	**0.0942**	**1.1800e-003**	**0.0954**	**0.0253**	**1.1100e-003**	**0.0264**	**0.0000**	**136.5441**	**136.5441**	**3.5000e-003**	**0.0000**	**136.6316**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2550	2.2503	2.0762	6.6700e-003		0.0834	0.0834		0.0767	0.0767	0.0000	585.3660	585.3660	0.1893	0.0000	590.0990
Total	**0.2550**	**2.2503**	**2.0762**	**6.6700e-003**		**0.0834**	**0.0834**		**0.0767**	**0.0767**	**0.0000**	**585.3660**	**585.3660**	**0.1893**	**0.0000**	**590.0990**

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	5.2100e-003	0.1588	0.0279	6.3000e-004	0.0151	5.6000e-004	0.0157	4.1500e-003	5.4000e-004	4.6800e-003	0.0000	59.6320	59.6320	1.9100e-003	0.0000	59.6797
Vendor	1.3100e-003	0.0347	7.1000e-003	1.5000e-004	4.5600e-003	1.6000e-004	4.7100e-003	1.3100e-003	1.5000e-004	1.4600e-003	0.0000	14.5780	14.5780	3.1000e-004	0.0000	14.5858
Worker	0.0244	0.0174	0.1726	6.9000e-004	0.0746	4.6000e-004	0.0750	0.0198	4.2000e-004	0.0202	0.0000	62.3341	62.3341	1.2800e-003	0.0000	62.3661
Total	**0.0309**	**0.2108**	**0.2076**	**1.4700e-003**	**0.0942**	**1.1800e-003**	**0.0954**	**0.0253**	**1.1100e-003**	**0.0264**	**0.0000**	**136.5441**	**136.5441**	**3.5000e-003**	**0.0000**	**136.6316**

3.5 Mechanical Installation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.8508	7.1397	7.9009	0.0167		0.3324	0.3324		0.3206	0.3206	0.0000	1,451.5461	1,451.5461	0.3027	0.0000	1,459.1139
Total	**0.8508**	**7.1397**	**7.9009**	**0.0167**		**0.3324**	**0.3324**		**0.3206**	**0.3206**	**0.0000**	**1,451.5461**	**1,451.5461**	**0.3027**	**0.0000**	**1,459.1139**

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	5.2100e-003	0.1588	0.0279	6.3000e-004	0.0151	5.6000e-004	0.0157	4.1500e-003	5.4000e-004	4.6800e-003	0.0000	59.6320	59.6320	1.9100e-003	0.0000	59.6797

Vendor	1.5300e-003	0.0405	8.3000e-003	1.8000e-004	5.3200e-003	1.8000e-004	5.5100e-003	1.5300e-003	1.8000e-004	1.7100e-003	0.0000	17.0271	17.0271	3.6000e-004	0.0000	17.0362
Worker	0.0285	0.0203	0.2016	8.0000e-004	0.0871	5.3000e-004	0.0876	0.0231	4.9000e-004	0.0236	0.0000	72.8063	72.8063	1.4900e-003	0.0000	72.8436
Total	**0.0352**	**0.2196**	**0.2378**	**1.6100e-003**	**0.1075**	**1.2700e-003**	**0.1088**	**0.0288**	**1.2100e-003**	**0.0300**	**0.0000**	**149.4654**	**149.4654**	**3.7600e-003**	**0.0000**	**149.5595**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.8508	7.1397	7.9009	0.0167		0.3324	0.3324		0.3206	0.3206	0.0000	1,451.5443	1,451.5443	0.3027	0.0000	1,459.1122
Total	**0.8508**	**7.1397**	**7.9009**	**0.0167**		**0.3324**	**0.3324**		**0.3206**	**0.3206**	**0.0000**	**1,451.5443**	**1,451.5443**	**0.3027**	**0.0000**	**1,459.1122**

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	5.2100e-003	0.1588	0.0279	6.3000e-004	0.0151	5.6000e-004	0.0157	4.1500e-003	5.4000e-004	4.6800e-003	0.0000	59.6320	59.6320	1.9100e-003	0.0000	59.6797
Vendor	1.5300e-003	0.0405	8.3000e-003	1.8000e-004	5.3200e-003	1.8000e-004	5.5100e-003	1.5300e-003	1.8000e-004	1.7100e-003	0.0000	17.0271	17.0271	3.6000e-004	0.0000	17.0362
Worker	0.0285	0.0203	0.2016	8.0000e-004	0.0871	5.3000e-004	0.0876	0.0231	4.9000e-004	0.0236	0.0000	72.8063	72.8063	1.4900e-003	0.0000	72.8436
Total	**0.0352**	**0.2196**	**0.2378**	**1.6100e-003**	**0.1075**	**1.2700e-003**	**0.1088**	**0.0288**	**1.2100e-003**	**0.0300**	**0.0000**	**149.4654**	**149.4654**	**3.7600e-003**	**0.0000**	**149.5595**

3.6 Electrical/Instrumentation Work - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.7714	6.5944	6.0884	0.0178		0.2729	0.2729		0.2524	0.2524	0.0000	1,559.2293	1,559.2293	0.4914	0.0000	1,571.5152
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.7714**	**6.5944**	**6.0884**	**0.0178**		**0.2729**	**0.2729**		**0.2524**	**0.2524**	**0.0000**	**1,559.2293**	**1,559.2293**	**0.4914**	**0.0000**	**1,571.5152**

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	0.0139	0.4239	0.0745	1.6700e-003	0.0403	1.5000e-003	0.0418	0.0111	1.4300e-003	0.0125	0.0000	159.1548	159.1548	5.0900e-003	0.0000	159.2820
Vendor	5.2500e-003	0.1389	0.0285	6.2000e-004	0.0183	6.3000e-004	0.0189	5.2700e-003	6.0000e-004	5.8700e-003	0.0000	58.4286	58.4286	1.2500e-003	0.0000	58.4598
Worker	0.2239	0.1595	1.5853	6.3200e-003	0.6847	4.1800e-003	0.6889	0.1818	3.8500e-003	0.1857	0.0000	572.5391	572.5391	0.0118	0.0000	572.8329
Total	**0.2431**	**0.7222**	**1.6883**	**8.6100e-003**	**0.7433**	**6.3100e-003**	**0.7496**	**0.1981**	**5.8800e-003**	**0.2040**	**0.0000**	**790.1225**	**790.1225**	**0.0181**	**0.0000**	**790.5747**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.7714	6.5944	6.0884	0.0178		0.2729	0.2729		0.2524	0.2524	0.0000	1,559.2274	1,559.2274	0.4914	0.0000	1,571.5133

Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.7714**	**6.5944**	**6.0884**	**0.0178**		**0.2729**	**0.2729**		**0.2524**	**0.2524**	**0.0000**	**1,559.2274**	**1,559.2274**	**0.4914**	**0.0000**	**1,571.5133**

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	0.0139	0.4239	0.0745	1.6700e-003	0.0403	1.5000e-003	0.0418	0.0111	1.4300e-003	0.0125	0.0000	159.1548	159.1548	5.0900e-003	0.0000	159.2820
Vendor	5.2500e-003	0.1389	0.0285	6.2000e-004	0.0183	6.3000e-004	0.0189	5.2700e-003	6.0000e-004	5.8700e-003	0.0000	58.4286	58.4286	1.2500e-003	0.0000	58.4598
Worker	0.2239	0.1595	1.5853	6.3200e-003	0.6847	4.1800e-003	0.6889	0.1818	3.8500e-003	0.1857	0.0000	572.5391	572.5391	0.0118	0.0000	572.8329
Total	**0.2431**	**0.7222**	**1.6883**	**8.6100e-003**	**0.7433**	**6.3100e-003**	**0.7496**	**0.1981**	**5.8800e-003**	**0.2040**	**0.0000**	**790.1225**	**790.1225**	**0.0181**	**0.0000**	**790.5747**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Industrial	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
User Defined Industrial	40.00	40.00	40.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
User Defined Industrial	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e

Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.8200e-003	1.8000e-004	0.0196	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0382	0.0382	1.0000e-004	0.0000	0.0407
Unmitigated	1.8200e-003	1.8000e-004	0.0196	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0382	0.0382	1.0000e-004	0.0000	0.0407

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8200e-003	1.8000e-004	0.0196	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0382	0.0382	1.0000e-004	0.0000	0.0407
Total	**1.8200e-003**	**1.8000e-004**	**0.0196**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0382**	**0.0382**	**1.0000e-004**	**0.0000**	**0.0407**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.8200e-003	1.8000e-004	0.0196	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005	0.0000	0.0382	0.0382	1.0000e-004	0.0000	0.0407
Total	**1.8200e-003**	**1.8000e-004**	**0.0196**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**	**0.0000**	**0.0382**	**0.0382**	**1.0000e-004**	**0.0000**	**0.0407**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			

User Defined Industrial	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix C-2

Amicus Curiae Brief,
Friant Ranch, SJVUAPCD

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SUPREME COURT COPY

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

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LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

SUPREME COURT
FILED
APR 13 2015
Frank A. McGuire Clerk
Deputy

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

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APPLICATION

Pursuant to California Rules of Court 8.520(f)(1), proposed Amicus Curiae San Joaquin Valley Unified Air Pollution Control District hereby requests permission from the Chief Justice to file an amicus brief in support of Defendant and Respondent, County of Fresno, and Defendant and Real Parties in Interest Friant Ranch, L.P. Pursuant to Rule 8.520(f)(5) of the California Rules of Court, the proposed amicus curiae brief is combined with this Application. The brief addresses the following issue certified by this Court for review:

> Is an EIR adequate when it identifies the health impacts of air pollution and quantifies a project's expected emissions, or does CEQA further require the EIR to *correlate* a project's air quality emissions to specific health impacts?

As of the date of this filing, the deadline for the final reply brief on the merits was March 5, 2015. Accordingly, under Rule 8.520(f)(2), this application and brief are timely.

1. Background and Interest of San Joaquin Valley Unified Air Pollution Control District

The San Joaquin Valley Unified Air Pollution Control District ("Air District") regulates air quality in the eight counties comprising the San Joaquin Valley ("Central Valley"): Kern, Tulare, Madera, Fresno, Merced, San Joaquin, Stanislaus, and Kings, and is primarily responsible for attaining air quality standards within its jurisdiction. After billions of dollars of investment by Central Valley businesses, pioneering air quality regulations, and consistent efforts by residents, the Central Valley air basin has made historic improvements in air quality.

The Central Valley's geographical, topographical and meteorological features create exceptionally challenging air quality

conditions. For example, it receives air pollution transported from the San Francisco Bay Area and northern Central Valley communities, and the southern portion of the Central Valley includes three mountain ranges (Sierra, Tehachapi, and Coastal) that, under some meteorological conditions, effectively trap air pollution. Central Valley air pollution is only a fraction of what the Bay Area and Los Angeles produce, but these natural conditions result in air quality conditions that are only marginally better than Los Angeles, even though about ten times more pollution is emitted in the Los Angeles region. Bay Area air quality is much better than the Central Valley's, even though the Bay Area produces about six times more pollution. The Central Valley also receives air pollution transported from the Bay Area and northern counties in the Central Valley, including Sacramento, and transboundary anthropogenic ozone from as far away as China.

Notwithstanding these challenges, the Central Valley has reduced emissions at the same or better rate than other areas in California and has achieved unparalleled milestones in protecting public health and the environment:

- In the last decade, the Central Valley became the first air basin classified by the federal government under the Clean Air Act as a "serious nonattainment" area to come into attainment of health-based National Ambient Air Quality Standard ("NAAQS") for coarse particulate matter (PM10), an achievement made even more notable given the Valley's extensive agricultural sector. Unhealthy levels of particulate matter can cause and exacerbate a range of chronic and acute illnesses.
- In 2013, the Central Valley became the first air basin in the country to improve from a federal designation of "extreme" nonattainment to

actually attain (and quality for an attainment designation) of the 1-hour ozone NAAQS; ozone creates "smog" and, like PM10, causes adverse health impacts.

- The Central Valley also is in full attainment of federal standards for lead, nitrogen dioxide, sulfur dioxide, and carbon monoxide.
- The Central Valley continues to make progress toward compliance with its last two attainment standards, with the number of exceedences for the 8-hour ozone NAAQS reduced by 74% (for the 1997 standard) and 38% (for the 2008 standard) since 1991, and for the small particulate matter (PM2.5) NAAQS reduced by 85% (for the 1997 standard) and 61% (for the 2006 standard).

Sustained improvement in Central Valley air quality requires a rigorous and comprehensive regulatory framework that includes prohibitions (e.g., on wood-burning fireplaces in new residences), mandates (e.g., requiring the installation of best available pollution reduction technologies on new and modified equipment and industrial operations), innovations (e.g., fees assessed against residential development to fund pollution reduction actions to "offset" vehicular emissions associated with new residences), incentive programs (e.g., funding replacements of older, more polluting heavy duty trucks and school buses)[1], ongoing planning for continued air quality improvements, and enforcement of Air District permits and regulations.

The Air District is also an expert air quality agency for the eight counties and cities in the San Joaquin Valley. In that capacity, the Air District has developed air quality emission guidelines for use by the Central

[1] San Joaquin's incentive program has been so successful that through 2012, it has awarded over $ 432 million in incentive funds and has achieved 93,349 tons of lifetime emissions reductions. *See* SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 2012 PM2.5 PLAN, 6-6 (2012) *available at* http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/06%20Chapter%206%20Incentives.pdf.

Valley counties and cities that implement the California Environment Quality Act (CEQA).[2] In its guidance, the Air District has distinguished between toxic air contaminants and criteria air pollutants.[3] Recognizing this distinction, the Air District's CEQA Guidance has adopted distinct thresholds of significance for *criteria* pollutants (i.e., ozone, PM2.5 and their respective precursor pollutants) based upon scientific and factual data which demonstrates the level that can be accommodated on a cumulative basis in the San Joaquin Valley without affecting the attainment of the applicable NAAQS.[4] For *toxic air* pollutants, the District has adopted different thresholds of significance which scientific and factual data demonstrates has the potential to expose sensitive receptors (i.e., children, the elderly) to levels which may result in localized health impacts.[5]

The Air District's CEQA Guidance was followed by the County of Fresno in its environment review of the Friant Ranch project, for which the Air District also served as a commenting agency. The Court of Appeal's holding, however, requiring correlation between the project's criteria

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[2] *See, e.g.*, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, PLANNING DIVISION, GUIDE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACTS (2015), *available at* http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf ("CEQA Guidance").

[3] Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health, they are distinguishable from toxic air contaminants and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of toxic air contaminants occurs solely under section 112 of the Act. Compare 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 with 42 U.S.C. § 7411.

[4] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 64-66, 80.

[5] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 66, 99-101.

pollutants and local health impacts, departs from the Air District's Guidance and approved methodology for assessing criteria pollutants. A close reading of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants (for which a local health risk assessment is feasible and routinely performed) and criteria air pollutants (for which a local health risk assessment is not feasible and would result in speculative results).[6] The Air District has a direct interest in ensuring the lawfulness and consistent application of its CEQA Guidance, and will explain how the Court of Appeal departed from the Air District's long-standing CEQA Guidance in addressing criteria pollutants and toxic air contaminants in this amicus brief.

2. How the Proposed Amicus Curiae Brief Will Assist the Court

As counsel for the proposed amicus curiae, we have reviewed the briefs filed in this action. In addition to serving as a "commentary agency" for CEQA purposes over the Friant Ranch project, the Air District has a strong interest in assuring that CEQA is used for its intended purpose, and believes that this Court would benefit from additional briefing explaining the distinction between criteria pollutants and toxic air contaminants and the different methodologies employed by local air pollution control agencies such as the Air District to analyze these two categories of air pollutants under CEQA. The Air District will also explain how the Court of Appeal's opinion is based upon a fundamental misunderstanding of these two different approaches by requiring the County of Fresno to correlate the project's *criteria* pollution emissions with *local* health impacts. In doing

---

[6] CEQA does not require speculation. *See, e.g., Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112, 1137 (1993) (upholding EIR that failed to evaluate cumulative toxic air emission increases given absence of any acceptable means for doing so).

so, the Air District will provide helpful analysis to support its position that at least insofar as criteria pollutants are concerned, CEQA does not require an EIR to correlate a project's air quality emissions to specific health impacts, because such an analysis is not reasonably feasible.

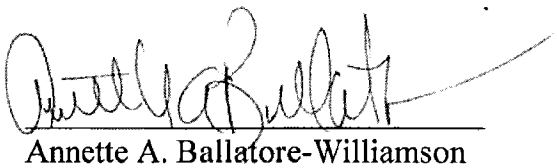
Rule 8.520 Disclosure

Pursuant to Cal. R. 8.520(f)(4), neither the Plaintiffs nor the Defendant or Real Party In Interest or their respective counsel authored this brief in whole or in part. Neither the Plaintiffs nor the Defendant or Real Party in Interest or their respective counsel made any monetary contribution towards or in support of the preparation of this brief.

CONCLUSION

On behalf of the San Joaquin Valley Unified Air Pollution Control District, we respectfully request that this Court accept the filing of the attached brief.

Dated: April 2, 2015



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SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL
DISTRICT

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I. INTRODUCTION.

The San Joaquin Valley Unified Air Pollution Control District ("Air District") respectfully submits that the Court of Appeal erred when it held that the air quality analysis contained in the Environmental Impact Report ("EIR") for the Friant Ranch development project was inadequate under the California Environmental Quality Act ("CEQA") because it did not include an analysis of the correlation between the project's criteria air pollutants and the potential adverse human health impacts. A close reading of the portion of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants and criteria air pollutants.

Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants (hereinafter referred to as "TACs") regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health,

they are distinguishable from TACs and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of TACs occurs solely under section 112 of the Act. *Compare* 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 *with* 42 U.S.C. § 7411.

The most relevant difference between criteria pollutants and TACs for purposes of this case is the manner in which human health impacts are accounted for. While it is common practice to analyze the correlation between an individual facility's TAC emissions and the expected localized human health impacts, such is not the case for criteria pollutants. Instead, the human health impacts associated with criteria air pollutants are analyzed and taken into consideration when EPA sets the national ambient air quality standard ("NAAQS") for each criteria pollutant. 42 U.S.C. § 7409(b)(1). The health impact of a particular criteria pollutant is analyzed on a regional and not a facility level based on how close the area is to complying with (attaining) the NAAQS. Accordingly, while the type of individual facility / health impact analysis that the Court of Appeal has required is a customary practice for TACs, it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task.

It is clear from a reading of both the administrative record and the Court of Appeal's decision that the Court did not have the expertise to fully

appreciate the difference between TACs and criteria air pollutants. As a result, the Court has ordered the County of Fresno to conduct an analysis that is not practicable and not likely yield valid information. The Air District respectfully requests that this portion of the Court of Appeal's decision be reversed.

II. THE COURT OF APPEAL ERRED IN FINDING THE FRIANT RANCH EIR INADEQUATE FOR FAILING TO ANALYZE THE SPECIFIC HUMAN HEALTH IMPACTS ASSOCIATED CRITERIA AIR POLLUTANTS.

Although the Air District does not take lightly the amount of air emissions at issue in this case, it submits that the Court of Appeal got it wrong when it required Fresno County to revise the Friant Ranch EIR to include an analysis correlating the criteria air pollutant emissions associated with the project with specific, localized health-impacts. The type of analysis the Court of Appeal has required will not yield reliable information because currently available modeling tools are not well suited for this task. Further, in reviewing this issue de novo, the Court of Appeal failed to appreciate that it lacked the scientific expertise to appreciate the significant differences between a health risk assessment commonly performed for toxic air contaminants and a similar type of analysis it felt should have been conducted for criteria air pollutants.

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A. Currently Available Modeling Tools are not Equipped to Provide a Meaningful Analysis of the Correlation between an Individual Development Project's Air Emissions and Specific Human Health Impacts.

In order to appreciate the problematic nature of the Court of Appeals' decision requiring a health risk type analysis for criteria air pollutants, it is important to understand how the relevant criteria pollutants (ozone and particulate matter) are formed, dispersed and regulated.

Ground level ozone (smog) is not directly emitted into the air, but is formed when precursor pollutants such as oxides of nitrogen (NOx) and volatile organic compounds (VOCs) are emitted into the atmosphere and undergo complex chemical reactions in the process of sunlight.[1] Once formed, ozone can be transported long distances by wind.[2] Because of the complexity of ozone formation, a specific tonnage amount of NOx or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area. In fact, even rural areas that have relatively low tonnages of emissions of NOx or VOCs can have high levels of ozone concentration simply due to wind transport.[3] Conversely, the San Francisco Bay Area has six times more NOx and VOC emissions per square mile than the San Joaquin Valley, but experiences lower

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[1] *See* United States Environmental Protection Agency, *Ground-level Ozone: Basic Information*, available at: http://www.epa.gov/airquality/ozonepollution/basic.html (visited March 10, 2015).
[2] *Id.*
[3] *Id.*

concentrations of ozone (and better air quality) simply because sea breezes disperse the emissions.[4]

Particulate matter ("PM") can be divided into two categories: directly emitted PM and secondary PM.[5] While directly emitted PM can have a localized impact, the tonnage emitted does not always equate to the local PM concentration because it can be transported long distances by wind.[6] Secondary PM, like ozone, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur dioxides (SOx) and NOx.[7] Because of the complexity of secondary PM formation, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area.

The disconnect between the *tonnage* of precursor pollutants (NOx, SOx and VOCs) and the *concentration* of ozone or PM formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or PM. Indeed, the national ambient air quality standards ("NAAQS"), which are statutorily required to be set by the United States Environmental Protection

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[4] *San Joaquin Valley Air Pollution Control District 2007 Ozone Plan*, Executive Summary p. ES-6, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/03%20Executive%20Summary.pdf (visited March 10, 2015).

[5] United States Environmental Protection Agency, *Particulate Matter: Basic Information*, available at: http://www.epa.gov/airquality/particlepollution/basic.html (visited March 10, 2015).

[6] *Id.*

[7] *Id.*

Agency ("EPA") at levels that are "requisite to protect the public health," 42 U.S.C. § 7409(b)(1), are established as concentrations of ozone or particulate matter and not as tonnages of their precursor pollutants.[8]

Attainment of a particular NAAQS occurs when the concentration of the relevant pollutant remains below a set threshold on a consistent basis throughout a particular region. For example, the San Joaquin Valley attained the 1-hour ozone NAAQS when ozone concentrations remained at or below 0.124 parts per million Valley-wide on 3 or fewer days over a 3-year period.[9] Because the NAAQS are focused on achieving a particular concentration of pollution region-wide, the Air District's tools and plans for attaining the NAAQS are regional in nature.

For instance, the computer models used to simulate and predict an attainment date for the ozone or particulate matter NAAQS in the San Joaquin Valley are based on regional inputs, such as regional inventories of precursor pollutants (NOx, SOx and VOCs) and the atmospheric chemistry and meteorology of the Valley.[10] At a very basic level, the models simulate future ozone or PM levels based on predicted changes in precursor

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[8] See, e.g., United States Environmental Protection Agency, *Table of National Ambient Air Quality Standards*, available at: http://www.epa.gov/air/criteria.html#3 (visited March 10, 2015).

[9] *San Joaquin Valley Unified Air Pollution Control District 2013 Plan for the Revoked 1-Hour Ozone Standard*, Ch. 2 p. 2-16, available at: http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/02Chapter2ScienceTrendsModeling.pdf (visited March 10, 2015).

[10] *Id.* at Ch. 2 p. 2-19 (visited March 12, 2015); *San Joaquin Valley Unified Air Pollution Control District 2008 PM2.5 Plan*, Appendix F, pp. F-2 – F-5, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Final_Adopted_PM2.5/20%20Appendix%20F.pdf (visited March 19, 2015).

emissions Valley wide.[11] Because the NAAQS are set levels necessary to protect human health, the closer a region is to attaining a particular NAAQS, the lower the human health impact is from that pollutant.

The goal of these modeling exercises is not to determine whether the emissions generated by a particular factory or development project will affect the date that the Valley attains the NAAQS. Rather, the Air District's modeling and planning strategy is regional in nature and based on the extent to which *all* of the emission-generating sources in the Valley (current and future) must be controlled in order to reach attainment.[12]

Accordingly, the Air District has based its thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the Valley can accommodate without affecting the attainment date for the NAAQS.[13] The Air District has tied its CEQA significance thresholds to the level at which stationary pollution sources permitted by the Air District must "offset" their emissions.[14] This "offset"

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[11] *Id.*

[12] Although the Air District does have a dispersion modeling tool used during its air permitting process that is used to predict whether a particular project's directly emitted PM will either cause an exceedance of the PM NAAQS or contribute to an existing exceedance, this model bases the prediction on a worst case scenario of emissions and meteorology and has no provision for predicting any associated human health impacts. Further, this analysis is only performed for stationary sources (factories, oil refineries, etc.) that are required to obtain a New Source Review permit from the Air District and not for development projects such as Friant Ranch over which the Air District has no preconstruction permitting authority. *See* San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0; 3.3.9; 4.14.1, available at: http://www.valleyair.org/rules/currntrules/Rule2201041l.pdf (visited March 19, 2015).

[13] *San Joaquin Valley Unified Air Pollution Control District Guide to Assessing and Mitigating Air Quality Impacts*, (March 19, 2015) p. 22, available at: http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf (visited March 30, 2015).

[14] *Id.* at pp. 22, 25.

level allows for growth while keeping the cumulative effects of all new sources at a level that will not impede attainment of the NAAQS.[15] In the Valley, these thresholds are 15 tons per year of PM, and 10 tons of NOx or VOC per year. *Sierra Club*, *supra*, 172 Cal.Rptr.3d at 303; AR 4554. Thus, the CEQA air quality analysis for criteria pollutants is not really a localized, project-level impact analysis but one of regional, "cumulative impacts."

Accordingly, the significance thresholds applied in the Friant Ranch EIR (15 tons per year of PM and 10 tons of NOx or VOCs) are not intended to be indicative of any localized human health impact that the project may have. While the health effects of air pollution are of primary concern to the Air District (indeed, the NAAQS are established to protect human health), the Air District is simply not equipped to analyze whether and to what extent the criteria pollutant emissions of an individual CEQA project directly impact human health in a particular area. This is true even for projects with relatively high levels of emissions of criteria pollutant precursor emissions.

For instance, according to the EIR, the Friant Ranch project is estimated to emit 109.52 tons per year of ROG (VOC), 102.19 tons per year of NOx, and 117.38 tons per year of PM. Although these levels well

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[15] [15] *San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines* (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20Adopted%20_August%202000_.pdf (visited March 12, 2015).

exceed the Air District's CEQA significance thresholds, this does not mean that one can easily determine the concentration of ozone or PM that will be created at or near the Friant Ranch site on a particular day or month of the year, or what specific health impacts will occur. Meteorology, the presence of sunlight, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone or PM. This is especially true for a project like Friant Ranch where most of the criteria pollutant emissions derive not from a single "point source," but from area wide sources (consumer products, paint, etc.) or mobile sources (cars and trucks) driving to, from and around the site.

In addition, it would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have. As discussed above, the currently available modeling tools are equipped to model the impact of *all* emission sources in the Valley on attainment. According to the most recent EPA-approved emission inventory, the NOx inventory for the Valley is for the year 2014 is 458.2 tons per day, or 167,243 tons per year and the VOC (or ROG) inventory is 361.7 tons per day, or 132,020.5 tons per year.[16] Running the photochemical grid model used for predicting ozone attainment with the

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[16] *San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan*, Appendix B pp. B-6, B-9,
available at:
http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/19%20Appendix%20B%20April%202007.pdf (visited March 12, 2015).

emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NOx and VOC in the Valley) is not likely to yield valid information given the relative scale involved.

Finally, even once a model is developed to accurately ascertain local increases in concentrations of photochemical pollutants like ozone and some particulates, it remains impossible, using today's models, to correlate that increase in concentration to a specific health impact. The reason is the same: such models are designed to determine regional, population-wide health impacts, and simply are not accurate when applied at the local level.

For these reasons, it is not the norm for CEQA practitioners, including the Air District, to conduct an analysis of the localized health impacts associated with a project's criteria air pollutant emissions as part of the EIR process. When the accepted scientific method precludes a certain type of analysis, "the court cannot impose a legal standard to the contrary." *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 717 n. 8. However, that is exactly what the Court of Appeal has done in this case. Its decision upends the way CEQA air quality analysis of criteria pollutants occurs and should be reversed.

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B. The Court of Appeal Improperly Extrapolated a Request for a Health Risk Assessment for Toxic Air Contaminants into a Requirement that the EIR contain an Analysis of Localized Health Impacts Associated with Criteria Air Pollutants.

The Court of Appeal's error in requiring the new health impact analysis for criteria air pollutants clearly stems from a misunderstanding of terms of art commonly used in the air pollution field. More specifically, the Court of Appeal (and Appellants Sierra Club et al.) appear to have confused the health risk analysis ("HRA") performed to determine the health impacts associated with a project's toxic air contaminants ("TACs"), with an analysis correlating a project's criteria air pollutants (ozone, PM and the like) with specific localized health impacts.

The first type of analysis, the HRA, is commonly performed during the Air District's stationary source permitting process for projects that emit TACs and is, thus, incorporated into the CEQA review process. An HRA is a comprehensive analysis to evaluate and predict the dispersion of TACs emitted by a project and the potential for exposure of human populations. It also assesses and quantifies both the individual and population-wide health risks associated with those levels of exposure. There is no similar analysis conducted for criteria air pollutants. Thus, the second type of analysis (required by the Court of Appeal), is not currently part of the Air District's process because, as outlined above, the health risks associated

with exposure to criteria pollutants are evaluated on a regional level based on the region's attainment of the NAAQS.

The root of this confusion between the types of analyses conducted for TACs versus criteria air pollutants appears to stem from a comment that was presented to Fresno County by the City of Fresno during the administrative process.

In its comments on the draft EIR, the City of Fresno (the only party to raise this issue) stated:

> [t]he EIR must disclose the human health related effects of the Project's air pollution impacts. (CEQA Guidelines section 15126.2(a).) The EIR fails completely in this area. The EIR should be revised to disclose and determine the significance of TAC impacts, and of human health risks due to exposure to Project-related air emissions.

(AR 4602.)

In determining that the issue regarding the correlation between the Friant Ranch project's criteria air pollutants and adverse health impacts was adequately exhausted at the administrative level, the Court of Appeal improperly read the first two sentences of the City of Fresno's comment in isolation rather than in the context of the entire comment. *See Sierra Club v. County of Fresno* (2014) 172 Cal.Rptr.3d 271, 306. Although the comment first speaks generally in terms of "human health related effects" and "air pollution," it requests only that the EIR be revised to disclose "the significance of TACs" and the "human health risks due to exposure."

The language of this request in the third sentence of the comment is significant because, to an air pollution practitioner, the language would only have indicated only that a HRA for TACs was requested, and not a separate analysis of the health impacts associated with the project's criteria air pollutants. Fresno County clearly read the comment as a request to perform an HRA for TACs and limited its response accordingly. (AR 4602.)[17] The Air District submits that it would have read the City's comment in the same manner as the County because the City's use of the terms "human health risks" and "TACs" signal that an HRA for TACs is being requested. Indeed, the Air District was also concerned that an HRA be conducted, but understood that it was not possible to conduct such an analysis until the project entered the phase where detailed site specific information, such as the types of emission sources and the proximity of the sources to sensitive receptors became available. (AR 4553.)[18] The City of Fresno was apparently satisfied with the County's discussion of human health risks, as it did not raise the issue again when it commented on the final EIR. (AR 8944 – 8960.)

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[17] Appellants do not challenge the manner in which the County addressed TACs in the EIR. (Appellants' Answer Brief p. 28 fn. 7.)

[18] Appellants rely on the testimony of Air District employee, Dan Barber, as support for their position that the County should have conducted an analysis correlating the project's criteria air pollutant emissions with localized health impacts. (Appellants Answer Brief pp. 10-11; 28.) However, Mr. Barber's testimony simply reinforces the Air District's concern that a risk assessment (HRA) be conducted once the actual details of the project become available. (AR 8863.) As to criteria air pollutants, Mr. Barber's comments are aimed at the Air District's concern about the amount of emissions and the fact that the emissions will make it "more difficult for Fresno County and the Valley to reach attainment which means that the health of Valley residents maybe [sic] adversely impacted." Mr. Barber says nothing about conducting a separate analysis of the localized health impacts the project's emissions may have.

The Court of Appeal's holding, which incorrectly extrapolates a request for an HRA for TACs into a new analysis of the localized health impacts of the project's criteria air pollutants, highlights two additional errors in the Court's decision.

First, the Court of Appeal's holding illustrates why the Court should have applied the deferential substantial evidence standard of review to the issue of whether the EIR's air quality analysis was sufficient. The regulation of air pollution is a technical and complex field and the Court of Appeal lacked the expertise to fully appreciate the difference between TACs and criteria air pollutants and tools available for analyzing each type of pollutant.

Second, it illustrates that the Court likely got it wrong when it held that the issue regarding the criteria pollutant / localized health impact analysis was properly exhausted during the administrative process. In order to preserve an issue for the court, '[t]he "exact issue" must have been presented to the administrative agency....' [Citation.] *Citizens for Responsible Equitable Environmental Development v. City of San Diego*, (2011) 196 Cal.App.4th 515, 527 129 Cal.Rptr.3d 512, 521; *Sierra Club v. City of Orange* (2008) 163 Cal.App.4th 523, 535, 78 Cal.Rptr.3d 1, 13. "'[T]he objections must be sufficiently specific so that the agency has the

opportunity to evaluate and respond to them.' [Citation.]" *Sierra Club v. City of Orange*,163 Cal.App.4th at 536.[19]

As discussed above, the City's comment, while specific enough to request a commonly performed HRA for TACs, provided the County with no notice that it should perform a new type of analysis correlating criteria pollutant tonnages to specific human health effects. Although the parties have not directly addressed the issue of failure to exhaust administrative remedies in their briefs, the Air District submits that the Court should consider how it affects the issues briefed by the parties since "[e]xhaustion of administrative remedies is a jurisdictional prerequisite to maintenance of a CEQA action." *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1199, 22 Cal.Rptr.3d 203.

III. CONCLUSION

For all of the foregoing reasons, the Air District respectfully requests that the portion of the Court of Appeal's decision requiring an analysis correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

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[19] *Sierra Club v. City of Orange*, is illustrative here. In that case, the plaintiffs challenged an EIR approved for a large planned community on the basis that the EIR improperly broke up the various environmental impacts by separate project components or "piecemealed" the analysis in violation of CEQA. In evaluating the defense that the plaintiffs had failed to adequately raise the issue at the administrative level, the Court held that comments such as *"the use of a single document for both a project-level and a program-level EIR [is] 'confusing',"* and *"[t]he lead agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project,"* were too vague to fairly raise the argument of piecemealing before the agency. *Sierra Club v. City of Orange*, 163 Cal.App.4th at 537.

correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

Respectfully submitted,

Dated: April 2, 2015

Catherine T. Redmond
Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY
UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.204 of the California Rules of Court, I hereby certify that this document, based on the Word County feature of the Microsoft Word software program used to compose and print this document, contains, exclusive of caption, tables, certificate of word count, signature block and certificate of service, 3806 words.

Dated: April 2, 2015

Annette A. Ballatore-Williamson
District Counsel (SBN 192176)

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

PROOF OF SERVICE

I am over the age of 18 years and not a p[arty to the above-captioned action; that my business address is San Joaquin Valley Unified Air Pollution Control District located at 1990 E. Gettysburg Avenue, Fresno, California 93726.

On April 2, 2015, I served the document described below:

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO

On all parties to this action at the following addresses and in the following manner:

PLEASE SEE ATTACHED SERVICE LIST

(XX) **(BY MAIL)** I caused a true copy of each document(s) to be laced in a sealed envelope with first-class postage affixed and placed the envelope for collection. Mail is collected daily at my office and placed in a United State Postal Service collection box for pick-up and delivery that same day.

( ) **(BY ELECTRONIC MAIL)** I caused a true and correct scanned image (.PDF file) copy to be transmitted via electronic mail transfer system in place at the San Joaquin Valley Unified Air Pollution Control District ("District"), originating from the undersigned at 1990 E. Gettysburg Avenue, Fresno, CA, to the address(es) indicated below.

( ) **(BY OVERNIGHT MAIL)** I caused a true and correct copy to be delivered via Federal Express to the following person(s) or their representative at the address(es) listed below.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that I executed this document on April 2, 2015, at Fresno, California.

Esthela Soto

SERVICE LIST

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

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Appendix C-3

Amicus Curiae Brief,
Friant Ranch, SCAQMD

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S219783

IN THE SUPREME COURT OF C ALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,

Plaintiffs and Appellants,

v.

COUNTY OF FRESNO,

Defendant and Respondent,

and,

FRIANT RANCH, L.P.,

Real Party in Interest and Respondent.

SUPREME COURT
FILED
APR 13 2015
Frank A. McGuire Clerk
Deputy

After a Published Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726
Honorable Rosendo A. Pena, Jr.

APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*

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TO THE HONORABLE CHIEF JUSTICE AND JUSTICES OF THE SUPREME COURT:

APPLICATION FOR LEAVE TO FILE *AMICUS CURIAE* BRIEF

Pursuant to Rule 8.520(f) of the California Rules of Court, the South Coast Air Quality Management District (SCAQMD) respectfully requests leave to file the attached *amicus curiae* brief. Because SCAQMD's position differs from that of either party, we request leave to submit this amicus brief in support of neither party.

HOW THIS BRIEF WILL ASSIST THE COURT

SCAQMD's proposed amicus brief takes a position on two of the issues in this case. In both instances, its position differs from that of either party. The issues are:

1) Does the California Environmental Quality Act (CEQA) require an environmental impact report (EIR) to correlate a project's air pollution emissions with specific levels of health impacts?
2) What is the proper standard of review for determining whether an EIR provides sufficient information on the health impacts caused by a project's emission of air pollutants?

This brief will assist the Court by discussing the practical realities of correlating identified air quality impacts with specific health outcomes. In short, CEQA requires agencies to provide detailed information about a project's air quality impacts that is sufficient for the public and decisionmakers to adequately evaluate the project and meaningfully understand its impacts. However, the level of analysis is governed by a rule of reason; CEQA only requires agencies to conduct analysis if it is reasonably feasible to do so.

With regard to health-related air quality impacts, an analysis that correlates a project's air pollution emissions with specific levels of health impacts will be feasible in some cases but not others. Whether it is feasible depends on a variety of factors, including the nature of the project and the nature of the analysis under consideration. The feasibility of analysis may also change over time as air districts and others develop new tools for measuring projects' air quality related health impacts. Because SCAQMD has among the most sophisticated air quality modeling and health impact evaluation capability of any of the air districts in the State, it is uniquely situated to express an opinion on the extent to which the Court should hold that CEQA requires lead agencies to correlate air quality impacts with specific health outcomes.

SCAQMD can also offer a unique perspective on the question of the appropriate standard of review. SCAQMD submits that the proper standard of review for determining whether an EIR is sufficient as an informational document is more nuanced than argued by either party. In our view, this is a mixed question of fact and law. It includes determining whether additional analysis is feasible, which is primarily a factual question that should be reviewed under the substantial evidence standard. However, it also involves determining whether the omission of a particular analysis renders an EIR insufficient to serve CEQA's purpose as a meaningful, informational document. If a lead agency has not determined that a requested analysis is infeasible, it is the court's role to determine whether the EIR nevertheless meets CEQA's purposes, and courts should not defer to the lead agency's conclusions regarding the legal sufficiency of an EIR's analysis. The ultimate question of whether an EIR's analysis is "sufficient" to serve CEQA's informational purposes is predominately a question of law that courts should review de novo.

This brief will explain the rationale for these arguments and may assist the Court in reaching a conclusion that accords proper respect to a lead agency's factual conclusions while maintaining judicial authority over the ultimate question of what level of analysis CEQA requires.

STATEMENT OF INTEREST OF *AMICUS CURIAE*

The SCAQMD is the regional agency primarily responsible for air pollution control in the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of the Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410; Cal. Code Regs., tit. 17, § 60104.) The SCAQMD participates in the CEQA process in several ways. Sometimes it acts as a lead agency that prepares CEQA documents for projects. Other times it acts as a responsible agency when it has permit authority over some part of a project that is undergoing CEQA review by a different lead agency. Finally, SCAQMD also acts as a commenting agency for CEQA documents that it receives because it is a public agency with jurisdiction by law over natural resources affected by the project.

In all of these capacities, SCAQMD will be affected by the decision in this case. SCAQMD sometimes submits comments requesting that a lead agency perform an additional type of air quality or health impacts analysis. On the other hand, SCAQMD sometimes determines that a particular type of health impact analysis is not feasible or would not produce reliable and informative results. Thus, SCAQMD will be affected by the Court's resolution of the extent to which CEQA requires EIRs to correlate emissions and health impacts, and its resolution of the proper standard of review.

CERTIFICATION REGARDING AUTHORSHIP AND FUNDING

No party or counsel in the pending case authored the proposed amicus curiae brief in whole or in part, or made any monetary contribution intended to fund the preparation or submission of the brief. No person or entity other than the proposed *Amicus Curiae* made any monetary contribution intended to fund the preparation or submission of the brief.

Respectfully submitted,

DATED: April 3, 2015

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BRIEF OF AMICUS CURIAE

SUMMARY OF ARGUMENT

The South Coast Air Quality Management District (SCAQMD) submits that this Court should not try to establish a hard-and-fast rule concerning whether lead agencies are required to correlate emissions of air pollutants with specific health consequences in their environmental impact reports (EIR). The level of detail required in EIRs is governed by a few, core CEQA (California Environmental Quality Act) principles. As this Court has stated, "[a]n EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project." (*Laurel Heights Improvement Assn. v. Regents of the Univ of Cal.* (1988) 47 Cal.3d 376, 405 ["*Laurel Heights I*"]) Accordingly, "an agency must use its best efforts to find out and disclose all that it reasonably can." (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 428 (quoting CEQA Guidelines § 15144)[1].). However, "[a]nalysis of environmental effects need not be exhaustive, but will be judged in light of what is reasonably feasible." (*Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1390; CEQA Guidelines §§ 15151, 15204(a).)

With regard to analysis of air quality related health impacts, EIRs must generally quantify a project's pollutant emissions, but in some cases it is not feasible to correlate these emissions to specific, quantifiable health impacts (e.g., premature mortality; hospital admissions). In such cases, a general description of the adverse health impacts resulting from the pollutants at issue may be sufficient. In other cases, due to the magnitude

[1] The CEQA Guidelines are found at Cal. Code Regs., tit. 14 §§ 15000, *et seq.*

or nature of the pollution emissions, as well as the specificity of the project involved, it may be feasible to quantify health impacts. Or there may be a less exacting, but still meaningful analysis of health impacts that can feasibly be performed. In these instances, agencies should disclose those impacts.

SCAQMD also submits that whether or not an EIR complies with CEQA's informational mandates by providing sufficient, feasible analysis is a mixed question of fact and law. Pertinent here, the question of whether an EIR's discussion of health impacts from air pollution is sufficient to allow the public to understand and consider meaningfully the issues involves two inquiries: (1) Is it feasible to provide the information or analysis that a commenter is requesting or a petitioner is arguing should be required?; and (2) Even if it is feasible, is the agency relying on other policy or legal considerations to justify not preparing the requested analysis? The first question of whether an analysis is feasible is primarily a question of fact that should be judged by the substantial evidence standard. The second inquiry involves evaluating CEQA's information disclosure purposes against the asserted reasons to not perform the requested analysis. For example, an agency might believe that its EIR meets CEQA's informational disclosure standards even without a particular analysis, and therefore choose not to conduct that analysis. SCAQMD submits that this is more of a legal question, which should be reviewed de novo as a question of law.

ARGUMENT

I. RELEVANT FACTUAL AND LEGAL FRAMEWORK.

A. Air Quality Regulatory Background

The South Coast Air Quality Management District (SCAQMD) is one of the local and regional air pollution control districts and air quality

management districts in California. The SCAQMD is the regional air pollution agency for the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410, 17 Cal. Code Reg. § 60104.) The SCAQMD also includes the Coachella Valley in Riverside County (Palm Springs area to the Salton Sea). (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "chapter 7" hyperlink; pp 7-1, 7-3 (last visited Apr. 1, 2015).) The SCAQMD's jurisdiction includes over 16 million residents and has the worst or nearly the worst air pollution levels in the country for ozone and fine particulate matter. (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Executive Summary" hyperlink p. ES-1 (last visited Apr. 1, 2015).)

Under California law, the local and regional districts are primarily responsible for controlling air pollution from all sources except motor vehicles. (Health & Saf. Code § 40000.) The California Air Resources Board (CARB), part of the California Environmental Protection Agency, is primarily responsible for controlling pollution from motor vehicles. (*Id.*) The air districts must adopt rules to achieve and maintain the state and federal ambient air quality standards within their jurisdictions. (Health & Saf. Code § 40001.)

The federal Clean Air Act (CAA) requires the United States Environmental Protection Agency (EPA) to identify pollutants that are widely distributed and pose a threat to human health, developing a so-called "criteria" document. (42 U.S.C. § 7408; CAA § 108.) These pollutants are frequently called "criteria pollutants." EPA must then establish "national ambient air quality standards" at levels "requisite to protect public health",

allowing "an adequate margin of safety." (42 U.S.C. § 7409; CAA § 109.) EPA has set standards for six identified pollutants: ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter (PM), and lead. (U.S. EPA, National Ambient Air Quality Standards (NAAQS), http://www.epa.gov/air/criteria.html (last updated Oct. 21, 2014).)[2]

Under the Clean Air Act, EPA sets emission standards for motor vehicles and "nonroad engines" (mobile farm and construction equipment, marine vessels, locomotives, aircraft, etc.). (42 U.S.C. §§ 7521, 7547; CAA §§ 202, 213.) California is the only state allowed to establish emission standards for motor vehicles and most nonroad sources; however, it may only do so with EPA's approval. (42 U.S.C. §§ 7543(b), 7543(e); CAA §§ 209(b), 209(c).) Sources such as manufacturing facilities, power plants and refineries that are not mobile are often referred to as "stationary sources." The Clean Air Act charges state and local agencies with the primary responsibility to attain the national ambient air quality standards. (42 U.S.C. § 7401(a)(3); CAA § 101(a)(3).) Each state must adopt and implement a plan including enforceable measures to achieve and maintain the national ambient air quality standards. (42 U.S.C. § 7410; CAA § 110.) The SCAQMD and CARB jointly prepare portion of the plan for the South Coast Air Basin and submit it for approval by EPA. (Health & Saf. Code §§ 40460, et seq.)

The Clean Air Act also requires state and local agencies to adopt a permit program requiring, among other things, that new or modified "major" stationary sources use technology to achieve the "lowest achievable emission rate," and to control minor stationary sources as

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[2] Particulate matter (PM) is further divided into two categories: fine particulate or $PM_{2.5}$ (particles with a diameter of less than or equal to 2.5 microns) and coarse particulate (PM_{10}) (particles with a diameter of 10 microns or less). (U.S. EPA, Particulate Matter (PM), http://www.epa.gov/airquality/particlepollution/ (last visited Apr. 1, 2015).)

needed to help attain the standards. (42 U.S.C. §§ 7502(c)(5), 7503(a)(2), 7410(a)(2)(C); CAA §§ 172(c)(5), 173(a)(2), 110(a)(2)(C).) The air districts implement these permit programs in California. (Health & Saf. Code §§ 42300, et seq.)

The Clean Air Act also sets out a regulatory structure for over 100 so-called "hazardous air pollutants" calling for EPA to establish "maximum achievable control technology" (MACT) for sources of these pollutants. (42 U.S.C. § 7412(d)(2); CAA § 112(d)(2).) California refers to these pollutants as "toxic air contaminants" (TACs) which are subject to two state-required programs. The first program requires "air toxics control measures" for specific categories of sources. (Health & Saf. Code § 39666.) The other program requires larger stationary sources and sources identified by air districts to prepare "health risk assessments" for impacts of toxic air contaminants. (Health & Saf. Code §§ 44320(b), 44322, 44360.) If the health risk exceeds levels identified by the district as "significant," the facility must implement a "risk reduction plan" to bring its risk levels below "significant" levels. Air districts may adopt additional more stringent requirements than those required by state law, including requirements for toxic air contaminants. (Health & Saf. Code § 41508; *Western Oil & Gas Assn. v. Monterey Bay Unified APCD* (1989) 49 Cal.3d 408, 414.) For example, SCAQMD has adopted a rule requiring new or modified sources to keep their risks below specified levels and use best available control technology (BACT) for toxics. (SCAQMD, *Rule 1401-New Source Review of Toxic Air Contaminants*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiv; then follow "Rule 1401" hyperlink (last visited Apr. 1, 2015).)

B. The SCAQMD's Role Under CEQA

The California Environmental Quality Act (CEQA) requires public agencies to perform an environmental review and appropriate analysis for projects that they implement or approve. (Pub. Resources Code § 21080(a).) The agency with primary approval authority for a particular project is generally the "lead agency" that prepares the appropriate CEQA document. (CEQA Guidelines §§ 15050, 15051.) Other agencies having a subsequent approval authority over all or part of a project are called "responsible" agencies that must determine whether the CEQA document is adequate for their use. (CEQA Guidelines §§ 15096(c), 15381.) Lead agencies must also consult with and circulate their environmental impact reports to "trustee agencies" and agencies "with jurisdiction by law" including "authority over resources which may be affected by the project." (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines §§ 15086(a)(3), 15073(c).) The SCAQMD has a role in all these aspects of CEQA.

Fulfilling its responsibilities to implement its air quality plan and adopt rules to attain the national ambient air quality standards, SCAQMD adopts a dozen or more rules each year to require pollution reductions from a wide variety of sources. The SCAQMD staff evaluates each rule for any adverse environmental impact and prepares the appropriate CEQA document. Although most rules reduce air emissions, they may have secondary environmental impacts such as use of water or energy or disposal of waste—e.g., spent catalyst from control equipment.[3]

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[3] The SCAQMD's CEQA program for its rules is a "Certified Regulatory Program" under which it prepares a "functionally equivalent" document in lieu of a negative declaration or EIR. (Pub. Resources Code § 21080.5, CEQA Guidelines § 15251(l).)

The SCAQMD also approves a large number of permits every year to construct new, modified, or replacement facilities that emit regulated air pollutants. The majority of these air pollutant sources have already been included in an earlier CEQA evaluation for a larger project, are currently being evaluated by a local government as lead agency, or qualify for an exemption. However, the SCAQMD sometimes acts as lead agency for major projects where the local government does not have a discretionary approval. In such cases, SCAQMD prepares and certifies a negative declaration or environmental impact report (EIR) as appropriate.[4] SCAQMD evaluates perhaps a dozen such permit projects under CEQA each year. SCAQMD is often also a "responsible agency" for many projects since it must issue a permit for part of the projects (e.g., a boiler used to provide heat in a commercial building). For permit projects evaluated by another lead agency under CEQA, SCAQMD has the right to determine that the CEQA document is inadequate for its purposes as a responsible agency, but it may not do so because its permit program already requires all permitted sources to use the best available air pollution control technology. (SCAQMD, *Rule 1303(a)(1) – Requirements*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiii; then follow "Rule 1303" hyperlink (last visited Apr. 1, 2015).)

Finally, SCAQMD receives as many as 60 or more CEQA documents each month (around 500 per year) in its role as commenting agency or an agency with "jurisdiction by law" over air quality—a natural resource affected by the project. (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines § 15366(a)(3).) The SCAQMD staff provides comments on as many as 25 or 30 such documents each month.

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[4] The SCAQMD's permit projects are not included in its Certified Regulatory Program, and are evaluated under the traditional local government CEQA analysis. (Pub. Resources Code §§ 21150-21154.)

(SCAQMD Governing Board Agenda, Apr. 3, 2015, Agenda Item 16, Attachment A, http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-april-3-2015; then follow "16. Lead Agency Projects and Environmental Documents Received by SCAQMD" hyperlink (last visited Apr. 1, 2015).) Of course, SCAQMD focuses its commenting efforts on the more significant projects.

Typically, SCAQMD comments on the adequacy of air quality analysis, appropriateness of assumptions and methodology, and completeness of the recommended air quality mitigation measures. Staff may comment on the need to prepare a health risk assessment detailing the projected cancer and noncancer risks from toxic air contaminants resulting from the project, particularly the impacts of diesel particulate matter, which CARB has identified as a toxic air contaminant based on its carcinogenic effects. (California Air Resources Board, Resolution 98-35, Aug. 27, 1998, http://www.arb.ca.gov/regact/diesltac/diesltac.htm; then follow Resolution 98-35 hyperlink (last visited Apr. 1, 2015).) Because SCAQMD already requires new or modified stationary sources of toxic air contaminants to use the best available control technology for toxics and to keep their risks below specified levels, (SCAQMD Rule 1401, supra, note 15), the greatest opportunity to further mitigate toxic impacts through the CEQA process is by reducing emissions—particularly diesel emissions—from vehicles.

II. THIS COURT SHOULD NOT SET A HARD-AND-FAST RULE CONCERNING THE EXTENT TO WHICH AN EIR MUST CORRELATE A PROJECT'S EMISSION OF POLLUTANTS WITH RESULTING HEALTH IMPACTS.

Numerous cases hold that courts do not review the correctness of an EIR's conclusions but rather its sufficiency as an informative document. (*Laurel Heights 1, supra*, 47 Cal.3d at p. 392; *Citizens of Goleta Valley v.*

Bd. of Supervisors (1990) 52 Cal.3d 553, 569; *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1197.)

As stated by the Court of Appeal in this case, where an EIR has addressed a topic, but the petitioner claims that the information provided about that topic is insufficient, courts must "draw[] a line that divides *sufficient* discussions from those that are *insufficient*." (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) The Court of Appeal readily admitted that "[t]he terms themselves – sufficient and insufficient – provide little, if any, guidance as to where the line should be drawn. They are simply labels applied once the court has completed its analysis." (*Id.*)

The CEQA Guidelines, however, provide guidance regarding what constitutes a sufficient discussion of impacts. Section 15151 states that "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." Case law reflects this: "Analysis of environmental effects need not be exhaustive, but will be judged in light of what was reasonably feasible." (*Association of Irritated Residents v. County of Madera, supra,* 107 Cal.App.4th at p. 1390; see also CEQA Guidelines § 15204(a).)

Applying this test, this Court cannot realistically establish a hard-and-fast rule that an analysis correlating air pollution impacts of a project to quantified resulting health impacts is always required, or indeed that it is never required. Simply put, in some cases such an analysis will be "feasible"; in some cases it will not.

For example, air pollution control districts often require a proposed new source of toxic air contaminants to prepare a "health risk assessment" before issuing a permit to construct. District rules often limit the allowable cancer risk the new source may cause to the "maximally exposed individual" (worker and residence exposures). (*See, e.g.*, SCAQMD Rule 1401(c)(8); 1401(d)(1), *supra* note 15.) In order to perform this analysis, it

is necessary to have data regarding the sources and types of air toxic contaminants, location of emission points, velocity of emissions, the meteorology and topography of the area, and the location of receptors (worker and residence). (SCAQMD, *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (AB2588), pp. 11-16*; (last visited Apr. 1, 2015) http://www.aqmd.gov/home/library/documents-support-material; "Guidelines" hyperlink; AB2588; then follow AB2588 Risk Assessment Guidelines hyperlink.)

Thus, it is feasible to determine the health risk posed by a new gas station locating at an intersection in a mixed use area, where receptor locations are known. On the other hand, it may not be feasible to perform a health risk assessment for airborne toxics that will be emitted by a generic industrial building that was built on "speculation" (i.e., without knowing the future tenant(s)). Even where a health risk assessment can be prepared, however, the resulting maximum health risk value is only a calculation of risk—it does not necessarily mean anyone will contract cancer as a result of the project.

In order to find the "cancer burden" or expected additional cases of cancer resulting from the project, it is also necessary to know the numbers and location of individuals living within the "zone of impact" of the project: i.e., those living in areas where the projected cancer risk from the project exceeds one in a million. (SCAQMD, Health Risk Assessment Summary form, http://www.aqmd.gov/home/forms ; filter by "AB2588" category; then "Health Risk Assessment" hyperlink (last visited Apr. 1, 2015).) The affected population is divided into bands of those exposed to at least 1 in a million risk, those exposed to at least 10 in a million risk, etc. up to those exposed at the highest levels. (*Id.*) This data allows agencies to calculate an approximate number of additional cancer cases expected from

the project. However, it is not possible to predict which particular individuals will be affected.

For the so-called criteria pollutants[5], such as ozone, it may be more difficult to quantify health impacts. Ozone is formed in the atmosphere from the chemical reaction of the nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. (U.S. EPA, Ground Level Ozone, http://www.epa.gov/airquality/ozonepollution/ (last updated Mar. 25, 2015).) It takes time and the influence of meteorological conditions for these reactions to occur, so ozone may be formed at a distance downwind from the sources. (U.S. EPA, *Guideline on Ozone Monitoring Site Selection* (Aug. 1998) EPA-454/R-98-002 § 5.1.2, http://www.epa.gov/ttnamti1/archive/cpreldoc.html (last visited Apr. 1, 2015).) NO_x and VOC are known as "precursors" of ozone.

Scientifically, health effects from ozone are correlated with increases in the ambient level of ozone in the air a person breathes. (U.S. EPA, *Health Effects of Ozone in the General Population,* Figure 9, http://www.epa.gov/apti/ozonehealth/population.html#levels (last visited Apr. 1, 2015).) However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels over an entire region. For example, the SCAQMD's 2012 AQMP showed that reducing NO_x by 432 tons per day (157,680 tons/year) and reducing VOC by 187 tons per day (68,255 tons/year) would reduce ozone levels at the SCAQMD's monitor site with the highest levels by only 9 parts per billion. (South Coast Air Quality Management District, *Final 2012 AQMP (February 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Appendix V: Modeling & Attainment Demonstrations" hyperlink,

[5] See discussion of types of pollutants, supra, Part I.A.

pp. v-4-2, v-7-4, v-7-24.) SCAQMD staff does not currently know of a way to accurately quantify ozone-related health impacts caused by NO_x or VOC emissions from relatively small projects.

On the other hand, this type of analysis may be feasible for projects on a regional scale with very high emissions of NO_x and VOCs, where impacts are regional. For example, in 2011 the SCAQMD performed a health impact analysis in its CEQA document for proposed Rule 1315, which authorized various newly-permitted sources to use offsets from the districts "internal bank" of emission reductions. This CEQA analysis accounted for essentially *all* the increases in emissions due to new or modified sources in the District between 2010 and 2030.[6] The SCAQMD was able to correlate this very large emissions increase (e.g., 6,620 pounds per day NO_x (1,208 tons per year), 89,180 pounds per day VOC (16,275 tons per year)) to expected health outcomes from ozone and particulate matter (e.g., 20 premature deaths per year and 89,947 school absences in the year 2030 due to ozone).[7] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System* (see hyperlink in fn 6*)* at p. 4.1-35, Table 4.1-29.)

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[6] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, Attachment G, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System, Vol. 1, p.4.0-6,* http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-february-4-2011; the follow "26. Adopt Proposed Rule 1315 – Federal New Source Review Tracking System" (last visited April 1, 2015).)

[7] The SCAQMD was able to establish the location of future NO_x and VOC emissions by assuming that new projects would be built in the same locations and proportions as existing stationary sources. This CEQA document was upheld by the Los Angeles County Superior Court in *Natural Res. Def. Council v SCAQMD*, Los Angeles Superior Court No. BS110792).

However, a project emitting only 10 tons per year of NO_x or VOC is small enough that its regional impact on ambient ozone levels may not be detected in the regional air quality models that are currently used to determine ozone levels. Thus, in this case it would not be feasible to directly correlate project emissions of VOC or NO_x with specific health impacts from ozone. This is in part because ozone formation is not linearly related to emissions. Ozone impacts vary depending on the location of the emissions, the location of other precursor emissions, meteorology and seasonal impacts, and because ozone is formed some time later and downwind from the actual emission. (EPA Guideline on Ozone Monitoring Site Selection (Aug. 1998) EPA-454/R-98-002, § 5.1.2; https://www.epa.gov/ttnamti1/archive/cpreldoc.html; then search "Guideline on Ozone Monitoring Site Selection" click on pdf) (last viewed Apr. 1, 2015).)

SCAQMD has set its CEQA "significance" threshold for NO_x and VOC at 10 tons per year (expressed as 55 lb/day). (SCAQMD, *Air Quality Analysis Handbook*, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook; then follow "SCAQMD Air Quality Significance Thresholds" hyperlink (last visited Apr. 1, 2015).) This is because the federal Clean Air Act defines a "major" stationary source for "extreme" ozone nonattainment areas such as SCAQMD as one emitting 10 tons/year. (42 U.S.C. §§ 7511a(e), 7511a(f); CAA §§ 182(e), 182(f).) Under the Clean Air Act, such sources are subject to enhanced control requirements (42 U.S.C. §§ 7502(c)(5), 7503; CAA §§ 172(c)(5), 173), so SCAQMD decided this was an appropriate threshold for making a CEQA "significance" finding and requiring feasible mitigation. Essentially, SCAQMD takes the position that a source that emits 10 tons/year of NO_x or VOC would contribute cumulatively to ozone formation. Therefore, lead agencies that use SCAQMD's thresholds of significance may determine

that many projects have "significant" air quality impacts and must apply all feasible mitigation measures, yet will not be able to precisely correlate the project to quantifiable health impacts, unless the emissions are sufficiently high to use a regional modeling program.

In the case of particulate matter ($PM_{2.5}$)[8], another "criteria" pollutant, SCAQMD staff is aware of two possible methods of analysis. SCAQMD used regional modeling to predict expected health impacts from its proposed Rule 1315, as mentioned above. Also, the California Air Resources Board (CARB) has developed a methodology that can predict expected mortality (premature deaths) from large amounts of $PM_{2.5}$. (California Air Resources Board, *Health Impacts Analysis: PM Premature Death Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort_arch.htm (last reviewed Jan. 19, 2012).) SCAQMD used the CARB methodology to predict impacts from three very large power plants (e.g., 731-1837 lbs/day). (Final Environmental Assessment for Rule 1315, *supra*, pp 4.0-12, 4.1-13, 4.1-37 (e.g., 125 premature deaths in the entire SCAQMD in 2030), 4.1-39 (0.05 to 1.77 annual premature deaths from power plants.) Again, this project involved large amounts of additional $PM_{2.5}$ in the District, up to 2.82 tons/day (5,650 lbs/day of $PM_{2.5}$, or, or 1029 tons/year. (*Id.* at table 4.1-4, p. 4.1-10.)

However, the primary author of the CARB methodology has reported that this $PM_{2.5}$ health impact methodology is not suited for small projects and may yield unreliable results due to various uncertainties. [9] (SCAQMD, *Final Subsequent Mitigated Negative Declaration for: Warren*

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[8] SCAQMD has not attained the latest annual or 24-hour national ambient air quality standards for "$PM_{2.5}$" or particulate matter less than 2.5 microns in diameter.

[9] Among these uncertainties are the representativeness of the population used in the methodology, and the specific source of PM and the corresponding health impacts. (*Id.* at p. 2-24.)

E&P, Inc. WTU Central Facility, New Equipment Project (certified July 19, 2011), http://www.aqmd.gov/home/library/documents-support-material/lead-agency-permit-projects/permit-project-documents---year-2011; then follow "Final Subsequent Mitigated Negative Declaration for Warren E&P Inc. WTU Central Facility, New Equipment Project" hyperlink, pp. 2-22, 2-23 (last visited Apr. 1, 2015).) Therefore, when SCAQMD prepared a CEQA document for the expansion of an existing oil production facility, with very small $PM_{2.5}$ increases (3.8 lb/day) and a very small affected population, staff elected not to use the CARB methodology for using estimated $PM_{2.5}$ emissions to derive a projected premature mortality number and explained why it would be inappropriate to do so. (*Id.* at pp 2-22 to 2-24.) SCAQMD staff concluded that use of this methodology for such a small source could result in unreliable findings and would not provide meaningful information. (*Id.* at pp. 2-23, 2-25.) This CEQA document was not challenged in court.

In the above case, while it may have been technically possible to plug the data into the methodology, the results would not have been reliable or meaningful. SCAQMD believes that an agency should not be required to perform analyses that do not produce reliable or meaningful results. This Court has already held that an agency may decline to use even the "normal" "existing conditions" CEQA baseline where to do so would be misleading or without informational value. (*Neighbors for Smart Rail v. Exposition Metro Line* (2013) 57 Cal.4th 439, 448, 457.) The same should be true for a decision that a particular study or analysis would not provide reliable or meaningful results.[10]

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[10] Whether a particular study would result in "informational value" is a part of deciding whether it is "feasible." CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and

Therefore, it is not possible to set a hard-and-fast rule on whether a correlation of air quality impacts with specific quantifiable health impacts is required in all cases. Instead, the result turns on whether such an analysis is reasonably feasible in the particular case.[11] Moreover, what is reasonably feasible may change over time as scientists and regulatory agencies continually seek to improve their ability to predict health impacts. For example, CARB staff has been directed by its Governing Board to reassess and improve the methodology for estimating premature deaths. (California Air Resources Board, *Health Impacts Analysis: PM Mortality Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort.htm (last reviewed Dec. 29, 2010).) This factor also counsels against setting any hard-and-fast rule in this case.

III. THE QUESTION OF WHETHER AN EIR CONTAINS SUFFICIENT ANALYSIS TO MEET CEQA'S REQUIREMENTS IS A MIXED QUESTION OF FACT AND LAW GOVERNED BY TWO DIFFERENT STANDARDS OF REVIEW.

A. Standard of Review for Feasibility Determination and Sufficiency as an Informative Document

A second issue in this case is whether courts should review an EIR's informational sufficiency under the "substantial evidence" test as argued by Friant Ranch or the "independent judgment" test as argued by Sierra Club.

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technological factors." (Pub. Resources Code § 21061.1.) A study cannot be "accomplished in a *successful* manner" if it produces unreliable or misleading results.

[11] In this case, the lead agency did not have an opportunity to determine whether the requested analysis was feasible because the comment was non-specific. Therefore, SCAQMD suggests that this Court, after resolving the legal issues in the case, direct the Court of Appeal to remand the case to the lead agency for a determination of whether the requested analysis is feasible. Because Fresno County, the lead agency, did not seek review in this Court, it seems likely that the County has concluded that at least some level of correlation of air pollution with health impacts is feasible.

As this Court has explained, "a reviewing court must adjust its scrutiny to the nature of the alleged defect, depending on whether the claim is predominantly one of improper procedure or a dispute over the facts." (*Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 435.) For questions regarding compliance with proper procedure or other legal questions, courts review an agency's action de novo under the "independent judgment" test. (*Id.*) On the other hand, courts review factual disputes only for substantial evidence, thereby "accord[ing] greater deference to the agency's substantive factual conclusions." (*Id.*)

Here, Friant Ranch and Sierra Club agree that the case involves the question of whether an EIR includes sufficient information regarding a project's impacts. However, they disagree on the proper standard of review for answering this question: Sierra Club contends that courts use the independent judgment standard to determine whether an EIR's analysis is sufficient to meet CEQA's informational purposes,[12] while Friant Ranch contends that the substantial evidence standard applies to this question.

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[12] Sierra Club acknowledges that courts use the substantial evidence standard when reviewing predicate factual issues, but argues that courts ultimately decide as a matter of law what CEQA requires. (Answering Brief, pp. 14, 23.)

SCAQMD submits that the issue is more nuanced than either party contends. We submit that, whether a CEQA document includes sufficient analysis to satisfy CEQA's informational mandates is a mixed question of fact and law,[13] containing two levels of inquiry that should be judged by different standards.[14]

The state CEQA Guidelines set forth standards for the adequacy of environmental analysis. Guidelines Section 15151 states:

> An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection, but for adequacy, completeness, and a good-faith effort at full disclosure.

In this case, the basic question is whether the underlying analysis of air quality impacts made the EIR "sufficient" as an informative document. However, whether the EIR's analysis was sufficient is judged in light of what was reasonably feasible. This represents a mixed question of fact and law that is governed by two different standards of review.

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[13] Friant Ranch actually states that the claim that an EIR lacks sufficient relevant information is, "most properly thought of as raising mixed questions of fact and law." (Opening Brief, p. 27.) However, the remainder of its argument claims that the court should apply the substantial evidence standard of review to all aspects of the issue.

[14] Mixed questions of fact and law issues may implicate predominantly factual subordinate questions that are reviewed under the substantial evidence test even though the ultimate question may be reviewed by the independent judgment test. *Crocker National Bank v. City and County of San Francisco* (1989) 49 Cal.3d 881, 888-889.

SCAQMD submits that an EIR's sufficiency as an informational document is ultimately a legal question that courts should determine using their independent judgment. This Court's language in *Laurel Heights I* supports this position. As this Court explained: "The court does not pass upon the correctness of the EIR's environmental conclusions, but only upon its *sufficiency as an informative document.*" (*Laurel Heights I, supra,* 47 Cal.3d at 392-393) (emphasis added.) As described above, the Court in *Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 431, also used its independent judgment to determine what level of analysis CEQA requires for water supply impacts. The Court did not defer to the lead agency's opinion regarding the law's requirements; rather, it determined for itself what level of analysis was necessary to meet "[t]he law's informational demands." (*Id.* at p. 432.) Further, existing case law also holds that where an agency fails to comply with CEQA's information disclosure requirements, the agency has "failed to proceed in the manner required by law." (*Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 118.)

However, whether an EIR satisfies CEQA's requirements depends in part on whether it was reasonably feasible for an agency to conduct additional or more thorough analysis. EIRs must contain "a detailed statement" of a project's impacts (Pub. Res. Code § 21061), and an agency must "use its best efforts to find out and disclose all that it reasonably can." (CEQA Guidelines § 15144.) Nevertheless, "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." (CEQA Guidelines § 15151.)

SCAQMD submits that the question of whether additional analysis or a particular study suggested by a commenter is "feasible" is generally a question of fact. Courts have already held that whether a particular alternative is "feasible" is reviewed by the substantial evidence test.

(*Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 598-99; *Center for Biological Diversity v. County of San Bernardino* (2010) 185 Cal.App.4th 866, 883.) Thus, if a lead agency determines that a particular study or analysis is infeasible, that decision should generally be judged by the substantial evidence standard. However, SCAQMD urges this Court to hold that lead agencies must explain the basis of any determination that a particular analysis is infeasible in the EIR itself. An EIR must discuss information, including issues related to the feasibility of particular analyses "in sufficient detail to enable meaningful participation and criticism by the public. '[W]hatever is required to be considered in an EIR must be in that formal report; what any official might have known from other writings or oral presentations cannot supply what is lacking in the report.'" (*Laurel Heights I, supra*, 47 Cal.3d at p. 405 (quoting *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 831) (discussing analysis of alternatives).) The evidence on which the determination is based should also be summarized in the EIR itself, with appropriate citations to reference materials if necessary. Otherwise commenting agencies such as SCAQMD would be forced to guess where the lead agency's evidence might be located, thus thwarting effective public participation.

Moreover, if a lead agency determines that a particular study or analysis would not result in reliable or useful information and for that reason is not feasible, that determination should be judged by the substantial evidence test. (See *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority*, *supra*, 57 Cal.4th 439, 448, 457:

whether "existing conditions" baseline would be misleading or uninformative judged by substantial evidence standard.[15])

If the lead agency's determination that a particular analysis or study is not feasible is supported by substantial evidence, then the agency has not violated CEQA's information disclosure provisions, since it would be infeasible to provide additional information. This Court's decisions provide precedent for such a result. For example, this Court determined that the issue of whether the EIR should have included a more detailed discussion of future herbicide use was resolved because substantial evidence supported the agency's finding that "the precise parameters of future herbicide use could not be predicted." *Ebbetts Pass Forest Watch v. California Dept. of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 955.

Of course, SCAQMD expects that courts will continue to hold lead agencies to their obligations to consult with, and not to ignore or misrepresent, the views of sister agencies having special expertise in the area of air quality. (*Berkeley Keep Jets Over the Bay v. Board of Port Commissioners* (2007) 91 Cal.App.4th 1344, 1364 n.11.) In some cases, information provided by such expert agencies may establish that the purported evidence relied on by the lead agency is not in fact "substantial". (*Id.* at pp. 1369-1371.)

In sum, courts retain ultimate responsibility to determine what CEQA requires. However, the law does not require exhaustive analysis, but only what is reasonably feasible. Agencies deserve deference for their factual determinations regarding what type of analysis is reasonably feasible. On the other hand, if a commenter requests more information, and the lead agency declines to provide it but does *not* determine that the

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[15] The substantial evidence standard recognizes that the courts "have neither the resources nor the scientific expertise" to weigh conflicting evidence on technical issues. (*Laurel Heights I, supra,* 47 Cal.3d 376, 393.)

requested study or analysis would be infeasible, misleading or uninformative, the question becomes whether the omission of that analysis renders the EIR inadequate to satisfy CEQA's informational purposes. (*Id.* at pp. 1370-71.) Again, this is predominantly a question of law and should be judged by the de novo or independent judgment standard of review. Of course, this Court has recognized that a "project opponent or reviewing court can always imagine some additional study or analysis that might provide helpful information. It is not for them to design the EIR. That further study...might be helpful does not make it necessary." (*Laurel Heights I, supra,* 47 Cal.3d 376, 415 – see also CEQA Guidelines § 15204(a) [CEQA "does not require a lead agency to conduct every test. . . recommended or demanded by commenters."].) Courts, then, must adjudicate whether an omission of particular information renders an EIR inadequate to serve CEQA's informational purposes.[16]

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[16] We recognize that there is case law stating that the substantial evidence standard applies to "challenges to the scope of an EIR's analysis of a topic" as well as the methodology used and the accuracy of the data relied on in the document "because these types of challenges involve factual questions." (*Bakersfield Citizens for Local Control v. City of Bakersfield, supra,* 124 Cal.App.4th 1184, 1198, and cases relied on therein.) However, we interpret this language to refer to situations where the question of the scope of the analysis really is factual—that is, where it involves whether further analysis is feasible, as discussed above. This interpretation is supported by the fact that the *Bakersfield* court expressly rejected an argument that a claimed "omission of information from the EIR should be treated as inquiries whether there is substantial evidence supporting the decision approving the project. " *Bakersfield, supra,* 124 Cal.App.4th at p. 1208. And the *Bakersfield* court ultimately decided that the lead agency must analyze the connection between the identified air pollution impacts and resulting health impacts, even though the EIR already included some discussion of air-pollution-related respiratory illnesses. *Bakersfield, supra,* 124 Cal.App.4th at p. 1220. Therefore, the court must not have interpreted this question as one of the "scope of the analysis" to be judged by the substantial evidence standard.

B. Friant Ranch's Rationale for Rejecting the Independent Judgment Standard of Review is Unsupported by Case Law.

In its brief, Friant Ranch makes a distinction between cases where a required CEQA topic is not discussed at all (to be reviewed by independent judgment as a failure to proceed in the manner required by law) and cases where a topic is discussed, but the commenter claims the information provided is insufficient (to be judged by the substantial evidence test). (Opening Brief, pp. 13-17.) The Court of Appeal recognized these two types of cases, but concluded that both raised questions of law. (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) We believe the distinction drawn by Friant Ranch is unduly narrow, and inconsistent with cases which have concluded that CEQA documents are insufficient. In many instances, CEQA's requirements are stated broadly, and the courts must interpret the law to determine what level of analysis satisfies CEQA's mandate for providing meaningful information, even though the EIR discusses the issue to some extent.

For example, the CEQA Guidelines require discussion of the existing environmental baseline. In *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 954-955, the lead agency had discussed the environmental baseline by describing historic month-end water levels in the affected lakes. However, the court held that this was not an adequate baseline discussion because it failed to discuss the timing and amounts of past actual water releases, to allow comparison with the proposed project. The court evidently applied the independent judgment test to its decision, even though the agency discussed the issue to some extent.

Likewise, in *Vineyard Area Citizens* (2007) 40 Cal.4th 412, this Court addressed the question of whether an EIR's analysis of water supply impacts complied with CEQA. The parties agreed that the EIR was required to analyze the effects of providing water to the development project, "and that in order to do so the EIR had, in some manner, to identify the planned sources of that water." (*Vineyard Area Citizens, supra,* at p. 428.) However, the parties disagreed as to the level of detail required for this analysis and "what level of uncertainty regarding the availability of water supplies can be tolerated in an EIR . . . ." (*Id.*) In other words, the EIR had analyzed water supply impacts for the project, but the petitioner claimed that the analysis was insufficient.

This Court noted that neither CEQA's statutory language or the CEQA Guidelines specifically addressed the question of how precisely an EIR must discuss water supply impacts. (*Id.*) However, it explained that CEQA "states that '[w]hile foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can.'" (*Id.*, [Guidelines § 15144].) The Court used this general principle, along with prior precedent, to elucidate four "principles for analytical adequacy" that are necessary in order to satisfy "CEQA's informational purposes." (*Vineyard Area Citizens, supra,* at p. 430.) The Court did not defer to the agency's determination that the EIR's analysis of water supply impacts was sufficient. Rather, this Court used its independent judgment to determine for itself the level of analysis required to satisfy CEQA's fundamental purposes. (*Vineyard Area Citizens, supra*, at p. 441: an EIR does not serve its purposes where it neglects to explain likely sources of water and "... leaves long term water supply considerations to later stages of the project.")

Similarly, the CEQA Guidelines require an analysis of noise impacts of the project. (Appendix G, "Environmental Checklist Form."[17]) In *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1123, the court held that the lead agency's noise impact analysis was inadequate even though it had addressed the issue and concluded that the increase would not be noticeable. If the court had been using the substantial evidence standard, it likely would have upheld this discussion.

Therefore, we do not agree that the issue can be resolved on the basis suggested by Friant Ranch, which would apply the substantial evidence standard to *every* challenge to an analysis that addresses a required CEQA topic. This interpretation would subvert the courts' proper role in interpreting CEQA and determining what the law requires.

Nor do we agree that the Court of Appeal in this case violated CEQA's prohibition on courts interpreting its provisions "in a manner which imposes procedural or substantive requirements beyond those explicitly stated in this division or in the state guidelines." (Pub. Resources Code § 21083.1.) CEQA requires an EIR to describe *all* significant impacts of the project on the environment. (Pub. Resources Code § 21100(b)(2); *Vineyard Area Citizens, supra,* at p. 428.) Human beings are part of the environment, so CEQA requires EIRs to discuss a project's significant impacts on human health. However, except in certain particular circumstances,[18] neither the CEQA statute nor Guidelines specify the precise level of analysis that agencies must undertake to satisfy the law's requirements. (see, e.g., CEQA Guidelines § 15126.2(a) [EIRs must describe "health and safety problems caused by {a project's} physical changes"].) Accordingly, courts must interpret CEQA as a whole to

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[17] Association of Environmental Professionals, 2015 CEQA Statute and Guidelines (2015) p.287.

[18] E.g., Pub. Resources Code § 21151.8(C)(3)(B)(iii) (requiring specific type of health risk analysis for siting schools).

determine whether a particular EIR is sufficient as an informational document. A court determining whether an EIR's discussion of human health impacts is legally sufficient does not constitute imposing a new substantive requirement.[19] Under Friant Ranch's theory, the above-referenced cases holding a CEQA analysis inadequate would have violated the law. This is not a reasonable interpretation.

IV. COURTS MUST SCRUPULOUSLY ENFORCE THE REQUIREMENTS THAT LEAD AGENCIES CONSULT WITH AND OBTAIN COMMENTS FROM AIR DISTRICTS

Courts must "scrupulously enforce" CEQA's legislatively mandated requirements. (*Vineyard Area Citizens, supra*, 40 Cal.4th 412, 435.) Case law has firmly established that lead agencies must consult with the relevant air pollution control district before conducting an initial study, and must provide the districts with notice of the intention to adopt a negative declaration (or EIR). (*Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 958.) As *Schenck* held, neither publishing the notice nor providing it to the State Clearinghouse was a sufficient substitute for sending notice directly to the air district. (*Id.*) Rather, courts "must be satisfied that [administrative] agencies have fully complied with the procedural requirements of CEQA, since only in this way can the important public purposes of CEQA be protected from subversion." *Schenck,* 198 Cal.App.4th at p. 959 (citations omitted).[20]

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[19] We submit that Public Resources Code Section 21083.1 was intended to prevent courts from, for example, holding that an agency must analyze economic impacts of a project where there are no resulting environmental impacts (see CEQA Guidelines § 15131) , or imposing new procedural requirements, such as imposing additional public notice requirements not set forth in CEQA or the Guidelines.

[20] Lead agencies must consult air districts, as public agencies with jurisdiction by law over resources affected by the project, *before* releasing an EIR. (Pub. Resources Code §§ 21104(a); 21153.) Moreover, air

Lead agencies should be aware, therefore, that failure to properly seek and consider input from the relevant air district constitutes legal error which may jeopardize their project approvals. For example, the court in *Fall River Wild Trout Foundation v. County of Shasta,* (1999) 70 Cal.App.4th 482, 492 held that the failure to give notice to a trustee agency (Department of Fish and Game) was prejudicial error requiring reversal. The court explained that the lack of notice prevented the Department from providing any response to the CEQA document. (*Id.* at p. 492.) It therefore prevented relevant information from being presented to the lead agency, which was prejudicial error because it precluded informed decision-making. (*Id.*)[21]

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districts should be considered "state agencies" for purposes of the requirement to consult with "trustee agencies" as set forth in Public Resources Code § 20180.3(a). This Court has long ago held that the districts are not mere "local agencies" whose regulations are superseded by those of a state agency regarding matters of statewide concern, but rather have concurrent jurisdiction over such issues. (*Orange County Air Pollution Control District v. Public Util. Com.* (1971) 4 Cal.3d 945, 951, 954.) Since air pollution is a matter of statewide concern, *Id* at 952, air districts should be entitled to trustee agency status in order to ensure that this vital concern is adequately protected during the CEQA process.

[21] In *Schenck,* the court concluded that failure to give notice to the air district was not prejudicial, but this was partly because the trial court had already corrected the error before the case arrived at the Court of Appeal. The trial court issued a writ of mandate requiring the lead agency to give notice to the air district. The air district responded by concurring with the lead agency that air impacts were not significant. (*Schenck,* 198 Cal.App.4th 949, 960.) We disagree with the *Schenck* court that the failure to give notice to the air district would not have been prejudicial (even in the absence of the trial court writ) merely because the lead agency purported to follow the air district's published CEQA guidelines for significance. (*Id.*, 198 Cal.App.4th at p. 960.) In the first place, absent notice to the air district, it is uncertain whether the lead agency properly followed those guidelines. Moreover, it is not realistic to expect that an air district's published guidelines would necessarily fully address all possible air-quality related issues that can arise with a CEQA project, or that those

Similarly, lead agencies must obtain additional information requested by expert agencies, including those with jurisdiction by law, if that information is necessary to determine a project's impacts. (*Sierra Club v. State Bd. Of Forestry* (1994) 7 Cal.4th 1215, 1236-37.) Approving a project without obtaining that information constitutes a failure to proceed in the manner prescribed by CEQA. (*Id.* at p. 1236.)

Moreover, a lead agency can save significant time and money by consulting with the air district early in the process. For example, the lead agency can learn what the air district recommends as an appropriate analysis on the facts of its case, including what kinds of health impacts analysis may be available, and what models are appropriate for use. This saves the lead agency from the need to do its analysis all over again and possibly needing to recirculate the document after errors are corrected, if new significant impacts are identified. (CEQA Guidelines § 15088.5(a).) At the same time, the air district's expert input can help the lead agency properly determine whether another commenter's request for additional analysis or studies is reasonable or feasible. Finally, the air district can provide input on what mitigation measures would be feasible and effective.

Therefore, we suggest that this Court provide guidance to lead agencies reminding them of the importance of consulting with the relevant air districts regarding these issues. Otherwise, their feasibility decisions may be vulnerable to air district evidence that establishes that there is no substantial evidence to support the lead agency decision not to provide specific analysis. (*See Berkeley Keep Jets Over the Bay, supra,* 91 Cal.App.4th 1344, 1369-1371.)

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guidelines would necessarily be continually modified to reflect new developments. Therefore we believe that, had the trial court not already ordered the lead agency to obtain the air district's views, the failure to give notice would have been prejudicial, as in *Fall River, supra,* 70 Cal.App.4th 482, 492.

CONCLUSION

The SCAQMD respectfully requests this Court *not* to establish a hard-and-fast rule concerning whether CEQA requires a lead agency to correlate identified air quality impacts of a project with resulting health outcomes. Moreover, the question of whether an EIR is "sufficient as an informational document" is a mixed question of fact and law containing two levels of inquiry. Whether a particular proposed analysis is feasible is predominantly a question of fact to be judged by the substantial evidence standard of review. Where the requested analysis is feasible, but the lead agency relies on legal or policy reasons not to provide it, the question of whether the EIR is nevertheless sufficient as an informational document is predominantly a question of law to be judged by the independent judgment standard of review.

Respectfully submitted,

DATED: April 3, 2015

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CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.520(c)(1) of the California Rules of Court, I hereby certify that this brief contains 8,476 words, including footnotes, but excluding the Application, Table of Contents, Table of Authorities, Certificate of Service, this Certificate of Word Count, and signature blocks. I have relied on the word count of the Microsoft Word Vista program used to prepare this Certificate.

DATED: April 3, 2015 Respectfully submitted,

Barbara Baird

Barbara Baird

PROOF OF SERVICE

I am employed in the County of Los Angeles, California. I am over the age of 18 years and not a party to the within action. My business address is 21865 Copley Drive, Diamond Bar, California 91765.

On April 3, 2015 I served true copies of the following document(s) described as **APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*** by placing a true copy of the foregoing document(s) in a sealed envelope addressed as set forth on the attached service list as follows:

BY MAIL: I enclosed the document(s) in a sealed envelope or package addressed to the persons at the addresses listed in the Service List and placed the envelope for collection and mailing following our ordinary business practices. I am readily familiar with this District's practice for collection and processing of correspondence for mailing. Under that practice, the correspondence would be deposited with the United States Postal Service, with postage thereon fully prepaid at Diamond Bar, California, in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on April 3, 2015 at Diamond Bar, California.

Patricia Anderson

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Appendix D-1
Biological Resources Evaluation

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BIOLOGICAL EVALUATION

KUDU SOLAR FARM
CALIFORNIA CITY AND KERN COUNTY, CALIFORNIA

26 April 2020

EnviroPlus Consulting, Inc.

Biological Evaluation
Kudu Solar Farm

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26 April 2020

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EXECUTIVE SUMMARY

69SV 8me LLC (Applicant) proposes to develop up to a 500 megawatt-alternating current (MW-ac) utility-scale solar farm and 600 MW-hour (MWh) Energy Storage System (ESS) known as the Kudu Solar Farm Project (Project) in unincorporated Kern County and California City, California. Features that comprise the Project, include but are not limited to, the solar array, collector lines, ESS, substation, and ancillary facilities.

The Project is adjacent to the approved 68SF 8me LLC, Eland 1 Solar Farm, south of the existing Springbok 1 & 2 Solar Farms, and southeast of the Los Angeles Department of Water and Power (LADWP) Beacon Solar Facility. The Project would use gen-tie[1] lines already approved for the adjacent Eland 1 Solar Farm. Since the gen-tie lines for the Project are a part of the Eland 1 project, they will not be evaluated further in this Biological Evaluation.

The permanent disturbance acreage associated with development of the Project would be located within a subset of the Project, referred to as the Action Area. The Applicant will be applying for Conditional Use Permits (CUP) from Kern County and from California City for development and operation of this Project.

The Action Area includes 2,176.14 gross acres on 75 privately owned parcels in unincorporated Kern County and in California City. A total of 42 parcels are located within Kern County and comprise 673.52 gross acres and a total of 33 parcels are located within California City and comprise 1,222.64 gross acres. In addition, the Project includes collector lines in Kern County (186.36 gross acres) and California City (93.62 gross acres).

The Project is located north of the California City Municipal Airport and is bisected by Washburn Boulevard (the California City and Kern County boundary) and Neuralia Road. State Route 14 (SR14) is located to the west of the Project with a single line track of Union Pacific (UP) Railroad bisecting the western portion of the Project in a north-south direction in the Kern County parcels. Phillips Road bisects the western portion of the Project in an east-west direction also within the Kern County parcels.

This Draft Biological Evaluation (BE) documents existing conditions within the Action Area. In September of 2019 a Mohave ground squirrel habitat assessment was independently conducted by Dr. Philip Leitner. The vegetation community assessment was conducted in September of 2019 by EREMICO Biological Services, LLC. Species specific surveys for federal or state listed and special status wildlife species were initiated in August and concluded in October of 2019. Additional information for this BE has been generated from literature searches, multi-agency databases, maps, and other documents to include a 20-mile radius around the Project.

This BE does not include the results of species-specific surveys however it does include an in-depth review and analysis of vegetation communities; soils; the potential for state and federal listed and special status plants and wildlife species; and migratory bird and raptor species. Potential effects to these natural resources and biological species from the Project development

[1] A generation tie-in is an electrical transmission line that connects the generation location (solar field) to a substation which then connects to the electrical grid.

will be addressed upon amendment of this BE with the inclusion of the Wildlife Survey Report. A U.S. Army Corps of Engineers (USACE) jurisdictional determination and a California Department of Fish and Wildlife (CDFW) review of waters and wetlands was not conducted by EnviroPlus Consulting, Inc. (EPC) and is not incorporated into the BE. This information will be provided by another qualified firm.

The Project is located in the Fremont Valley of the Mojave Desert Region of the Desert Floristic Province within the Basin and Range physiographic province (Norris and Webb 1990). Landforms in the region include granite-derived flood plains, alluvial fans, and terraces. A wash draining Barren Ridge of the Sierra Nevada traverses the northwest corner of the Project and ultimately drains into Koehn Dry Lake to the northeast. Soil textures throughout most of the Project are loamy sands, gravelly loamy sands, and sandy clay loams. Native vegetation on-site is typical of that found throughout the Mojave Desert.

The 2,176.14-acre Action Area is comprised of the following six vegetation communities and unvegetated/urban acreages (Sawyer et al. 2009):

- **Kern County portion of the Action Area – 859.88-Acres:**
  - *Larrea tridentata-Ambrosia dumosa* Shrubland Alliance (Creosote Bush–White Bursage Scrub) – 478.87-Acres
  - *Larrea tridentata-Ambrosia dumosa – Senna armata* Association (Creosote Bush-White Bursage-Desert Senna Scrub) (sensitive) – 203.12-Acres
  - *Larrea tridentata* Shrubland Alliance (Creosote Bush Scrub) – 78.81-Acres
  - *Ericameria nauseosa* Shrubland Alliance (Rubber Rabbitbrush Scrub) – 56.93-Acres
  - *Ambrosia dumosa* Shrubland Alliance (White Bursage Scrub) – 18.05-Acres
  - Mediterranean California Naturalized Annual and Perennial Grassland Group – 10.10-Acres
  - Unvegetated, urban, developed, and disturbed – 14.00-Acres

- **California City portion of the Action Area – 1,316.26-Acres:**
  - *Larrea tridentata-Ambrosia dumosa* Shrubland Alliance (Creosote Bush–White Bursage Scrub) – 563.69-Acres
  - *Ericameria nauseosa* Shrubland Alliance (Rubber Rabbitbrush Scrub) – 579.56-Acres
  - *Ambrosia dumosa* Shrubland Alliance (White Bursage Scrub) – 87.14-Acres
  - *Larrea tridentata* Shrubland Alliance (Creosote Bush Scrub) – 83.90-Acres
  - *Larrea tridentata-Ambrosia dumosa – Senna armata* Association (Creosote Bush-White Bursage-Desert Senna Scrub) (sensitive) – 0.85-Acres
  - Unvegetated, urban, developed, and disturbed – 1.12-Acres

One sensitive vegetation community was identified, *Larrea tridentata-Ambrosia dumosa–Senna armata* Association (Creosote Bush - White Bursage - Desert Senna Scrub). Vegetation community descriptions and acreages per CUP (unincorporated Kern County and California City) are addressed in detail in Section 4.0.

A total of 45 listed and special status plant and wildlife species potentially occur within or in proximity to the Project. Of the 45 species, a total of 14 special status plants were identified during the literature review and database searches (discussed in Section 5.0); 31 vertebrate species were identified, including the following listed species: the state Threatened Mohave ground squirrel (*Xerospermophilus mohavensis*), the state and federal Threatened Agassiz's desert tortoise (*Gopherus agassizii*), the state and federal Endangered California condor (*Gymnogyps californianus*), the state Threatened Swainson's hawk (*Buteo swainsoni*), the federal Threatened western snowy plover (*Charadrius alexandrinus nivosus*), and the state Threatened tricolored blackbird (*Agelaius tricolor*); and three insect species (discussed in Section 6.0).

The results of the Mohave ground squirrel habitat suitability assessment conducted in September of 2019 indicate that the potential for occupancy of the Action Area by Mohave ground squirrels would be unsuitable, low, or moderate depending upon location, soils, and vegetation communities.

U.S. Fish and Wildlife Service (USFWS) protocol Agassiz's desert tortoise and CDFW western burrowing owl protocol surveys were initiated in August of 2019 and concluded in October of 2019. The desert tortoise and burrowing owl surveys were conducted at the same time within the Action Area and included all other listed, special status, and general wildlife species observations.

1.0 INTRODUCTION

1.1 Project Description and Land Ownership

69SV 8me LLC (Applicant) proposes to develop up to a 500 megawatt-alternating current (MW-ac) utility-scale solar farm and 600 MW-hour (MWh) Energy Storage System (ESS) known as the Kudu Solar Farm Project (Project) in unincorporated Kern County and California City, California (Figure 1). Features that comprise the Project, include but are not limited to, the solar array, collector lines, ESS, substation, and ancillary facilities.

The Project is adjacent to the approved 68SF 8me LLC, Eland 1 Solar Farm, south of the existing Springbok Solar Farms, and southeast of the Los Angeles Department of Water and Power (LADWP) Beacon Solar Facility. The Project would use gen-tie[1] lines already approved for the adjacent Eland 1 solar farm. Since the gen-tie lines for the Project are a part of the Eland 1 project, they will not be evaluated further in this Biological Evaluation.

The permanent disturbance acreage associated with development of the Project would be located within a subset of the Project, referred to as the Action Area. The Applicant will be applying for Conditional Use Permits (CUP) from Kern County and from California City for development and operation of this Project.

The Action Area includes 2,176.14 gross acres on 75 privately owned parcels in unincorporated Kern County and in California City (Appendix A). A total of 42 parcels are located within Kern County and comprise 673.52 gross acres and a total of 33 parcels are located within California City and comprise 1,222.64 gross acres. In addition, the Project includes collector lines in Kern County (186.36 gross acres) and California City (93.62 gross acres).

Power generated by the Project would be collected using up to 230 kilovolt (kV) collector lines which will run underground and/or overhead to the LADWP Barren Ridge Substation. The Project intends to share the Eland 1 gen-tie[1] line and right-of-way, which may require stringing additional line on the Eland 1 transmission structures or increasing the capacity of the Eland 1 gen-tie by reconductoring the line with thicker cable. If the Project cannot share these facilities, a new gen-tie line would be developed within one of the routes previously analyzed in the Eland 1 Environmental Impact Report (Kern County 2018). Since the gen-tie lines for the Project are a part of the Eland 1 project, they will not be discussed further in this Biological Evaluation.

The Project may share an operations and maintenance (O&M) building, ESS, and/or transmission facilities, as necessary, with one or more nearby solar projects, and/or it may be remotely operated. Any unused O&M building, substation, and/or transmission facility areas on-site may be covered by solar panels under such scenarios.

The Project is located north of the California City Municipal Airport and is bisected by Washburn Boulevard (the California City and Kern County boundary) and Neuralia Road. State Route 14 (SR14) is located to the west of the Project with a single line track of Union Pacific (UP) Railroad bisecting the western portion of the Project in a north-south direction in the Kern County parcels. Phillips Road bisects the western portion of the Project in an east-west direction also within the Kern County parcels (Figure 2).

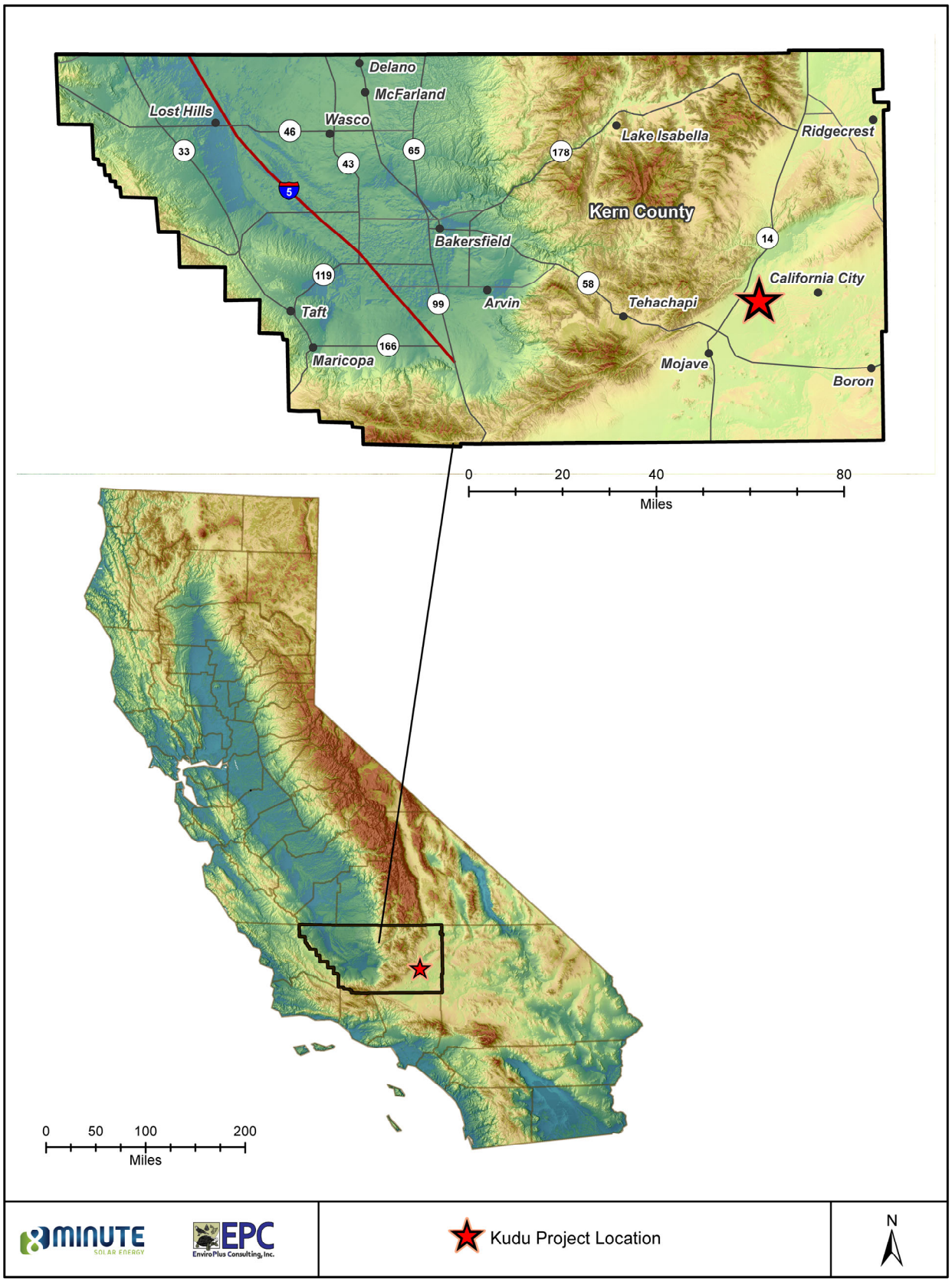

Figure 1. Kudu Solar Farm Project Vicinity Map, California City and Kern County, CA

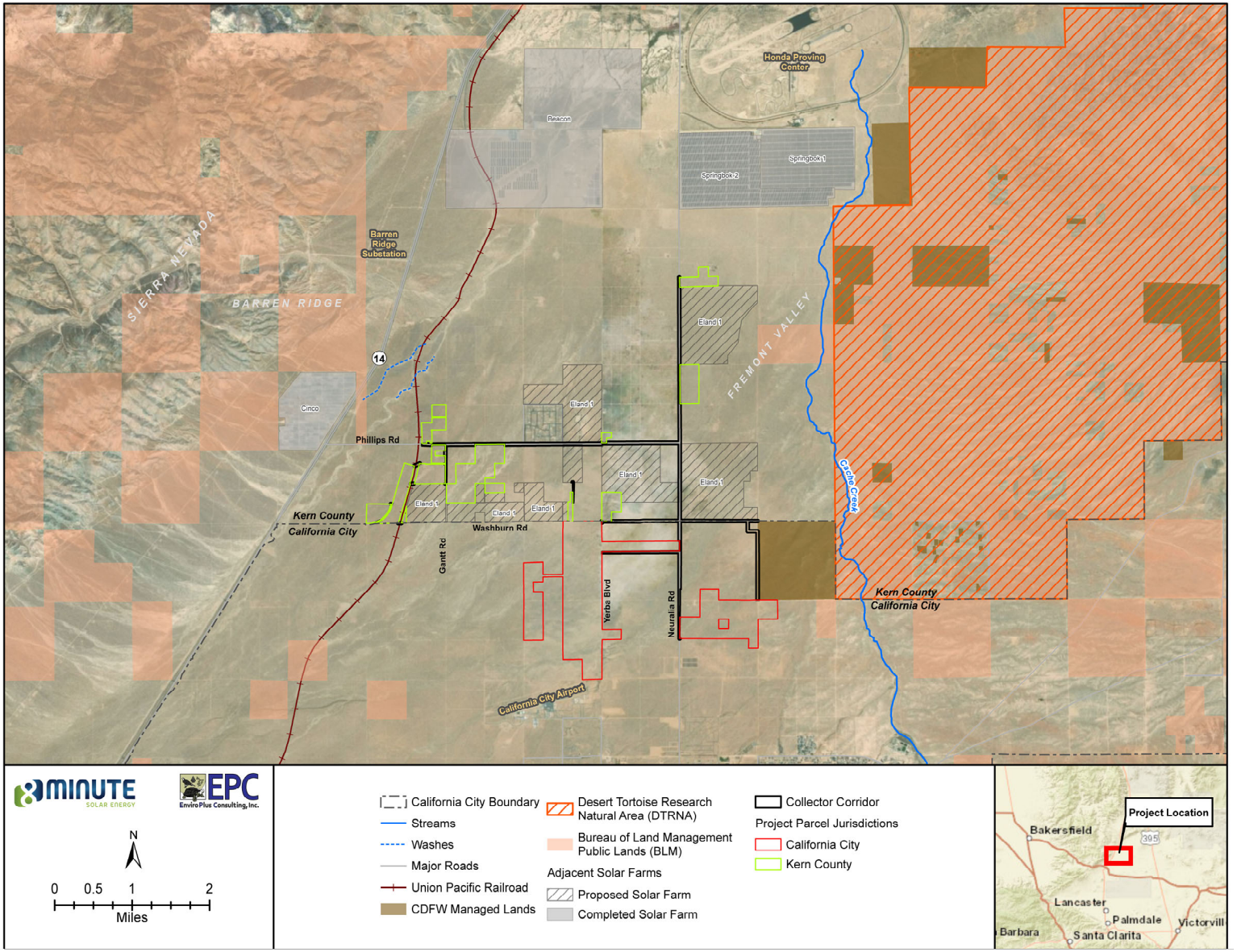

Figure 2. Kudu Solar Farm Action Area Location Map, California City and Kern County, CA

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The construction period for the Project, from site preparation through construction, testing, and commercial operation, is expected to commence as early as the fourth quarter of 2021 and will extend for approximately 12 to 18 months.

Construction of the facility will include the following activities:

- Site preparation
- Grading and earthwork
- Concrete foundations
- Structural steel work
- Electrical/instrumentation work
- Collector line installation
- Architecture and landscaping

No public roadways will be affected by the Project, except during the construction period. Construction traffic would access the Project from Phillips Road, Gantt Road, and Neuralia Road, or through the Eland 1 project site. It is estimated that up to 1,000 workers per day, during peak construction periods, will be required for the construction of the Project.

Heavy construction is expected to occur between 6:00 am and 5:00 pm, Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Some activities may continue 24 hours per day, seven days per week. Low-level noise activities may potentially occur between the hours of 10:00 pm and 7:00 am. Nighttime activities could potentially include, but are not limited to, refueling equipment, staging material for the following day's construction activities, quality assurance/control, and commissioning.

Materials and supplies will be delivered to the Project by truck. Truck deliveries will normally occur during daylight hours. However, there will be offloading and/or transporting to the Project on weekends and during evening hours.

Earthmoving activities are expected to be limited to the construction of the access roads, any O&M building, any substation, any energy storage systems, and any storm water protection or storage (detention) facilities. Final grading may include revegetation with low lying grass or applying earth-binding materials to disturbed areas.

The Project could require an operational staff of up to 20 full-time employees. As discussed, the Project may share O&M, substation, ESS, and/or transmission facilities with one or more nearby projects. In such a scenario, the projects would share personnel, thereby potentially reducing the Project's on-site staff.

The facility would operate seven days a week, 24 hours a day, generating electricity during normal daylight hours when the solar energy is available. Maintenance activities may occur seven days a week, 24 hours a day to ensure PV panel output when solar energy is available.

After the useful life of the Project, the panels will be disassembled from the mounting frames and the Site restored to its pre-development condition.

1.2 Site Description

The Project is situated within an unincorporated area of southeastern Kern County and within the limits of California City, California (Figure 2). The Project is located north of the California City Municipal Airport and is bisected by Washburn Boulevard (the California City and Kern County boundary).

The Project is on private lands located on the Mojave NE and California City North USGS 1:24,000 topographic maps (7.5-minute quadrangle). The Project is cadastrally located as follows:

- Township 31S, Range 37E – portions of Sections 14, 15, 22, 23, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35
- Township 32S, Range 37E – portions of Sections 1, 2, 3, 4, 9, 10, 11, 12

The following features occur in areas surrounding the Project:

- North – Beacon Solar Farm, Springbok 1 and 2 Solar Farms, and the Honda Proving Center of California a few miles to the north,
- West – State Route 14 with the Cinco Solar Farm and the Sierra Nevada Mountains further to the west,
- South – California City airport and the developed portions of California City, and
- East – similar vacant land with the fenced Desert Tortoise Research Natural Area (DTRNA) further to the east.

The Project is located within the Fremont Valley. The terrain of the Project is relatively flat with elevations ranging between 2,174 feet above mean sea level (AMSL) in the northeastern portion to 2,460 feet AMSL in the southwestern portion. Drainage is towards Koehn Dry Lake, located 10 miles to the northeast. Due to the relatively flat terrain over most of the Project, hydrology is largely characterized by percolation and small washes.

Population centers and employers within the vicinity of the Project include but are not limited to California City, Mojave, Edwards AFB, and the Honda Proving Center of California (Honda Proving Center). The developed portion of California City (population 14,120 in the 2010 census), incorporated in 1965, is located south of the Project.

There are several constructed features within and in the vicinity of the Project. The small unincorporated community of Phillips Ranch lies in the vicinity but not adjacent to parcels in the Action Area. Several small ranches also lie in the general area but not within the Action Area. The California City airport lies adjacent to the southernmost Action Area parcel at the corner of Yerba Boulevard.

North of the Project within 2 to 4 miles is the unincorporated community of Cantil, California located within Kern County. It is the home of the Honda Proving Center and the Red Rock Elementary School and Community Day School. Cantil was founded in 1908 or 1909 as a station stop for the Nevada and California Railroad when it was extended from Owens Lake to Mojave (Wikipedia 2019a). The unincorporated community of Mojave (population 4,238 in the 2010 census), located within Kern County, is within 10 miles southwest of the Project.

SR14, a generally north-south four-lane divided highway, lies within 0.5 mile (at its closest

point) west of the Project. Neuralia Road, a two-lane paved County road traverses north-south through the Project while Phillips Road, a two-lane road paved County road traverses east-west through the Project. There are also several short, paved roads within the Phillips Ranch community. Many unmaintained dirt roads crisscross the area. The UP Railroad, a single line track, passes through the Project in the west generally paralleling SR14.

There are several electrical distribution lines within the Project including lines along both Neuralia and Phillips Roads. No electrical transmission lines or large natural gas or petroleum transmission pipelines are known to occur within or adjacent to the Project.

The 3,840-acre Honda Proving Center is located within 2 and 5 miles northeast of the Project, within the community of Cantil. This facility was built in 1990, closed in 2010, and then was reopened in 2017 after major repairs were made to the track (PR Newswire Association 2017).

There are existing and proposed solar farms in the vicinity of the Project (Figure 3). These include Springbok 1 and 2 located immediately south of the Honda Proving Center, the Beacon Solar Farm located between Springbok 1 and SR14, and Cinco Solar Farm which is located just west of SR14 about a mile west of the western-most parcels of the Project. Eland 1 is a proposed solar farm immediately adjacent to and intermixed with the Kudu parcels for which a draft Environmental Impact Report has been completed (Kern County Planning and Community Development Department 2018).

At its closest point, the Project is located approximately 1 mile west of the DTRNA. The DTRNA was established in 1974 and includes 39.5 square miles of desert habitat of which a majority of the private land inholdings have been purchased by the Bureau of Land Management (BLM), by the California Department of Fish and Wildlife (CDFW), or by the Desert Tortoise Preserve Committee (DTPC), a 501(3)c non-profit organization (DTPC 2019). The southern and eastern boundary of the DTRNA is shared with California City. In 1980 the BLM designated the DTRNA as an Area of Critical Environmental Concern (ACEC) and perimeter fencing was installed as well as a visitor's center. The bottom strand of the DTRNA fence is lifted off the ground in order to allow unimpeded ingress and egress of the DTRNA by desert tortoises and other wildlife. The DTPC manages the DTRNA and over 30 years of research has been conducted there on the desert tortoise (ADT) (*Gopherus agassizii*), the Mohave ground squirrel (MGS) (*Xerospermophilus mohavensis*), and many other species of wildlife and plants.

The Project is not located within critical habitat for any species. At its closest point, the Project is 6.3 miles southwest of designated desert tortoise critical habitat at the BLM Fremont-Kramer ACEC.

Evidence of human impacts are present throughout the Action Area. Agricultural activity has resulted in significant degradation of native vegetation. A total of 41.1% of the Action Area has been previously farmed (Appendix A). This included 811.43-acres of the 1,222.64-acres in the California City portion of the Action Area and 82.83-acres of the 673.52-acres of the Kern County portion of the Action Area. Although these parcels have not been in agricultural production for decades, preparation of the land for farming resulted in complete removal of native vegetation. Much of this abandoned farmland is still barren of native shrub cover and has been colonized by rubber rabbitbrush (*Ericameria nauseosa*), a fast- growing, early seral shrub that establishes after disturbance. Other disturbed areas are undergoing the slow process of reverting back to their original vegetation communities.

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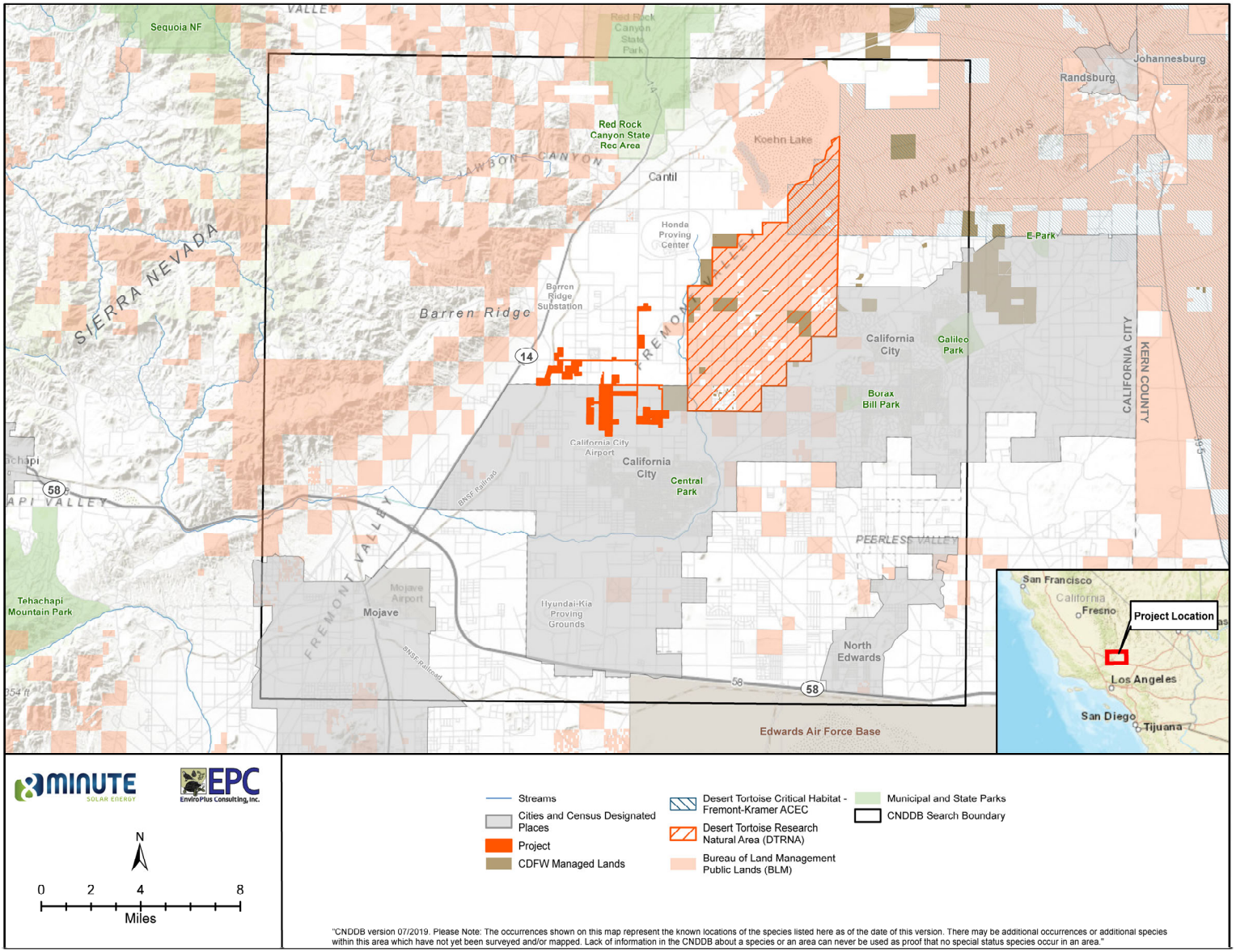

Figure 3. Kudu Solar Farm Project Regional and CNDDB Search Map, California City and Kern County, CA

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The Action Area has also been heavily impacted by recent and historic domestic sheep grazing. Evidence of sheep grazing including sheep scat, sheep trails, denuded areas in the vicinity of watering sites, and trampling of annual and small perennial vegetation.

Off-highway vehicle (OHV) activity within the Action Area was relatively common as evidenced by tracks and observations of OHVs. The level of OHV activity is likely influenced by the proximity of the BLM's Jawbone Canyon OHV area a few miles to the north. Evidence of shooting activity was found sporadically throughout the Action Area and illegal dump sites and wind-blown trash were routine observations.

2.0 Literature Review and Database Search

Information on potential species occurrences has been obtained from existing databases and published and non-published resources. Databases were reviewed to assess whether occurrences of special status species have been documented in the vicinity of the Project within the Mojave NE and California City North 7.5-minute USGS quadrangles (Figure 3 and Table 1).

A 20-mile radius around the Project included a review of all surrounding USGS maps to include Cross Mountain, Cinco, Cantil, Saltdale SE, Galileo Hill, Cache Peak, Mojave, Sanborn, California City South, and North Edwards.

Databases and resources reviewed and researched included but were not limited to the following:

- The California Natural Diversity Database (CNDDB) QuickView (2019a) and the CNDDB Occurrences List (2019b) within a 20-mile radius of the Project;
- CDFW Natural Communities List (CDFW 2018a) and California Wildlife Habitat Relationships System Maps and Descriptions (CDFW 2014);
- CDFW state and federally listed endangered, threatened, and rare plants (CDFW 2019a);
- California Native Plant Society (CNPS) database (CNPS 2019) and CNPS website (CNPS 2019);
- CDFW Special Vascular Plants, Bryophytes, and Lichen List (CDFW 2019b);
- California Desert Native Plant Act (CDNPA) (Division 23 of the California Food and Agricultural Code, Section 80071-80075) (California Food and Agricultural Code 2005);
- BLM (2015) species databases;
- CDFW Special Animals List (CDFW 2019c) and the CDFW and U.S. Fish and Wildlife Service (USFWS) Threatened or Endangered Animal Species List (CDFW 2019d);
- USFWS National Wetlands Inventory (NWI) Map (USFWS 2018b);
- Desert Renewable Energy Conservation Plan (DRECP) (Dudek 2014), DRECP Data Basin (Dudek 2014), and DRECP Kern County Gateway (Dudek 2014);
- CDFW West Mohave Desert Ecological Reserve (CDFW 2019e);
- U.S. Department of Agriculture (USDA) Web Soil Survey (USDA 1982);
- Federal Emergency Management Agency (FEMA) 100-year floodplain database (FEMA 2019);
- Western Bat Working Group (WBWG) (2019a);
- Regional hydrologic information was obtained from the Geospatial Data Gateway website of the Natural Resources Conservation Service (NRCS) (USDA 2019); and
- Weather and precipitation data were obtained from the Western Regional Climate Center (2019).

Table 1. Federal and State Listed and Special Status Species; IUCN and Xerces Society Red List Species; and CNPS Special Status Species Identified for the Kudu Solar Farm Project, California City and Kern County, California.[2]

SPECIES	ESA	CESA OR CDFW	G-RANK / S-RANK	CNPS RANK
Spotted Bat (*Euderma maculatum*)	-	SSC WBWG[3] - Med	G4 / S3	-
Pacific Townsend's Big-eared Bat (*Plecotus townsendii* ssp. *townsendii*)	-	SSC and SGCN WBWG[3] - High	G3G4 / S2	-
Pallid Bat (*Antrozous pallidus*)	-	SSC WBWG[3] - Low	G5 / S3	-
Mohave Ground Squirrel (*Xerospermophilus mohavensis*)	-	ST	G2G3 / S2S3	-
Desert Kit Fox (*Vulpes macrotis arsipus*)	-	CCR Title 14[4]		-
American Badger (*Taxidea taxus*)	-	SSC	G5 / S3	-
Agassiz's Desert Tortoise (*Gopherus agassizii*)	FT	ST	G3 / S2S3	-
California Condor (*Gymnogyps californianus*)	FE	SE	G1 / S1	-
Northern Harrier (*Circus hudsonius*)	-	SSC	G5 / S3	-
Cooper's Hawk (*Accipiter cooperii*)	-	WL	G5 / S4	-
Swainson's Hawk (*Buteo swainsoni*)	BCC	ST	G5 / S3	-
Ferruginous Hawk (*Buteo regalis*)	BCC	WL	G4 / S3S4	-
Golden Eagle (*Aquila chrysaetos*)	BCC BGEPA	FP WL	G5 / S3	-
Prairie Falcon (*Falco mexicanus*)	BCC	WL	G5 / S4	-
Merlin (*Falco columbarius*)	-	WL	G5 / S3S4	-
American Peregrine Falcon (*Falco peregrinus anatum*)	BCC	FP	G4T4 / S3S4	-
Western Snowy Plover (*Charadrius alexandrinus nivosus*)	FT BCC	SSC	G3T3 / S2S3	-
Mountain Plover (*Charadrius montanus*)	BCC	SSC	G3 / S2S3	-
Western Burrowing Owl (*Athene cunicularia* ssp. *hypugaea*)	BCC	SSC	G4 / S3	-
Long-eared Owl (*Asio otus*)	-	SSC	G5 / S3	-
Short-eared Owl (*Asio flammeus*)	-	SSC	G5 / S3	-
Loggerhead Shrike (*Lanius ludovicianus*)	BCC	SSC	G4 / S4	-
Gray Vireo (*Vireo vicinior*)	BCC	SSC	G4 / S2	-
Bendire's Thrasher (*Toxostoma bendirei*)	BCC	SSC	G4G5 / S3	-
Crissal Thrasher (*Toxostoma crissale*)	-	SSC	G5 / S3	-
Yellow Warbler (*Setophaga petechia*)	BCC	SSC	G5 / S3S4	-
Tricolored Blackbird (*Agelaius tricolor*)	SC BCC	ST	G2G3 / S1S2	-
Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*)	-	SSC	G5 / S3	-
Crotch Bumble Bee (*Bombus crotchii*)	-	PL[5]	G3G4 / S1S2 IUCN[6] - Endangered	-

[2] See Appendix B for the definition of all Rank codes.
[3] WBWG = Western Bat Working Group Conservation Priorities: High, Medium, Low (2019b)
[4] Desert kit fox are a protected fur-bearing mammal under Title 14 of the California Code of Regulations, Section 460 (2019).
[5] PL = Petitioned for Listing under the California Endangered Species Act (CESA) as Endangered (Xerces Society 2019a).

SPECIES	ESA	CESA OR CDFW	G-RANK / S-RANK	CNPS RANK
Western Bumble Bee (*Bombus occidentalis*)	-	PL[5]	G2G3 / S1 IUCN/Xerces[6] – Vulnerable/ Imperiled	-
Mojave Dotted-blue Butterfly (*Euphilotes mojave*)	-	-	G2G3 / S1S2 Xerces[6] - Imperiled	-
Desert Cymopterus (*Cymopterus deserticola*)	-	-	G2 / S2	1B.2 E
Barstow Woolly Sunflower (*Eriophyllum mohavense*)	-	-	G2 / S2	1B.2 E
Red Rock Poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*)	-	-	G5 / S2	1B.2 E
Pale-yellow Layia (*Layia heterotricha*)	-	-	G2 / S2	1B.1E
Creamy Blazing Star (*Mentzelia tridentata*)	-	-	G3 / S3	1B.3E
Charlotte's Phacelia (*Phacelia nashiana*)	-	-	G3 / S3	1B.2E
Kern County Evening-primrose (*Camissonia kernensis* ssp. *kernensis*)	-	-	G4T3 / S3	4.3E
White Pygmy-poppy (*Canbya candida*)	-	-	G3G4 / S3S4	4.2 E
Mojave Spineflower (*Chorizanthe spinosa*)	-	-	G4 / S4	4.2 E
Death Valley Sandmat (*Euphorbia vallis-mortae*)	-	-	G3 / S3	4.2E
Golden Goodmania (*Goodmania luteola*)	-	-	G3 / S3	4.2
Solitary Blazing Star (*Mentzelia eremophila*)	-	-	G4 / S3S4	4.2
Crowned Muilla (*Muilla coronata*)	-	-	G3 / S3	4.2
Mojave Fish-hook Cactus (*Sclerocactus polyancistrus*)	-	-	G3 / S3	4.2

[6] IUCN (International Union for Conservation of Nature) Red List (IUCN 2019) and Xerces Society Red List (2019a, 2019b).

3.0 GENERAL SITE CONDITIONS

3.1 Geographic Area and Climate

The Project is located within southeastern Kern County (Figure 1). Kern County encompasses 8,161 square miles and is bordered by Monterey and King Counties to the northwest, Tulare County to the north, Inyo County to the northwest, San Bernardino County to the east, Los Angeles County to the south, Ventura County to the southwest, Santa Barbara County to the southwest, and San Luis Obispo County to the west. The climate of the region varies greatly from the foothills of the Sierra Nevada and Tehachapi Mountains to the foothills of the Coastal Ranges.

The 2,176.14 gross acre Action Area would be located on uninhabited private lands north of California City, northeast of the community of Mojave, and south of the community of Cantil, within portions of unincorporated Kern County and within California City. A total of 859.88-acres comprise the Action Area within Kern County and a total of 1,316.26-acres comprise the Action Area within California City (Figure 2 and Figure 3).

California City was incorporated in 1965 and the population was 14,120 at the 2010 census (United States Census Bureau [USCB] 2019a). Its elevation is 2,405 feet AMSL. It is located 5.5 miles northwest of Edwards Air Force Base, 15 miles east of Tehachapi, 20 miles north of Lancaster, 20 miles southwest of Ridgecrest, and 42 miles east of Bakersfield in the Fremont Valley region of the Mojave Desert. According to the USCB, California City has a total area of 203.6 square miles, making it the third largest city in California based on land area. The southern portion of the Project is located adjacent to the California City Airport and it is within 3 miles north of the populated center of California City.

The community of Mojave is an unincorporated census-designated place (CDP) within Kern County (USCB 2019b). The population was 4,238 at the 2010 census. Mojave is located at the crossroads of SR58 and SR14 at an elevation of 2,762 feet AMSL. It is 17 miles north of Lancaster, 12 miles east of Tehachapi and 50 miles east of Bakersfield, and 2.5 miles south of California City in the Fremont Valley region of the Mojave Desert. Mojave is located below and east of Oak Creek Pass and the Tehachapi Mountains and north of the Antelope Valley proper. According to the USCB, the CDP has a total area of 58.4 square miles. The southern portion of the Project is located within 10 miles southwest of the community of Mojave.

Cantil is a small unincorporated community in Kern County and the home of the Honda Proving Center. It is located within 2 to 5 miles of the northern parcels that comprise the Project (Figure 3).

The desert area around California City has an average annual temperature ranging from 48 degrees Fahrenheit (F) to 76 degrees F (Wikipedia 2019b). The coldest month is December and average temperatures range between 32 degrees F and 58 degrees F. The warmest month is July and average temperatures range between 67 degrees F and 97 degrees F. The mean precipitation is approximately 6.5 inches. Most of the annual precipitation, in the form of rain, falls between the months of November and March.

3.2 Soils

Soils identified within the Action Area include Cajon loamy sand (114), Cajon gravelly loamy sand (116), Garlock loamy sand (137), and Neuralia sandy loam (154) (USDA 1981, 1982, 2001, 2015) (Table 2 and Figure 4).

The dominant soil type found throughout the Action Area was Cajon loamy sand (114).

Soils Series descriptions are as follows:

Cajon Series (USDA 2015a)**:** The Cajon Series of soils consist of very deep, somewhat excessively drained soils that formed in sandy alluvium from dominantly granitic rocks. The textures can be coarse sand, loamy coarse sand, sand, loamy sand, fine sand, or loamy fine sand or their gravelly or cobbly equivalents.

Cajon soils are found on alluvial fans, fan aprons, fan skirts, inset fans and river terraces at elevations of 200 to 4,300 feet AMSL. Slopes are 0 to 15 percent. The climate is arid with hot dry summers and somewhat moist winters. Average annual precipitation is 2 to 9 inches, mostly in the form of winter rain. Mean January temperature is 43 degrees to 48 degrees F., mean July temperature is 82 degrees to 84 degrees F., mean annual temperature is 57 degrees to 70 degrees F. Frost-free season is 150 to 340 days. The profile is slightly alkaline or strongly alkaline and mildly saline-alkali to strongly saline-alkali. Cajon soils are somewhat excessively drained; negligible to low runoff; with rapid permeability. Cajon soils with sandy loam surface textures have moderately rapid over rapid permeability. Flooding is none to rare. Vegetation is mostly desert shrubs including creosote bush (*Larrea tridentata*), saltbush (*Atriplex* spp.), Mormon-tea (*Ephedra* sp.), Joshua tree (*Yucca brevifolia*), sand rice grass (*Stipa hymenoides*), and other annual grasses and forbs.

Garlock Series (USDA 2015b)**:** The Garlock Series of soils consist of very deep, well drained soils that formed from mixed alluvium. The textures include sand, coarse sand, loamy sand, coarse sandy loam, and sandy loam.

Garlock soils are found on old stream terraces and alluvial fans in the Mojave Desert that have slopes of 2 to 9 percent, between 2,100 and 3,500 feet AMSL. The climate is arid with hot dry summers and mild, moist winters. The annual precipitation is 3 to 8 inches with some as snow. Average January temperature is 45 degrees F and the average July temperature is 88 degrees F. The frost free season is 200 to 340 days. Garlock soils are well drained with low to medium runoff, and drainage that is moderately slow over very rapid permeability. Vegetation is mostly desert shrubs including creosote bush, white bursage (*Ambrosia dumosa*), buckwheat (*Eriogonum* spp.), other shrubs, desert needlegrass (*Stipa speciosa*), sand rice grass, and annual grasses.

Table 2. Soil Mapping Units Identified Within the Kudu Solar Farm Action Area, California City and Kern County, CA

Soil Mapping Unit	Soil Mapping Unit Name	Slopes Associated with Unit (%)	Elevation where Found (ft)	Landforms Associated with Unit	Parent Material Associated with Unit
114	Cajon loamy sand	0-5	2,500-3,500	alluvial fans, flood plains	alluvium derived from granitic rock
116	Cajon gravelly loamy sand	0-9	2,000-3,500	alluvial fans, flood plains	alluvium derived from granitic rock
137	Garlock sandy loam	2-9	2,500-3,500	alluvial fans, alluvial terraces	alluvium derived from granitic rock
154	Neuralia sandy loam	2-5	2,300-2,800	alluvial fans, flood plains	alluvium derived from granitic rock

Neuralia Series (USDA 2001)**:** The Neuralia Series consists of very deep, well drained soils formed in alluvium from mixed sources. The textures include sandy loam, loamy sand, sand or gravelly sand.

Neuralia soils are found on alluvial fans, fan terraces, and plains with slopes of 0 to 15 percent, between 2,300 and 4,200 feet AMSL. The climate is arid with hot dry summers and cool moist winters. Mean annual precipitation is 4 to 6 inches with some snow. Mean January temperature is 45 degrees F. and the mean July temperature is 88 degrees F., and the mean annual temperature is 57 to 62 degrees F. Frost-free season is 200 to 250 days. Reaction is neutral to moderately alkaline to a depth of 10 inches and slightly alkaline or moderately alkaline below. Neuralia soils are well drained with slow and medium runoff and moderately slow permeability. Natural vegetation occurring within this series includes white bursage, creosote bush, and scattered annual grasses and forbs.

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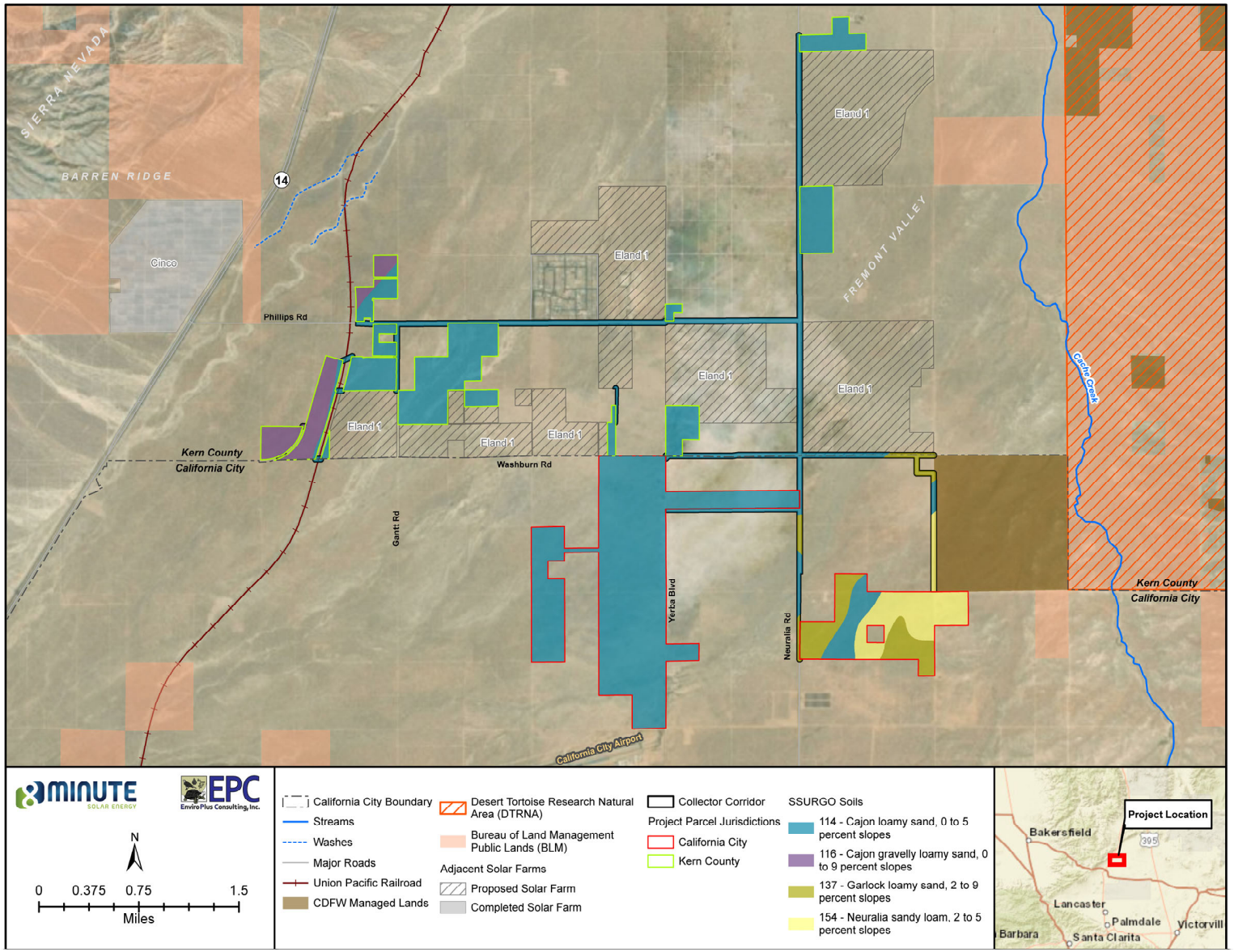

Figure 4. Kudu Solar Farm Action Area Soils Map, California City and Kern County, CA

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3.3 Vegetation Communities and Special Status Plant Species

The Project is located in the Mojave Desert Region of the Desert Floristic Province. Landforms in the region include granite-derived flood plains, alluvial fans, and terraces. The Project ultimately drains into Koehn Dry Lake to the northeast. Soil types are mapped on Figure 4 and described in Table 2. Soil textures throughout most of the Project are loamy sands, gravelly loamy sands, and sandy clay loams. Native vegetation on-site is typical of that found throughout the Mojave Desert.

A vegetation community assessment was conducted within the Action Area in September of 2019. Six vegetation communities were identified. These included four shrubland alliances, one plant association, and one herbaceous community, as defined by Sawyer et al. (2009) and Klein and Keeler-Wolf (2014). The plant association is considered a sensitive natural community in California (CDFW 2018a). Each community is discussed in detail in Section 4.0.

The literature research conducted for special status plant species (Section 2.0) identified a total of 33 species within the USGS quadrangles in and around the Project (CNDDB 2019a, 2019b). Out of the 33 species identified, 14 species have the potential to occur within the Action Area (Table 1). Potentially occurring rare and special status plant species are discussed in detail in Section 5.1.

3.4 Wildlife

The literature research conducted for sensitive and listed wildlife species (Section 2.0) identified a total of 21 species within the USGS quadrangles in and around the Project (CNDDB 2019a, CNDDB 2019b). This included 19 wildlife species, 1 insect, and 1 mollusk. Out of the 21 species identified, 18 species have the potential to occur within the Action Area (Table 1). In addition to the 2019 CNDDB list, 13 more species were identified with a potential for occurring in or near the Action Area, increasing the total to 31 species.

Of the 31 species, there are 6 mammals, 1 reptile, 21 birds, and 3 insects. These species are discussed in detail in Section 6.2 and 6.3. Of the 31 species, six are federal and/or state listed. Of these six species, only two have the potential to inhabit the Action Area: the state listed as Threatened Mohave ground squirrel (MGS) and the federal and state listed as Threatened Agassiz's desert tortoise (ADT). The federal and state Endangered California condor, the state Threatened Swainson's hawk, the federal Threatened western snowy plover, and the state Threatened tricolored blackbird are not known to nest within the limits of the Action Area but may potentially occur on site to forage, hunt, roost, perch, drink, or migrate through.

Because of the potential for on-site presence of both MGS and ADT, a habitat suitability assessment for MGS was conducted in September of 2019 by Dr. Philip Leitner and a USFWS protocol presence/absence ADT survey was completed in October 2019 by EPC. All other potentially occurring listed, special status, and general wildlife and insect species were surveyed for during the ADT protocol survey.

4.0 Vegetation Community Assessment

4.1 Methods

As discussed in Section 2.0, various agency databases and recorded documents were reviewed and researched for the Project and surrounding lands for the presence of vegetation communities and associated botanical species. Sensitive natural communities or vegetation communities are presumed to occur within the Action Area if there were locality records, either historic or recent, indicating presence. In order to determine which vegetation communities occur on site, a vegetation community assessment was conducted by EREMICO Biological Services, LLC between September 2 and September 23, 2019.

The EREMICO Biological Services team included Denise LaBerteaux and Bruce Garlinger. Because of the timing of the survey, most special status plants that have some potential to occur within the Action Area were not expected to be observable. Therefore, the purpose of this survey was to: 1) ground-truth and edit, if necessary, the vegetation communities that were mapped in the Action Area as part of the DRECP; 2) identify habitats that may harbor special status plants; and 3) identify sensitive natural communities occurring on-site. The team either walked or drove throughout the Action Area, visiting all habitats and topographic features in the area. The following information was recorded: plant alliances, dominant shrubs, other shrubs, soil texture, and habitat disturbances.

Prior to conducting the field survey within the Action Area, each team member reviewed the physical description, habitat description, drawings, and photographs of each potentially occurring special status plant species. Sources for information on each species included floras (Abrams and Ferris 1923-1960, Baldwin et al. 2012, Munz 1974), field guides (Jaeger 1940, MacKay 2013), and other sources (CNPS 1978, 2019; Smithsonian Institution 1978; University of California, Berkeley 2017).

Once the habitat assessment was completed, those special status plant species identified initially as having potential to occur were ranked as having “Low”, “Moderate”, or “High” potential. Those species that are known to occur within the Action Area or were encountered during the habitat assessment were ranked as “Present.” Special status plant species are discussed in detail in Section 5.1.

4.2 Results

The Action Area supports a total of four shrubland alliances and one plant association, as defined by Sawyer et al. (2009). One grassland group, as described by Klein and Keeler-Wolf (2014) is also present. The plant association is a sensitive natural community in California (CDFW 2018a).

These desert vegetation communities are defined by the predominant vegetation present on site. Where dominant plant species coincide and the majority of the land coverage is comprised of more than one dominant vegetation type, it is considered an Alliance, as in the case of the Creosote Bush-White Bursage Scrub Shrubland Alliance.

Agricultural activity has resulted in significant degradation of native vegetation. A total of 45.7% of the Action Area has been previously farmed. This includes 811.43-acres of the 1,222.64-acres in the California City portion of the Action Area and 82.83-acres of the 673.52-acres in the Kern County portion of the Action Area (Appendix A). Although these parcels have not been in agricultural production for decades, preparation of the land for farming has resulted in complete removal of native vegetation. Much of this abandoned farmland is still barren of native shrub cover and has been colonized by rubber rabbitbrush (*Ericameria nauseosa*), a fast-growing, early seral shrub that establishes after disturbance. Other disturbed areas are undergoing the slow process of reverting back to their original vegetation communities.

Within the 2,176.14-acre Action Area, the 859.88-acre Kern County CUP supports all six vegetation communities of which one is considered sensitive; and the 1,316.26-acre California City CUP supports five of the six vegetation communities of which one is considered sensitive. Table 3 provides the acreage of each vegetation community and the acreage of unvegetated, disturbed, and developed features within each CUP. Figure 5 depicts the vegetation communities mapped within the Action Area.

The vegetation communities present on site are further defined as follows with nomenclature following *A Manual of California Vegetation, 2nd Ed.* (Sawyer et al. 2009). A list of annual and perennial plant species recorded during the vegetation community assessment is provided in Appendix C. Representative photographs of each vegetation community are provided in Appendix D.

4.2.1 Non-sensitive Vegetation Communities

***Larrea tridentata-Ambrosia dumosa* Shrubland Alliance (Creosote Bush-White Bursage Scrub)**

This vegetation community comprises a total of 1,042.56-acres or approximately 48.0% of the 2,176.14-acre Action Area and is the most common vegetation community (Table 3, Figure 5, and Photograph 1 in Appendix D).

The Action Area acreages within the Kern County CUP consist of 478.87-acres (55.7% of the CUP) and within the California City CUP consist of 563.69-acres (42.8% of the CUP).

This habitat type commonly occurs on well-drained alluvial or colluvial soils, with or without a desert pavement surface, in minor washes and rills and on alluvial fans, bajadas, and upland slopes throughout the Mojave Desert, from -75 m to 1,200 m in elevation. Shrubs are typically less than 3 m in height, and the shrub canopy is open to intermittent and may be two-tiered (Sawyer et al. 2009).

Other shrubs that were identified during the vegetation community assessment in this habitat include goldenhead (*Acamptopappus sphaerocephalus* var. *hirtellus*), cheesebush, cottonthorn (*Tetradymia axillaris* var. *longispina*), horsebrush (*Tetradymia stenolepis*), desert tomato (*Lycium andersonii*), and box-thorn (*Lycium cooperi*). Rubber rabbitbrush (*Ericameria nauseosa*) was a common associate in disturbed areas. One shrub association within this alliance, *Larrea tridentata-Ambrosia dumosa-Senna armata* occurs in the Action Area and is a sensitive natural community (CDFW 2018a). It is discussed in Section 4.2.2.

Table 3. Acreage of Vegetation Communities and Unvegetated Features within the Kudu Solar Farm Action Area, California City and Kern County, California.

VEGETATION COMMUNITY[7]	KERN COUNTY CUP ACRES (%)	CALIFORNIA CITY CUP ACRES (%)	OVERALL ACRES (%)
***Larrea tridentata – Ambrosia dumosa* Shrubland Alliance (Creosote Bush - White Bursage)**	478.87 (55.7%)	563.69 (42.8%)	1,042.56 (47.9%)
***Ericameria nauseosa* Shrubland Alliance (Rubber Rabbitbrush Scrub)**	56.93 (6.6%)	579.56 (44.0%)	636.49 (29.2%)
***Larrea tridentata – Ambrosia dumosa – Senna armata* Association (Creosote Bush - White Bursage – Desert Senna Scrub) - Sensitive**	203.12 (23.6%)	0.85 (0.1%)	203.97 (9.4%)
***Larrea tridentata* Shrubland Alliance (Creosote Bush Scrub)**	78.81 (9.2%)	83.90 (6.4%)	162.71 (7.5%)
***Ambrosia dumosa* Shrubland Alliance (White Bursage Scrub)**	18.05 (2.1%)	87.14 (6.6%)	105.19 (4.8%)
Mediterranean California Naturalized Annual and Perennial Grassland Group	10.10 (1.2%)	-	10.10 (0.5%)
Unvegetated (developed: paved roadways, structures, or other features and disturbed: dirt roadways, etc.)	14.00 (1.6%)	1.12 (0.1%)	15.12 (0.7%)
TOTAL ACRES	**859.88 (100%)**	**1,316.26 (100%)**	**2,176.14 (100%)**

[7] Vegetation communities per Sawyer et al. 2009.

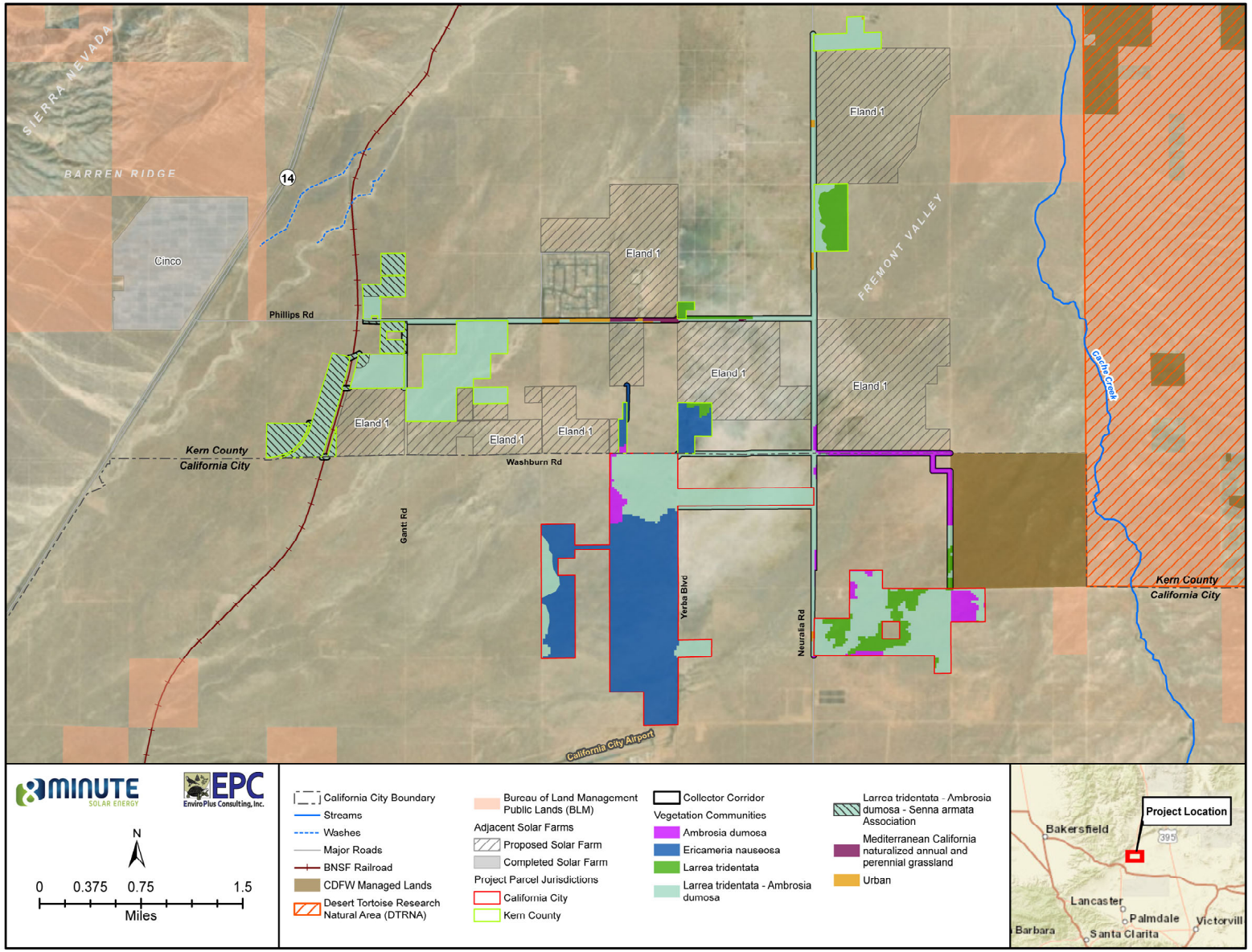

Figure 5. Kudu Solar Farm Action Area Vegetation Communities, California City and Kern County, CA

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Ericameria nauseosa Shrubland Alliance (Rubber Rabbitbrush Scrub)

This vegetation community comprises a total of 636.49-acres or approximately 29.2% of the 2,176.14-acre Action Area and is the second most common vegetation community (Table 3, Figure 5, and Photograph 2 in Appendix D).

The Action Area acreages within the Kern County CUP consist of 56.93-acres (6.6% of the CUP) and within the California City CUP consist of 579.56-acres (44.0% of the CUP).

Rubber rabbitbrush is a fast-growing, early seral shrub that establishes after disturbance. Stands can occur in any topographic setting, typically colonizing areas after disturbance such as washes, road cuts, clearings, and areas disturbed by overgrazing and agricultural activities. Soils are primarily well-drained sands and gravel (Sawyer et al. 2009).

Rabbitbrush scrub dominates Action Area parcels disturbed by past agricultural activities (Photograph 2, Appendix D). Shrubs occurring with rubber rabbitbrush include white bursage, cheesebush, and scattered creosote bush. Soils are compacted coarse sand and gravel. This alliance is not a sensitive natural community (CDFW 2018a).

Larrea tridentata Shrubland Alliance (Creosote Bush Scrub)

This vegetation community comprises a total of 162.71-acres or approximately 7.5% of the 2,176.14-acre Action Area (Table 3, Figure 5, and Photograph 3 in Appendix D).

The Action Area acreages within the Kern County CUP consist of 78.81-acres (9.2% of the CUP) and within the California City CUP consist of 83.90-acres (6.4% of the CUP).

Creosote bush scrub typically has shrubs that are less than 3 m in height and occurs in well-drained soils on alluvial fans, bajadas, upland slopes and in minor, intermittent washes at an elevational range of -75 m to 1,000 m (Sawyer et al. 2009). The majority of this habitat occurs in patches on the eastern portion of the Action Area. This habitat is a nearly monotypic stand of creosote bush with very few other shrubs (Photograph 3, Appendix D). Soils include sand, coarse sand, and gravel. No associations occur in the Action Area. This alliance is not a sensitive natural community (CDFW 2018a).

Ambrosia dumosa Shrubland Alliance (White Bursage Scrub)

This vegetation community comprises a total of 105.19-acres or approximately 4.8% of the 2,176.14-acre Action Area (Table 3, Figure 5, and Photograph 4 in Appendix D).

The Action Area acreages within the Kern County CUP consist of 18.05-acres (2.1% of the CUP) and within the California City CUP consist of 87.14-acres (6.6% of the CUP).

White bursage scrub commonly occurs on alluvial fans, bajadas, rocky hills, partially-stabilized and stabilized sand fields, and upland slopes, between 0 and 1700 m in elevation. Soils are typically sandy, clay-rich, or calcareous and may have pavement surfaces (Sawyer et al. 2009). This alliance occurs in patches on the eastern portion of the Action Area. The shrub diversity is high, with several other species present. These shrubs included goldenhead, cheesebush, Cooper's goldenbush, desert tomato, and box-thorn. A

few scattered creosote bushes were also present. In areas with sand or on low sandy hummocks additional shrub species were present, including winter fat (*Krascheninnikovia lanata*) and Thurber sandpaper-plant (*Petalonyx thurberi* ssp. *thurberi*).

White-bursage – goldenhead plant association, a sensitive natural community (CDFW 2018a), was not identified as occurring in the Action Area.

Mediterranean California Naturalized Annual and Perennial Grassland Group

This vegetation community comprises a total of 10.10-acres or approximately 0.5% of the 2,176.14-acre Action Area (Table 3, Figure 5).

The Action Area acreages within the Kern County CUP consist of 10.10-acres (1.2% of the CUP). This vegetation community does not occur within the California City CUP.

This vegetation type represents a group of stands each dominated by non-native annual or short-lived plants. Any one stand may be dominated by mustards (e.g., *Brassica* spp., *Sisymbrium* spp., *Hirschfeldia incana*) or grasses (e.g., *Schismus* spp., *Bromus* spp.). These stands are common in areas disturbed by fire, agriculture, grazing, clearing, OHV use, and other soil disturbing activities. Within the Action Area, this group of non-native grass and mustard stands occur on road shoulders and along the edges of fallow fields adjacent to some of the collector lines.

4.2.2 Sensitive Vegetation Communities

***Larrea tridentata-Ambrosia dumosa-Senna armata* Association (Creosote Bush-White Bursage-Desert Senna Scrub)**

This vegetation community comprises a total of 203.97-acres or approximately 9.4% of the 2,176.14-acre Action Area (Table 3, Figure 5, and Photograph 5 in Appendix D).

The Action Area acreages within the Kern County CUP consist of 203.12-acres (23.6% of the CUP) and within the California City CUP consist of 0.85-acres (0.1% of the CUP).

This plant association, under the *Larrea tridentata-Ambrosia dumosa* Shrubland Alliance, is limited to areas along the UP Railroad, which traverses the western portion of the Action Area, and in a small patch located in the southernmost collector line in the California City CUP. Soils in these areas consisted of sands, coarse sands, and gravels. Other shrubs included goldenhead, cheesebush, winter fat, desert tomato, and box-thorn. Scattered young Joshua trees are also present within this sensitive Association.

5.0 POTENTIAL LISTED AND SPECIAL STATUS PLANT SPECIES

As discussed in Section 2.0, various agency databases and recorded documents were reviewed and researched for the Project and surrounding lands to identify the potential occurrence of listed federal or state and special status plant species. Listed and special status plant species are presumed to occur within the Action Area if there were locality records, either historic or recent, indicating presence, discovered through the research and literature review efforts.

5.1 Literature Research Results

The literature research conducted for special status plant species identified a total of 33 plant species within the USGS quadrangles in and around the Project (CNDDB 2019a, 2019b). Out of the 33 species identified, 14 plant species have the potential to occur within the Action Area (Table 1). Potentially occurring rare and special status plant species are discussed in detail in Section 5.1.

The 33 special status plants occurring in the search area are depicted on Figure 6. There were no records of any special status plants within or immediately adjacent to the Action Area. Based on habitat requirements and elevational range, 19 species were identified as having no potential of occurring in the Action Area. The 14 species that have some potential of occurring include: six species that are listed as CNPS Rank 1B, defined as plants that are rare and endangered in California and elsewhere, and eight species that are listed as CNPS Rank 4, a watch list of plants with limited distribution (CNPS 2019) (Table 4). Potentially occurring special status plant species are discussed in detail in Section 5.2. No potentially occurring species are listed as Threatened or Endangered under the state or federal ESA (CDFW 2019a, USFWS 2018a).

The 14 special status plant species that have the potential to occur within the boundaries of the Action Area are included on special status lists where they meet one or more of the following categories (CDFW 2019a, 2019b; CNPS 2019; USFWS 2017a):

- Taxa that are officially listed or proposed for listing under the state and/or federal Endangered Species Acts;
- Taxa that are state or federal candidates for possible listing;
- Taxa listed in the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Plants of California*;
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the California Environmental Quality Act (CEQA) Guidelines (e.g., all CNPS Rank 1 and 2 and some Rank 3 and 4 plants may fall under Section 15380 of CEQA);
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;
- Populations in California that may be on the periphery of a taxon's range, but are threatened with extirpation in California; and
- Taxa closely associated with a habitat that is declining in California at a significant rate (e.g., wetlands, riparian, old growth forests, desert aquatic systems, native grasslands, vernal pools, etc.).

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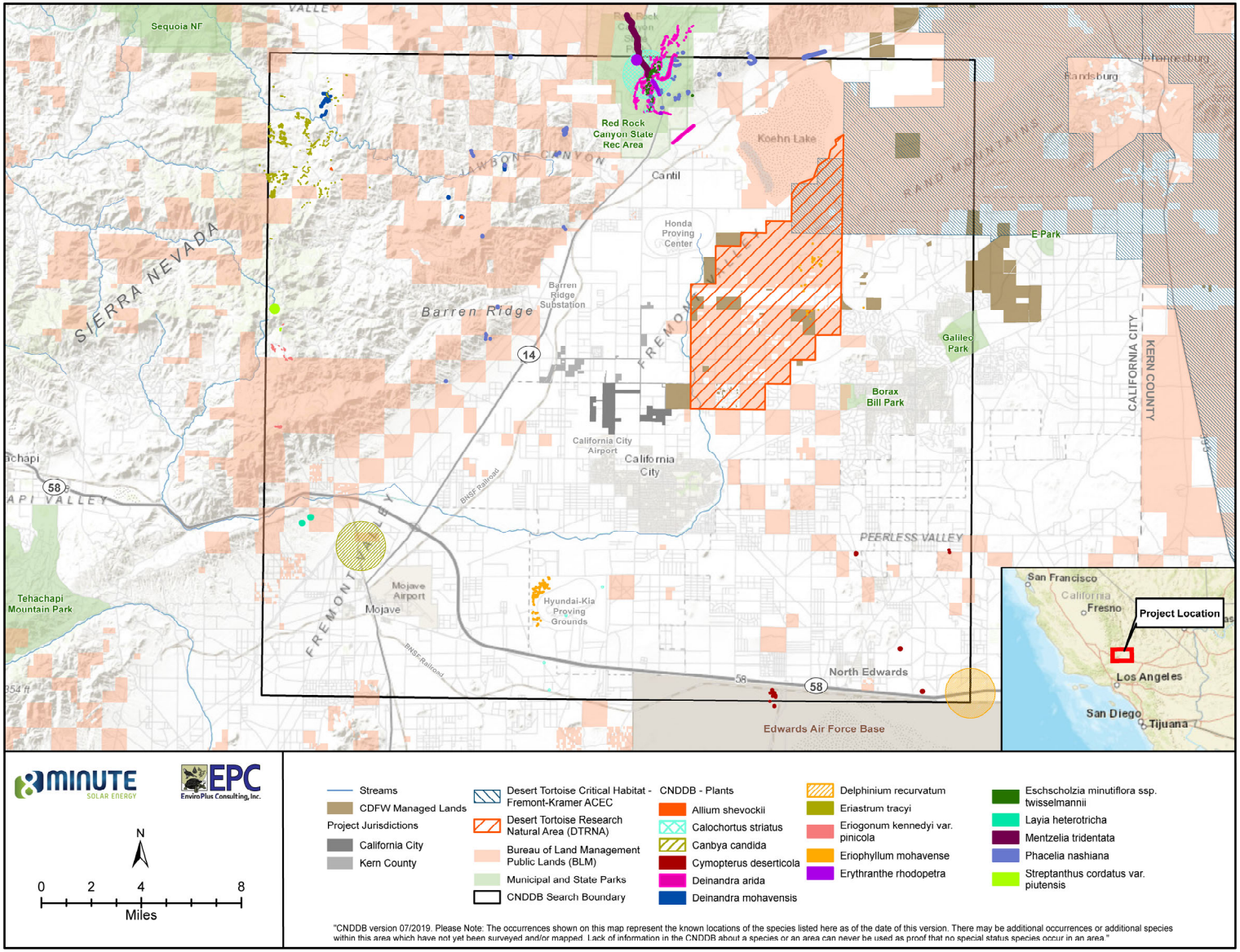

Figure 6. Kudu Solar Farm Project Special Status Plants, CNDDB Search Result, California City and Kern County, CA

Table 4. Special Status Plant Species with Potential to Occur in the Region and within the Kudu Solar Farm Action Area, California City and Kern County, California.

SCIENTIFIC NAME COMMON NAME PLANT FAMILY, LIFE FORM	RANK OR STATUS[8] FWS	CDFW	G-RANK	CNDDB S-RANK	CNPS	FLOWERING PERIOD	HABITAT AND DISTRIBUTION NOTES	POTENTIAL FOR OCCURRENCE WITHIN THE ACTION AREA
CNPS Rank 1B								
Cymopterus deserticola **desert cymopterus** Apiaceae, perennial herb	–	–	G2	S2	1B.2E	March-May	630-1500 m. Sandy. Joshua tree woodland, Mojavean desert scrub. Known to occur northwest (west of Red Rock Canyon State Park) and southeast (Edwards AFB and Aerial Acres) of the Project.	**LOW** – May occur on the sandy hummocks east of Neuralia Road
Eriophyllum mohavense **Barstow woolly sunflower** Asteraceae, annual herb	–	–	G2	S2	1B.2E	March-May	500-950 m. Gravelly, silty, sandy, or clay soils on level or sloping terrain, as well as in low-lying areas. Chenopod scrub, Mojavean scrub, playas. Known to occur east and south of the Project at the DTRNA and at the Hyundai Proving Grounds.	**LOW –** May occur in silty and gravely depressions east of Neuralia Road
Eschscholzia minutiflora **ssp.** ***twisselmannii*** **Red Rock poppy** Papaveraceae, annual herb	–	–	G5	S2	1B.2E	March-May	680-1230 m. Rhyolite tuff, granitic. Mohavean desert scrub. Known to occur north and northeast of the Project in the El Paso Mountains.	**LOW** – May occur in gravelly areas on undisturbed parcels throughout the Action Area
Layia heterotrichia **pale-yellow layia** Fabaceae, perennial herb	–	–	G2	S2	1B.1E	March-June	300-1705 m. Alkaline or clay. Cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland. Known to occur southwest of the Project near Mojave.	**LOW** – May occur in silty or clayey areas on undisturbed parcels
Mentzelia tridentata **Creamy Blazing Star** Loasaceae, annual herb	-	-	G3	S3	1B.3E	March-May	700-1175 m. Rocky, gravelly, sandy. Mojavean desert scrub. Known to occur east and north of the Project in central	**LOW** - May occur on undisturbed parcels throughout the Action

[8] See Appendix B for the definition of all Rank codes.

SCIENTIFIC NAME COMMON NAME PLANT FAMILY, LIFE FORM	RANK OR STATUS[8] FWS	CDFW	G-RANK	CNDDB S-RANK	CNPS	FLOWERING PERIOD	HABITAT AND DISTRIBUTION NOTES	POTENTIAL FOR OCCURRENCE WITHIN THE ACTION AREA
							Mojave Desert and upper Red Rock Canyon (old, vague record).	Area
Phacelia nashiana **Charlotte's phacelia** Hydrophyllaceae, annual	-	-	G3	S3	1B.2E	March-June	600-2200 m. Usually granitic, sandy or rocky areas on steep slopes or flats. Joshua tree woodland, Mohavean desert scrub; pinyon-juniper woodland; Known to occur north and west of the Project in Red Rock Canyon, Jawbone Canyon, and Pine Tree Canyon.	**LOW** – May occur in the extreme western portion of the Action Area
CNPS Rank 4								
Camissonia kernensis* ssp. *kernensis **Kern County evening-primrose** Onagraceae, annual herb	-	-	G4	S3	4.3E	March-May	790-2130 m. Sandy or gravelly, granitic. Chaparral, Joshua tree woodland, pinyon and juniper woodland. Known to occur northwest and southwest of the Project.	**LOW** - May occur in sandy and gravelly soils on undisturbed parcels throughout the Action Area
Canbya candida **white pygmy-poppy** Papaveraceae, annual herb	–	–	G3 G4	S3S4	4.2E	March-June	600-1460 m. Gravelly, sandy, granitic. Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland. Known from the West Mojave Desert.	**MODERATE -** May occur in sandy and gravelly soils on undisturbed parcels throughout the Action Area
Chorizanthe spinosa **Mojave Spineflower** Polygonaceae, annual herb	-	-	G4	S4	4.2E	March-July	600-1300 m. Sometimes alkaline. Chenopod scrub, Joshua tree woodland, Mojavean desert scrub, playas. Known to occur in surrounding areas.	**LOW** – may occur in silty, clayey, or gravelly open areas on undisturbed parcels
Euphorbia vallis-mortae **Death Valley Sandmat** Euphorbiaceae, perennial herb	–	–	G3	S3	4.2E	May-October	230-1460 m. Sandy, gravelly. Mojavean desert scrub. Known to occur north and northwest of the Project.	**LOW** - May occur in sandy and gravelly soils on undisturbed parcels in the Action Area
Goodmania luteola **golden goodmania** Polygonaceae, annual herb	–	–	G3	S3	4.2	April-August	20-2200 m. Alkaline or clay. Mojavean desert scrub, meadows and seeps, playas, valley and foothill grassland. Known from south and southeast of the	**LOW -** May occur in silty or clayey open areas on undisturbed parcels

SCIENTIFIC NAME COMMON NAME PLANT FAMILY, LIFE FORM	RANK OR STATUS[8] FWS	CDFW	G-RANK	CNDDB S-RANK	CNPS	FLOWERING PERIOD	HABITAT AND DISTRIBUTION NOTES	POTENTIAL FOR OCCURRENCE WITHIN THE ACTION AREA
							Project.	
Mentzelia eremophila **solitary blazing star** Loasaceae, annual herb	–	–	G4	S3S4	4.2	March-May	700-1220 m. Canyons, rocky slopes, washes. Mojavean desert scrub. Known to occur in surrounding areas.	**LOW** - May occur in small washes in the Action Area
Muilla coronata **crowned muilla** Themidaceae, perennial bulbiferous herb	–	–	G3	S3	4.2	March-April	670-1960 m. Chenopod scrub, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland. Known to occur near the Project.	**HIGH** – potential habitat occurs on undisturbed parcels throughout the Action Area; known location nearby
Sclerocactus polyancistrus **Mojave Fish-hook Cactus** Cactaceae, perennial stem succulent	–	–	G4	S4	4.3E	April-May	640-2320 m. Usually carbonate. Great Basin scrub, Joshua tree woodland, Mojavean desert scrub. Known to occur in surrounding areas.	**LOW** - May occur on undisturbed parcels throughout the Action Area

In addition, taxa protected under the CDNPA (Division 23 of the California Food and Agricultural Code, Section 80071-80075) (California Food and Agricultural Code 2005) were also considered. These taxa include:

- Smoke tree (Psorothamnus spinosus);
- All native species in the genus *Prosopis*, i.e., mesquites;
- All native species in the genus *Nolina*, i.e. beargrass;
- All native species in the family *Cactaceae*, i.e., cacti;
- All native species in the family *Agavaceae*, i.e., century plants (*Agave* spp.), Joshua trees and other *Yucca* spp., desert lilies (*Hesperocallis undulata*).

Although federal and/or state Threatened or Endangered species or proposed Threatened or Endangered species receive legal protection, other special status species do not. However, local, state, and federal resource agencies typically require that these species be considered during the planning process for projects because 1) they either are declining at a rate that could result in a state and/or federal listing or they have historically occurred in low numbers, and 2) known threats to their persistence currently exist. Designations and rankings of special status species are intended to focus attention on the species to help avert the need for costly listing and recovery efforts required under federal and/or state endangered species laws.

Plants protected by the CDNPA that may occur within the Action Area include golden cholla (*Cylindropuntia echinocarpa*), beavertail cactus (*Opuntia basilaris* var. *basilaris*), and Joshua tree. These plant species are all common and widespread throughout the West Mojave Desert.

5.2 Special Status Plant Species Assessment Results

During the course of the vegetation community assessment conducted by EREMICO Biological Services in September 2019 (Section 4.0), each of the 14 special status plant species identified as having the potential to occur on site were notated as "Low," "Moderate," "High," or "Present" (Figure 6 and Table 4). Further consideration of potential occurrence included vegetation communities, soils, and landforms.

A floristically-based, protocol-level survey (CDFW 2009) in all natural (or naturalized) habitats within the Action Area was not conducted during the vegetation community assessment in September 2019.

The 14 species identified in Table 4 with the potential to occur in the Action Area are further described below. Nomenclature throughout this document follows *The Jepson Manual, 2nd Ed.* (Baldwin et al. 2012).

Desert Cymopterus (*Cymopterus deserticola*) - LOW Potential

The desert cymopterus is a CNPS Rank 1B plant, which includes plants that are rare, threatened, or endangered in California and elsewhere. It is a deep-rooted, stemless perennial that usually grows to a height of 15 cm. Its leaf blades are 4-8 cm long, highly dissected and hairless. The inflorescence is compact and spherical with numerous purple

flowers. The fruit is 5-7 mm long with narrowly winged ribs. With a flowering season from late March through early May, this rare species occurs at an elevation of 700 - 1,310 m AMSL (Baldwin et al. 2012). It grows in fine to coarse, sandy soil on flats in old dune areas that have deep, well-drained sand, typically in creosote bush scrub and Joshua tree woodland. Threats to the desert cymopterus include grazing, OHV, and development (Baldwin et al. 2012, CNPS 1978, 2019). Records show that it occurs from east of Victorville to Kramer Junction and Edwards AFB, in Kern, Los Angeles and San Bernardino Counties (CNDDB 2019b). The majority of known populations occur on Edwards AFB and vicinity. A population also occurs near Aerial Acres, 9.25 miles southeast of the Project (CNDDB 2019b). With the presence of sandy hummocks in the eastern portion of the Action Area, this species has LOW potential for occurrence.

Barstow Woolly Sunflower (*Eriophyllum mohavense*) - LOW Potential

The Barstow woolly sunflower is a CNPS Rank 1B plant, which includes plants that are rare, threatened, or endangered in California and elsewhere. The Barstow woolly sunflower is a woolly, tufted, dwarf annual, measuring 1-2.5 cm tall and 2-3 cm wide. Leaves are spoon-to-wedge-shaped and sharply 3-toothed. Flower heads have 3-4 yellow disk flowers. It is found in fine gravelly, silty, sandy, or clay soils on level or sloping terrain, as well as in low-lying depressions/desert playas. It grows in creosote bush or saltbush scrub at elevations of 500-800 m AMSL and typically flowers between April and May. It occurs in a limited area that includes west-central San Bernardino County and eastern Kern County; known locations range from California City and northern Edwards Air Force Base to Boron, Kramer Hills, the Harper Dry Lake area, Opal Mountain, and Cuddeback Lake (CNDDB 2019b). In general, threats to this rare species include energy development, military activities, vehicles/road construction, and grazing (Baldwin et al. 2012, CNPS 2019). A population is known to occur 6 miles east of the Project on the DTRNA (CNDDB 2019b). The presence of a few silty and gravelly depressions in the eastern portion of the Action Area gives this species a LOW potential for occurrence.

Red Rock Poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*) - LOW Potential

The Red Rock poppy is a CNPS Rank 1B plant, which includes plants that are rare, threatened, or endangered in California and elsewhere. It is a hairless annual, erect or spreading, that grows between 5-35 cm tall. Leaves are bluntly tipped; petals are yellow and measure 10-26 mm in length; and the petals are longer, in general, than other subspecies. This subspecies is definitively distinguished from other subspecies only by its chromosome number (Clark and Faull 1991). The flowering season is from March through May. It grows in desert washes, flats and slopes from 680 to 1,260 m elevation AMSL (CNPS 2019). It is found only in Mojave Desert scrub in northeastern Kern County in the Rand and El Paso Mountains on rhyolite tuff, granitic, and similar rocks (Clark and Faull 1991). Threats to this plant include mining, grazing, and off-highway vehicles (CNPS 2019). The nearest known location of Red Rock poppy is in Red Rock Canyon State Park within 8 miles north of the northernmost Action Area parcel. Due to the presence of gravelly soils, it has a LOW potential for occurrence in the Action Area.

Pale-yellow Layia (*Layia heterotricha*) - LOW Potential

The pale-yellow layia is a CNPS Rank 1B plant, which includes plants that are rare, threatened, or endangered in California and elsewhere. It is a glandular, apple- or banana-scented annual herb in the sunflower family that occurs at 300-1705 m elevation AMSL. It blooms from March through June. Ray flowers number 7-13 and are 3-22 mm in length, generally whitish but sometimes pale yellow or golden yellow. Disk flowers number 15-90 and are 4-7 mm. Ray fruit is generally glabrous but sometimes sparsely hairy. Disk fruit have zero or 14-20 bristles or bristle-like scales that fall as a unit (Baldwin et al. 2012). This species is threatened by agricultural conversion, grazing, invasive non-native plants, and vehicles and is also potentially threatened by road maintenance and wind energy development (CNPS 2019). It has a LOW potential for occurrence in silty or clayey areas on undisturbed parcels throughout the Action Area.

Creamy Blazing Star (*Mentzelia tridentata*) – LOW Potential

Creamy blazing star, a CNPS 1B plant, is an annual with conspicuous white to pale yellow flowers that are 9-18 mm wide and fruit that is 5-8 mm wide, erect or reflexed. Flower bracts are green, anther stalks are generally greater than the filament lobes, and the barrel-shaped seeds are widest at middle, distinguishing this species from other, similar-looking ones (Baldwin et al. 2012). Blooming from March through May, it occurs on sandy, gravelly, and rocky substrates in creosote bush scrub at an elevation of 700-1175 m AMSL (CNPS 2019). It is known to occur in the central Mojave Desert, but there is an old record of a population in Red Rock Canyon State Park, within 8 miles north of the northernmost Action Area parcel (CNDDB 2019b). It has a LOW potential for occurrence on undisturbed parcels with sandy or gravelly soils in the Action Area.

Charlotte's Phacelia (*Phacelia nashiana*) - LOW Potential

Charlotte's phacelia is a CNPS Rank 1B plant, which includes plants that are rare, threatened, or endangered in California and elsewhere. It is an annual with short, stiff hairs and black gland-tipped hairs on the stem; mature plants can vary between 4-18 cm in height. Its leaves are more or less basal, rounded and slightly lobed. The flower is bell-shaped, 10-18 mm long, with bright blue lobes, a white tube, and a blue throat typically with five white spots (Baldwin et al. 2012). This striking and rare species flowers April through June. Charlotte's phacelia prefers sandy to rocky and steep slopes, usually in Joshua tree or pinyon-juniper woodland, at elevations of 2,200 m AMSL or less. It is found in the Coso Mountains, the El Paso Mountains, and the east slopes of the southern Sierra Nevada on the western edge of the Mojave Desert (CNPS 2019). Threats to this plant include grazing, mining, OHV, off-trail hikers (some populations are alongside the Pacific Crest Trail), and invasive roadside/trailside non-native plants (CNPS 2019). The population closest to the Project is 2.5 miles west in the foothills of the Sierra Nevada. It has LOW potential for occurrence on sandy soils within the Action Area.

Kern County Evening-primrose (*Camissonia kernensis* ssp. *kernensis*) - LOW Potential

The Kern County evening-primrose is a CNPS Rank 4 plant that includes plants of limited distribution. It is and annual herb in the evening-primrose family and is known almost exclusively from eastern Kern County between 790 and 2130 m elevation AMSL, growing in sandy or gravelly granitic soils. It blooms March through May and it has yellow flowers. Each petal is 8-18 mm long and has two red spots at the base. The sepals are 5-11 mm and separate when flowers open. Leaves are clustered at the base of the stem. The fruit is 22-37 mm, 1.5-1.7 mm wide, and more or less swollen by the seeds. Fruit pedicel is 3-15 mm (Baldwin et al. 2012, CNPS 2019). Due to the presence of sandy and gravelly soils in the Action Area, it has a LOW potential for occurrence.

White Pygmy-Poppy (*Canbya candida*) - MODERATE Potential

The white pygmy-poppy is a CNPS Rank 4 plant that includes plants of limited distribution. It is a diminutive, tufted, hairless annual that grows 10-30 mm tall. Its basal leaves are fleshy and linear-oblong. Each flower has six separate petals that are ovate and white. The fruit is a small capsule with tiny brown seeds. Flowering occurs April through May/June. It grows on sandy soil from 600 to 1,200 m elevation AMSL in creosote-bush scrub, saltbush scrub, Joshua tree woodland, and pinyon-juniper woodland. It tends to be encountered in sandy wash areas where the mountains reach the desert floor. Endemic to California, white pygmy-poppy populations have been found in Inyo, Kern, Los Angeles and San Bernardino Counties. Although it is not considered threatened at this time, it has been placed on the CNPS "watch list" because of its tiny size and limited range. This poppy could be affected in the future by urbanization and invasive non-native plant species (Baldwin et al. 2012, CNPS 2019). Due to the presence of sandy and gravelly soils throughout the Action Area, it has a MODERATE potential for occurrence.

Mojave Spineflower (*Chorizanthe spinosa*) - LOW Potential

Mojave spineflower is a CNPS Rank 4 plant that includes plants of limited distribution. It is an annual herb and a member of the buckwheat family. It grows 3-40 cm tall: stems are prostate to ascending, with oblong leaves that can vary from 3-20 mm in length. Bracts of the inflorescence are usually 3 per node and lanceolate. The involucral tube is 2-2.5 mm, urn shaped, with one of five bracts longer than the others. Its white flowers are generally hairless, and the seeds are black. It blooms from April through July at elevations ranging from 600-1,300 m AMSL. Because of its stout stems and involucres, Mojave spineflower skeletal remains persist in the environment long after the flowering period. This species is endemic to California and is known from Rabbit Springs in Lucerne Valley, San Bernardino County, northwest to Red Rock Canyon, Kern County. It was once considered a rare plant before thousands of plants were reported from Rosamond to Boron, Kern County. It prefers sandy areas or low-lying open soils with fine gravels in desert scrub plant communities. Threats to the spineflower include surface mining, energy development, vehicles, and grazing (Charlton 1992, CNPS

2019). This species has LOW potential for occurrence and would be limited to silty, clayey, or gravelly open areas in the Action Area.

Death Valley Sandmat (*Euphorbia vallis-mortae*) - LOW Potential

In the spurge family, the Death Valley sandmat is a prostrate to decumbent perennial herb and is a CNPS 4 plant. The leaves are 4-6 mm, and the proximal stipules are fused while the distal ones are thread-like and separate. The inflorescences are clustered at branch tips, and the involucres are less than 2.5 mm and bell-shaped. The oblong gland is less than 1 mm. The white appendage is wider than the gland and is entire to scalloped. The plant is tomentose throughout (Baldwin et al. 2012). This plant occurs in sandy to gravelly substrates in the Mojave Desert from Owens Valley to Joshua Tree, blooming from May to October. Threats to this species include vehicles, grazing, and possibly solar and wind energy developments (CNPS 2019). Populations are known from near Cantil and Saltdale, north of the Project (CNDDB 2019a). This species has LOW potential for occurrence within sandy and gravelly substrates in the Action Area.

Golden Goodmania (*Goodmania luteola*) - LOW Potential

Golden goodmania is a CNPS Rank 4 plant that includes plants of limited distribution. In the buckwheat family, it is a spreading annual herb, 0.5 cm to 15 cm tall and wide. Leaves are opposite; the basal leaves are generally rounded while the cauline leaves are generally linear and awned. Inflorescences are terminal and cyme-like. The 5 involucral bracts are in one whorl and are narrow, glabrous and awned. The perianth consists of 6 yellow, entire lobes, and it has 9 stamens. The fruit is obconic and glabrous. Golden goodmania blooms April through August and occurs in alkaline or clay soils in Mojavean desert scrub, meadows and seeps, and on playas at 20-2200 m elevation AMSL. Formerly known from the southern San Joaquin Valley, it is now extirpated there. Possible threats to this species include invasive non-native plants, groundwater lowering, trampling by livestock, and development. Populations nearest to the Project occur to the south on Edwards AFB (CNDDB 2019b). Due to the presence of only a few silty and clayey open areas in the Action Area, it has a LOW potential for occurrence.

Solitary Blazing Star (*Mentzelia eremophila*) - LOW Potential

The solitary blazing star is a CNPS Rank 4 plant that includes plants of limited distribution. This plant is a large yellow-flowered (12-24 mm) annual herb with slender fruit (2-3.5 mm wide) in the Loasa family. Sepals are generally 9-16 mm and the style is 7-15 mm. Seeds are in 3 rows above mid-fruit and each is about 1 mm and tan with dark mottling. The recurved flap over the attachment scar of the seed is conspicuous (Baldwin et al. 2012). It blooms March through May and it occurs in creosote bush scrub in canyons, on rocky slopes, in washes, and along roadsides at elevations of 700-1220 m AMSL. Threats to this plant include vehicles, grazing, and (CNDDB 2019a, CNPS 2019). It is known from the West Mojave Desert, north of the Project, as well as Nevada and Arizona. It has a LOW potential for occurrence in small washes within the Action Area.

Crowned Muilla (*Muilla coronata*) – HIGH Potential

Crowned muilla is a CNPS Rank 4 plant that includes plants of limited distribution. It is a diminutive monocot, approximately 3-5 cm tall, in the Brodiaea family. Its perianth is whitish to bluish with a green abaxial midvein. Stamens are 2-4 mm; filaments are dilated throughout with wide, overlapping margins forming the nectar tube with cylindric crown. It blooms March through April and it occurs in open desert scrub and woodland from 670-1960 m in elevation AMSL. It occurs in scattered locations throughout the Mojave Desert, including Action Area parcels along the east side of Neuralia Road. It has a HIGH potential for occurrence throughout the Action Area based on the presence of various appropriate soil types and proximity to a known location.

Mojave Fish-hook Cactus (*Sclerocactus polyancistrus*) – LOW Potential

A CNPS 4 plant, the Mojave fish-hook cactus is also a CDNPA species. It is threatened by horticultural collecting, herbivory by insects, and vehicles and possibly by grazing and development (CNPS 2019). This showy cactus blooms from April through July and has large rose-purple to magenta flowers. Its stem is cylindrical, 10-45 cm tall, with 13-17 ribs. Spines are white, red, or dark reddish brown, the central ones being of 2 kinds – hooked (5-10 cm) and straight (3.7-8.6 cm). The radial spines (2-5 cm) number 10-15 per areole and are white and flat (Baldwin et al. 2012). This cactus usually occurs on carbonate soils in Great Basin scrub, Joshua tree woodland, and Mojavean desert scrub at 640-2320 m AMSL. It occurs on alluvial slopes, hills, and in canyons in the Mojave Desert region of California and Nevada (CNPS 2019). It is known from near Jawbone Canyon, Red Rock Canyon State Park, and the El Paso Mountains, north and northeast of the Project (CNDDB 2019a). Because the Action Area is downstream from potential locations in the Jawbone Canyon area, it has a LOW potential for occurrence.

Joshua trees, protected under the CDNPA and within Kern County, occur mainly in the western portion of the Action Area. Additional plants protected under the CDNPA and within Kern County that occur or are expected to occur on site include golden cholla and beavertail, both in the cactus family. Silver cholla was noted at scattered locations on Kern County and California City parcels during the vegetation community assessment. No beavertail was observed but it is expected to occur infrequently throughout the area.

6.0 POTENTIAL LISTED AND SPECIAL STATUS WILDLIFE SPECIES

As discussed in Section 2.0, various agency databases and recorded documents were reviewed and researched for the Project and surrounding lands to identify the potential occurrence of listed and special status wildlife species. Listed and special status wildlife species are presumed to occur within the Action Area if there were locality records, either historic or recent, indicating presence, discovered through the research and literature review efforts. Special status wildlife species are also referred to by CDFW as Special Animals (CDFW 2019c).

"Special Animals" is a broad term used to refer to all the animal taxa tracked by CDFW's CNDDB, regardless of legal or protective status. This list is also referred to as the list of "species at risk" or "special status species". The Special Animals list includes species, subspecies, or Evolutionarily Significant Units where at least one of the following conditions applies:

- Officially listed or proposed for listing under the state and/or federal Endangered Species Acts;
- Taxa considered by CDFW to be a Species of Special Concern (SSC);
- Taxa which meet the criteria for listing, even if not currently included on any list, as described in Section 15380 of the CEQA Guidelines (more information on CEQA is available at: http://resources.ca.gov/ceqa/guidelines);
- Taxa that are biologically rare, very restricted in distribution, or declining throughout their range but not currently threatened with extirpation;
- Population(s) in California that may be peripheral to the major portion of a taxon's range but are threatened with extirpation in California;
- Taxa closely associated with a habitat that is declining in California at a significant rate (e.g. wetlands, riparian, vernal pools, old growth forests, desert aquatic systems, native grasslands, valley shrubland habitats, etc.);
- Taxa designated as a special status, sensitive, or declining species by other state or federal agencies, or a non-governmental organization (NGO) and determined by the CNDDB to be rare, restricted, declining, or threatened across their range in California.

The literature research conducted for listed and special status wildlife species (Section 2.0) identified a total of 21 species within the USGS quadrangles in and around the Project (CNDDB 2019a, 2019b) (Figure 7). This included 19 wildlife species, 1 insect, and 1 mollusk. Out of the 21 species identified, 18 species have the potential to occur within the Action Area (Table 1). In addition to the 2019 CNDDB list, 13 more species were identified with a potential for occurring in or near the Action Area, increasing the total to 31 species.

Of the 31 species, there are 6 mammals, 1 reptile, 21 birds, and 3 insects. These species are discussed in detail in Section 6.2 and 6.3. Of the 31 species, six are federal and/or state listed. Of these six species, only two have the potential to inhabit the Action Area: the state listed Threatened Mohave ground squirrel (MGS) and the federal and state listed Threatened Agassiz's desert tortoise (ADT). The federal and state listed Endangered California condor, the state listed Threatened Swainson's hawk, the federal listed Threatened western snowy plover, and the state listed Threatened tricolored blackbird are not known to nest within the limits of the Action Area but may potentially occur on site to forage, hunt, roost, perch, drink, or migrate through.

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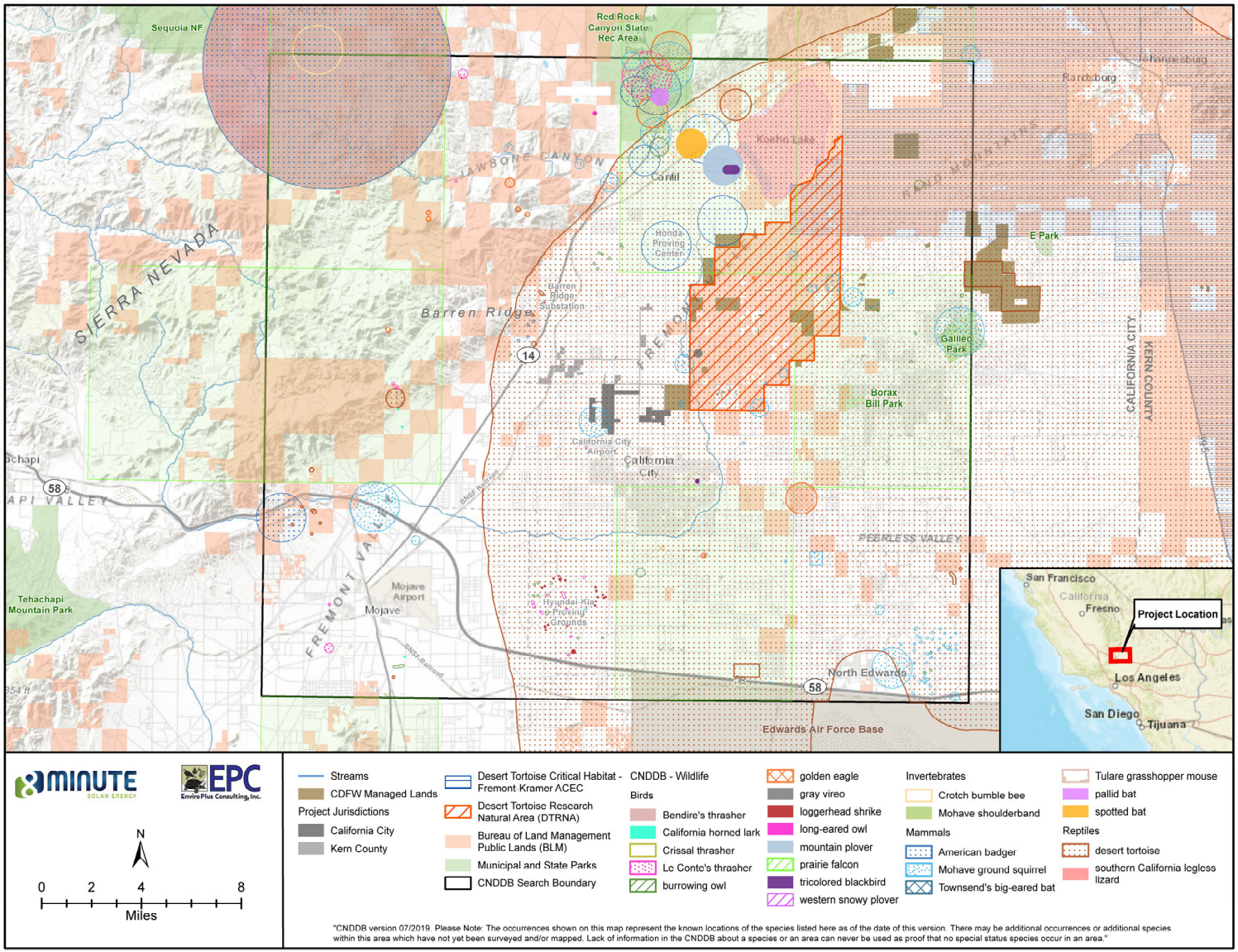

Figure 7. Kudu Solar Farm Project Listed and Special Status Wildlife Observations Reported in CNDDB

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Table 5 summarizes each of the 31 species including their state and/or federal listing status or designation, habitat requirements, and their potential for occurrence in the Action Area based on the provided analyses in this Section. Potential for occurrence is noted as, or in combination with the designation of "None," "Low," "Moderate," or "High."

Of the 31 species analyzed, five species have been determined to not have potential for occurrence in the Action Area or be affected by the Project for various reasons (Table 5 and Sections 6.1.5 and 6.2). These species include the western snowy plover, the mountain plover, the gray vireo, Bendire's thrasher, and the crissal thrasher.

Because of the potential for on-site presence of both MGS and ADT, a habitat suitability assessment for MGS was conducted in September of 2019 by Dr. Philip Leitner and a USFWS protocol presence/absence ADT survey was completed in October 2019 by EPC. All other potentially occurring listed, special status, and general wildlife and insect species were surveyed for during the ADT protocol survey. MGS, ADT, and the other state and/or federal listed species are discussed in detail in Section 6.1 and the remaining potentially occurring wildlife and insect species are discussed in detail in Section 6.2.

6.1 Listed Wildlife Species

6.1.1 Mohave Ground Squirrel (*Xerospermophilus mohavensis*)

6.1.1.1 Life History

The MGS was listed in 1971 by the State of California as a Threatened species throughout its endemic range in the northwestern Mojave Desert in San Bernardino, Los Angeles, Kern, and Inyo counties (Best 1995).

Habitat for MGS has been reduced by the development of agriculture, livestock grazing, urbanization, military activities, utility projects, and recreation. Additional impacts also include increased presence of domestic (pet dogs [*Canis familiaris*] and cats [*Felis catus*), feral (wild and semi-wild dogs and cats), and wild predators (e.g., fox [*Vulpes* sp.], coyote [*Canis latrans*], American badger [*Taxidea taxus*], golden eagle [*Aquila chrysaetos*], hawks [*Buteo* or *Accipiter*], prairie falcon [*Falco mexicanus*], owls [*Asio*, *Athene*, or *Bubo* species], snakes [*Crotalus*, *Masticophis*, *Pituophis* species], etc.).

Decades of studies and trapping efforts have been largely concentrated in the southern part of MGS range south of SR58, however, no range-wide systematic or statistically based random sampling has been conducted to characterize the status of MGS throughout its range (Dudek 2014).

The MGS occurs in a variety of desert shrubland habitats. Although most often found in creosote bush scrub it has also been recorded in desert saltbush scrub, desert sink scrub, desert greasewood scrub, shadscale scrub, Joshua tree woodland, and Mojave mixed woody scrub (Best 1995). MGS typically occupies areas with open vegetative cover and small bushes (< 0.6 meter (2 feet) in height) spaced approximately 6 to 9 meters (20 to 30 feet) apart (Best 1995). MGS prefers deep, sandy to gravelly soils on flat to moderately sloping terrain and will avoid rocky areas for the most part. The species is not known to occupy areas of desert pavement. Soil

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Table 5. Listed and Special Status Wildlife Species with Potential to Occur in the Region and within the Kudu Solar Farm Action Area, California City and Kern County, California.

COMMON NAME *SCIENTIFIC NAME*	RANK OR STATUS[9]					HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT
	ESA	CESA CDFW	G-RANK/ S-RANK	WBWG[10]	IUCN[11] XERCES[12]		
Spotted Bat (*Euderma maculatum*)	-	SSC	G4/S3	Medium	-	Found in desert scrub, semi-desert scrub, desert washes, desert riparian woodlands, and pinyon-juniper woodlands. Roosts in rock crevices located on high cliffs.	**VERY LOW to LOW** - May forage throughout or migrate through the area. Records nearby.
Pacific Townsend's Big-eared Bat (*Plecotus townsendii* ssp. *townsendii*)	-	SSC SGCN	G3G4/ S2S3	High	-	Found in desert washes, shrublands, agricultural valleys, and hillsides with mixed vegetation. Roosts in limestone caves, lava tubes, abandoned mines, tunnels, buildings, and bridge structures.	**LOW to MODERATE** – May forage throughout or migrate through the area. Records nearby.
Pallid Bat (*Antrozous pallidus*)	-	SSC	G5/S3	Low	-	Found in arid scrublands, pinyon-juniper woodlands, and open habitats. Roosts in rock crevices, buildings, caves, mines, rock piles, and tree cavities.	**LOW to MODERATE** – May forage throughout or migrate or move through the area. Records nearby.
Mohave Ground Squirrel (*Xerospermophilus mohavensis*)	-	ST	G2G3	S2S3	-	Open desert shrubland habitats: creosote bush scrub, saltbush scrub, desert sink scrub, desert greasewood scrub, shadscale scrub, Joshua tree woodland, and mixed woody scrub. Deep, sandy to gravelly soils on flat to moderately sloping terrain.	**LOW to MODERATE – California City CUP**: Appropriate habitat and nearby known occurrences to the Project. **UNSUITABLE, VERY LOW, LOW, and MODERATE – Kern County CUP**: A mix of inappropriate habitat and appropriate habitat with nearby known occurrences to the Project.
Desert Kit Fox (*Vulpes macrotis arsipus*)	–	CCR, Title 14	-	-	-	Creosote bush scrub vegetation communities in friable soils with little or no relief for den excavation.	**MODERATE to HIGH** – Appropriate habitat and nearby known occurrences.

[9] See Appendix B for the definition of all Rank codes.
[10] WBWG – Western Bat Working Group Conservation Priorities (2019)
[11] IUCN – E = Endangered
[12] Xerces Society – E = Endangered; I = Imperiled

COMMON NAME *SCIENTIFIC NAME*	RANK OR STATUS[9]					HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT
	ESA	CESA CDFW	G-RANK/ S-RANK	WBWG[10]	IUCN[11] XERCES[12]		
American Badger (*Taxidea taxus*)	–	SSC	G5/S3	-	-	Desert shrublands, open areas in grasslands, and agricultural areas. Friable soils for excavating deep burrows.	**MODERATE** – Appropriate habitat and nearby known occurrences.
Agassiz's Desert Tortoise (*Gopherus agassizii*)	FT	ST	G3/ S2S3	-	-	Wide variety of desert habitats: alluvial fans, washes, canyons, and saltbush plains. Creosote bush scrub on alluvial fans and bajadas. Friable soils for excavating burrows.	**MODERATE to HIGH** – Appropriate habitat and nearby known occurrences.
California Condor (*Gymnogyps californianus*)	FE	SE	G1	S1	-	Reintroduced resident population in the Tehachapi mountains of Kern County; make long-distance flights to forage. Wide variety of habitat types for scavenging to include roadways.	**LOW –** Year-round foraging opportunities throughout the area and nearby known occurrences.
Northern Harrier (*Circus hudsonius*)	–	SSC	G5	S3	-	Summer migrant; breeds and forage in a variety of open and treeless habitats with low growing vegetative shrubland cover, weedy fields, pastures, alfalfa and grain croplands, desert sinks. Nest on the ground in patches of dense, tall vegetation in undisturbed areas.	**MODERATE to HIGH –** Appropriate habitat for foraging and perching in the area with suitable nesting habitats nearby; known occurrences within the Project and Action Area limits.
Cooper's Hawk (*Accipiter cooperii*)	–	WL	G5	S4	-	Summer migrant; variety of desert habitats and nest in deciduous trees preferably near water sources.	**LOW to MODERATE** – Appropriate habitat for foraging and perching in the area with suitable nesting habitats nearby; known occurrences within the Project and Action Area limits.
Swainson's Hawk (*Buteo swainsoni*)	BCC	ST	G5	S3	-	Summer migrant; nests in Joshua tree woodland, non-native roadside trees, pine, elm, and tamarisk, windrow trees in active or historical agricultural areas; high site fidelity. Forage in grasslands, native desert scrub and woodland habitats, agricultural lands, residential developments.	**MODERATELY HIGH to HIGH –** Appropriate habitat for foraging and perching in the area with suitable nesting habitats nearby; nearby known and recent occurrences along Neuralia Road within and adjacent to the Project and Action Area.
Ferruginous Hawk (*Buteo regalis*)	BCC	WL	G4	S3S4	-	Winter resident/migrant September through mid-April; roost in open areas, lone trees, utility poles. Hunt cooperatively in a variety of desert habitats.	**LOW** – Appropriate foraging, perching, and roosting habitat; very limited occurrences within and near the Project and Action Area limits.

COMMON NAME *SCIENTIFIC NAME*	RANK OR STATUS[9]					HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT
	ESA	CESA CDFW	G-RANK/ S-RANK	WBWG[10]	IUCN[11] XERCES[12]		
Golden Eagle (*Aquila chrysaetos*)	BCC BGEPA	FP WL	G5	S3	-	Year-round resident. Nests in tall trees, high rocky cliffs, or on electrical transmission towers. Forages in a variety of desert habitats with suitable prey or will scavenge for carrion.	**MODERATE –** Appropriate habitat for foraging and perching in the area with suitable nesting habitats nearby; very limited occurrences within and near the Project and Action Area limits with the exception of the Tehachapi Mountains where more sightings occur.
Prairie Falcon (*Falco mexicanus*)	BCC	WL	G3	S3	-	Year-round resident. Variety of desert habitats: annual and perennial grasslands, rangeland, some agricultural fields, and desert scrub. Sheltered cliff ledges for cover and nesting in cliffs, bluffs, or rock outcrops.	**MODERATE to MODERATELY HIGH –** Appropriate habitat for foraging and perching in the area with suitable nesting habitats nearby; nearby known occurrences.
Merlin (*Falco columbarius*)					-	Winter migrant that requires dense trees close to bodies of water. Forage in a variety of desert and developed habitats	**LOW** – Appropriate foraging, perching, and roosting habitat and nearby known but limited occurrences.
American Peregrine Falcon (*Falco peregrinus anatum*)	BCC	FP	G4T4	S3S4	-	Uncommon breeder and transient winter migrant. Forages within large concentrations of shorebirds at water filled desert playas in the winter; other locations include spring-fed wetlands, alkali meadows and mudflats used by shorebirds.	**EXTREMELY LOW –** No appropriate habitat on site; direct or indirect effects from the Project not anticipated but this species may forage or migrate through the Project. Recent known locations nearby.
Western Snowy Plover (*Charadrius alexandrinus nivosus*)	FT BCC	SSC	G3T3	S2S3	-	Summer resident and local breeder March through September within water filled alkali or saline lakes, agricultural evaporation and wastewater ponds, alkali playas, reservoirs, ponds, river channels, and salt evaporation ponds.	**NONE to EXTREMELY LOW –** No appropriate habitat on site; direct or indirect effects from the Project are not anticipated. **No further consideration.**
Mountain Plover (*Charadrius montanus*)	BCC	SSC	G3	S2S3	-	Winter migrant between September and March to desert flats and plowed fields, water filled dry lakes, water treatment plants and other similar wet natural and man-made habitats.	**NONE to EXTREMELY LOW –** No appropriate habitat on site; direct or indirect effects from the Project are not anticipated. **No further consideration.**
Western Burrowing Owl (*Athene cunicularia* ssp. *hypugaea*)	BCC	SSC	G4	S3	-	Year-round resident or migrant in arid and semi-arid habitats with well drained, level to gently sloping areas with sparse vegetation and bare ground: annual and	**MODERATE to HIGH** – Appropriate habitat and nearby known occurrences.

COMMON NAME *SCIENTIFIC NAME*	RANK OR STATUS[9]					HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT
	ESA	CESA CDFW	G-RANK/ S-RANK	WBWG[10]	IUCN[11] XERCES[12]		
						perennial grasslands, deserts, and scrublands with low growing vegetation.	
Long-eared Owl (*Asio otus*)	-	SSC	G5	S3	-	Year-round resident; nests in conifers, ornamental trees, tamarisk, Joshua tree, desert riparian, desert washes, pinyon-juniper, desert woodlands, or on the ground that are adjacent to open grasslands, meadows, and shrublands for foraging.	**LOW** – No appropriate nesting habitat nearby and very few known occurrences in the proximity of the Project and Action Area.
Short-eared Owl (*Asio flammeus*)	-	SSC	G5	S3	-	Winter migrant or rare breeder in wet years. Close association with water filled dry lakes and marshes adjacent to irrigated alfalfa or grain fields, salt- and fresh-water marshes, and ungrazed grassland or old pastures.	**LOW** – No appropriate nesting habitat nearby and very few known occurrences in the proximity of the Project and Action Area.
Loggerhead Shrike (*Lanius ludovicianus*)	BCC	SSC	G4	S4	-	Year-round or winter migrant; breeds in shrublands, open woodlands with grass cover, areas of bare ground. Tall shrubs, trees, desert scrub, sparse desert riparian, fence lines and posts, and power lines for perches, territory defense. Impaling sites required for prey.	**HIGH** – Appropriate habitat and nearby known occurrences.
Gray Vireo (*Vireo vicinior*)	BCC	SSC	G4	S2	-	Winter migrant that possibly migrates through on the way to wintering grounds in Mexico.	**NONE to EXTREMELY LOW –** Not expected on site; direct or indirect effects from the Project are not anticipated. **No further consideration.**
Bendire's Thrasher (*Toxostoma bendirei*)	BCC	SSC	G4G5/ S3	-	-	Summer migrant that breeds in limited locations within the California deserts and overwinters in southwestern U.S. and Mexico. Close association with Joshua trees and other yuccas, cactus, and flat desert areas.	**NONE to EXTREMELY LOW –** Not expected on site; direct or indirect effects from the Project are not anticipated. **No further consideration.**
Crissal Thrasher (*Toxostoma crissale*)	-	SSC	G5/S3	-	-	Year-round resident limited to southeastern California desert up into Inyo County. Close association with dense desert wash and riparian habitats.	**NONE –** Not expected on site; direct or indirect effects from the Project are not anticipated. **No further consideration.**

COMMON NAME *SCIENTIFIC NAME*	RANK OR STATUS[9]					HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE WITHIN THE PROJECT
	ESA	CESA CDFW	G-RANK/ S-RANK	WBWG[10]	IUCN[11] XERCES[12]		
Yellow Warbler (*Setophaga petechia*)	BCC	SSC	G5	S3S4	-	Summer migrant and local breeder with high site fidelity. Desert riparian and upland desert scrub for breeding and in migration: desert wash, Joshua tree woodland, irrigated agricultural fields and deciduous orchards with open water nearby.	**MODERATE** – Appropriate habitat for migration movements and nearby known occurrences.
Tricolored Blackbird (*Agelaius tricolor*)	SC BCC	ST	G2G3	S1S2	-	Summer migrant and local colonial breeder in freshwater habitats: marshes with dense stands of cattails or bulrushes, agricultural fields and dairy farms. Forge in farm fields, pastures, cattle pens, and large lawns.	**EXTREMELY LOW** - No appropriate habitat for nesting. Nearest and most recent observations are within the Project along Neuralia Road where they were observed possibly migrating to potential breeding sites nearby.
Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*)	-	SSC	G5	S3	-	Summer migrant and local colonial breeder in deep wet habitats: parks with ponds, water treatment plants, golf courses, dairy farms, and agricultural fields with tall emergent cattails and bulrush.	**LOW** - No appropriate habitat for nesting. Known observations within the Project limits; nearest nesting occurrences in close proximity to the Project; they may be observed migrating to and from breeding sites nearby.
Crotch Bumble Bee (*Bombus crotchii*)	-	PL	G2G3	S1S2	E	Statewide distribution in a variety of habitats and agricultural fields. Wet years with wildflower bloom.	**VERY LOW** – Not expected in dry years. Occurrences recorded in the region.
Western Bumble Bee (*Bombus occidentalis*)	-	PL	G2G3	S1	V / I	Limited to agricultural lands and maybe other habitat types.	**VERY LOW** – Not expected on site. Occurrences recorded in the Fremont Valley region.
Mojave Dotted-blue Butterfly (*Euphilotes mojave*)	-	-	G2G3	S1S2	I	Restricted to two buckwheat host plants: yellow turbans and kidney-leaf wild buckwheat in desert habitats with sandy washes and sandy areas. One flight mid-March to June.	**LOW** - Host plants are likely to be present but limited to the major wash in the NW corner of the Action Area.

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characteristics are particularly important because MGS construct burrows to provide temperature regulation, avoid predators, and use during the inactive season.

The MGS primarily feeds on plant material and specializes in foraging on certain plant species, but as these sources become less available throughout the active season, the MGS adapts its foraging strategy to maximize energy intake, exploiting food sources that are intermittently available (USFWS 2010b). High water content may be a component of their food selection as plants are eaten at different times depending on their water content (Best 1995, USFWS 2010b). MGS consume the leaves, fruits, and seeds of a variety of annual and perennial plants, fungi, and arthropods, including butterfly larvae. At various times of the year and depending on location, they may consume leaves, forbs, shrubs, and grasses of several species and genera, including creosote bush, winter fat, spiny hop-sage (*Grayia spinosa*), freckled milk-vetch (*Astragalus lentiginosus*), white mallow (*Eremalche exilis*), desert-marigold (*Baileya pleniradiata*), langloisia (*Langloisia setosissima*), Mojave monardella (*Monardella exilis*), saltbush, gilia (*Gilia* spp.), golden leptosiphon (*Leptosiphon aureus*), and Mediterranean grass (*Schismus arabicus*), as well as seeds of box-thorn (*Lycium* spp.).

The MGS breeding season is from mid-February to mid-March (Best 1995; Laabs 2006). Males emerge from hibernation in February, up to two weeks before females, and during this time they may be territorial. Females generally only occupy male territories for one or two days then establish their own home ranges after copulation. Pregnant females are present from March through April and gestation lasts from 29 to 30 days. Litter sizes range from four to nine (Best 1995), though mortality of juveniles is high during the first year, especially for juvenile males (Mohave Ground Squirrel Working Group 2011 [MGSWG] 2011). Parental care and lactation continue through mid-May. Litters generally appear above ground in early May (Harris and Leitner 2004). Females will breed at 1 year of age if environmental conditions are suitable, but males do not mate until 2 years of age. Because of the small geographic range of the species, low rainfall can lead to reproductive failure throughout the range (MGSWG 2011). During these periods, all available forage may be converted to body fat and squirrels can enter dormancy as early as April (Leitner 1999).

6.1.1.2 Mojave Ground Squirrel Habitat Suitability Assessment Survey Results

Dr. Philip Leitner conducted a MGS habitat suitability assessment survey of the Action Area on September 9 through September 12, 2019.

The purpose of the survey was to evaluate the potential for the Action Area parcels to support populations of MGS. The survey was carried out by visual observations of the soils and vegetation over all portions of the Action Area in which the survey area was split into 13 survey units, K-01 through K-13. Each survey unit is a conglomeration of Action Area parcels that made it convenient to survey and map (Figure 8). Special attention was focused on the distribution and occurrence of plant species that are known to provide food and cover for MGS.

<u>Regional Mohave Ground Squirrel Distribution</u>

The Project is located on the western edge of the geographic range of MGS. There is a single CNDDB (2019a, 2019b) record of the species on or near one of the parcels proposed for development. This record is a 1975 visual observation about 1 mile to the north of the California

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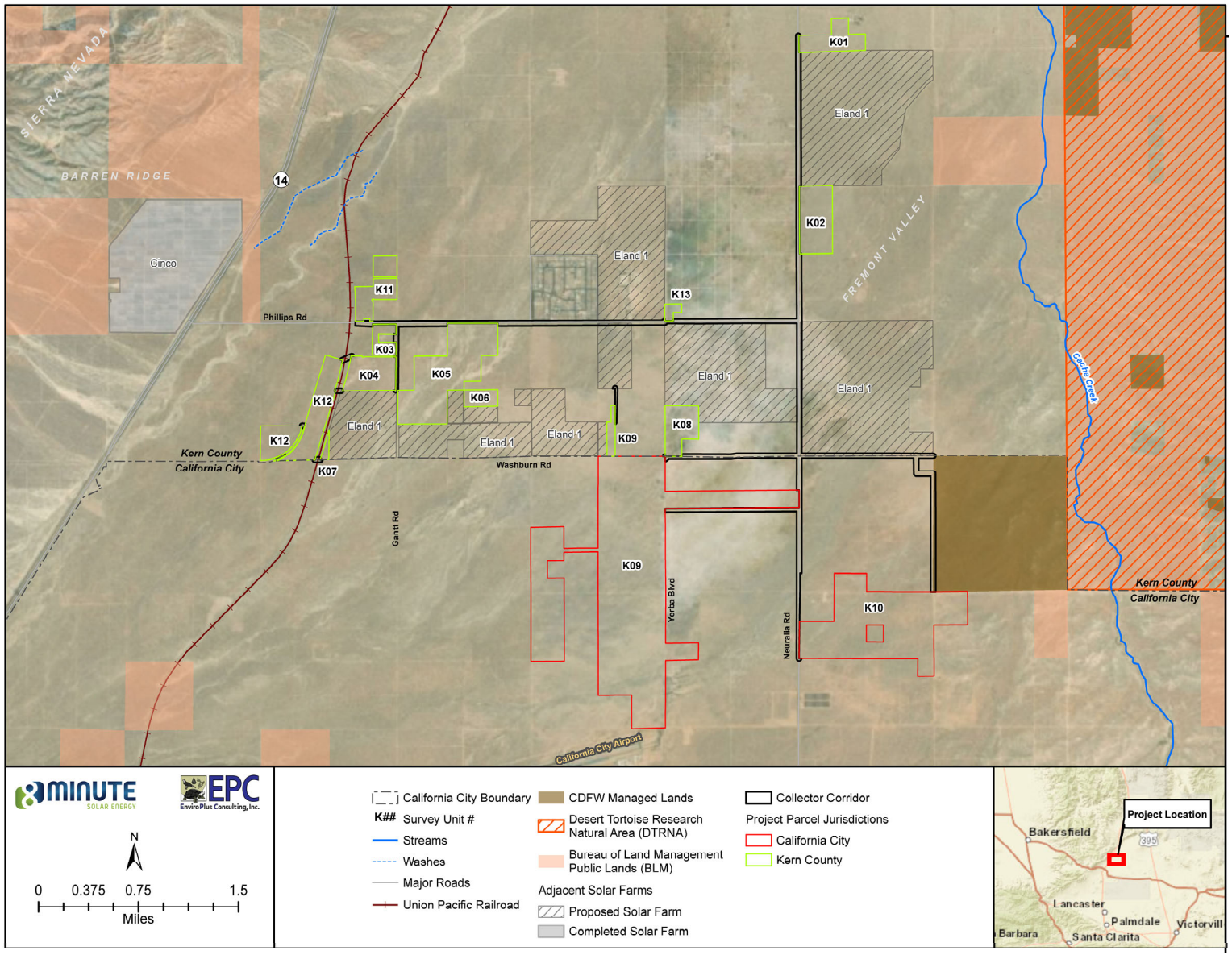

Figure 8. Kudu Solar Farm Action Area Survey Units for the Mohave Ground Squirrel Habitat Suitability Assessment Survey

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City Airport (CNDDB Occurrence #20). There are also 3 records dating from 1974 to 1992 approximately 8 miles to the north near Jawbone Canyon (CNDDB Occurrences #87, #186, and #282). There is considerable recent evidence that MGS are present in the area approximately 1 to 2 miles east of Neuralia Road at the DTRNA (Leitner 2008; Leitner 2015). Protocol surveys conducted in 2019 on properties just to the east of Neuralia Road resulted in the capture of juvenile MGS on three live-trapping grids and trail camera detections of an adult female and several young (Leitner, 2019). Figure 9 shows the locations of MGS records in the region surrounding the Project.

General Habitat Assessment

MGS habitat requirements include soils suitable for burrow construction and native desert vegetation that provides adequate food resources and cover. The soils in the Action Area appear to meet the requirements for burrow construction. However, human land uses in the Action Area have resulted in significant degradation of native vegetation. A total of 41.1% of the gross acreage of the Action Area (2,176.14-acres) has been in agricultural production in the past, resulting in complete removal of native vegetation. Some of this abandoned farmland is still barren of native shrub cover and is unsuitable for MGS occupancy. In other locations of the Action Area there has been some re-growth of weedy and invasive shrubs, but this habitat is still lacking food resources needed to support a resident MGS population. It is possible that juveniles could disperse through these areas.

Unregulated sheep grazing has been carried out over this entire region for over 100 years, resulting in severe impacts to both herbaceous and shrub community structure. The original diverse native herbaceous community has been replaced by invasive Mediterranean grasses (*Schismus* spp.) which have little to no food value for MGS. The region originally supported a diverse shrub community dominated by creosote bush scrub that included a number of other shrub species that provided important food resources for MGS. Sheep grazing has removed almost all shrub species that provide high quality forage for MGS. Locations in the Action Area that have not been developed for agriculture are now mainly comprised of low diversity creosote bush scrub, which provides little food value for MGS.

There is good evidence that the DTRNA and CDFW Ecological Reserves located to the east of the Project support a resident, reproductive MGS population. Although most juvenile MGS establish their home ranges close to their natal areas, some individuals can disperse up to 4 miles in May and June of their first summer (Harris and Leitner 2005). The presence of an adult female MGS in the Spring of 2019 on one of the Eland 1 parcels located east of Neuralia Road suggests that adults can occasionally occur in this area as well. Therefore, it is possible that young dispersing animals could move into the Action Area located on the east side of Neuralia Road (Figure 9). However, these parcels exhibit some degree of habitat suitability for MGS. Given their proximity to known populations within the DTRNA and CDFW Ecological Reserves, the potential for MGS to occur within the Action Area is likely, but their presence may be sporadic.

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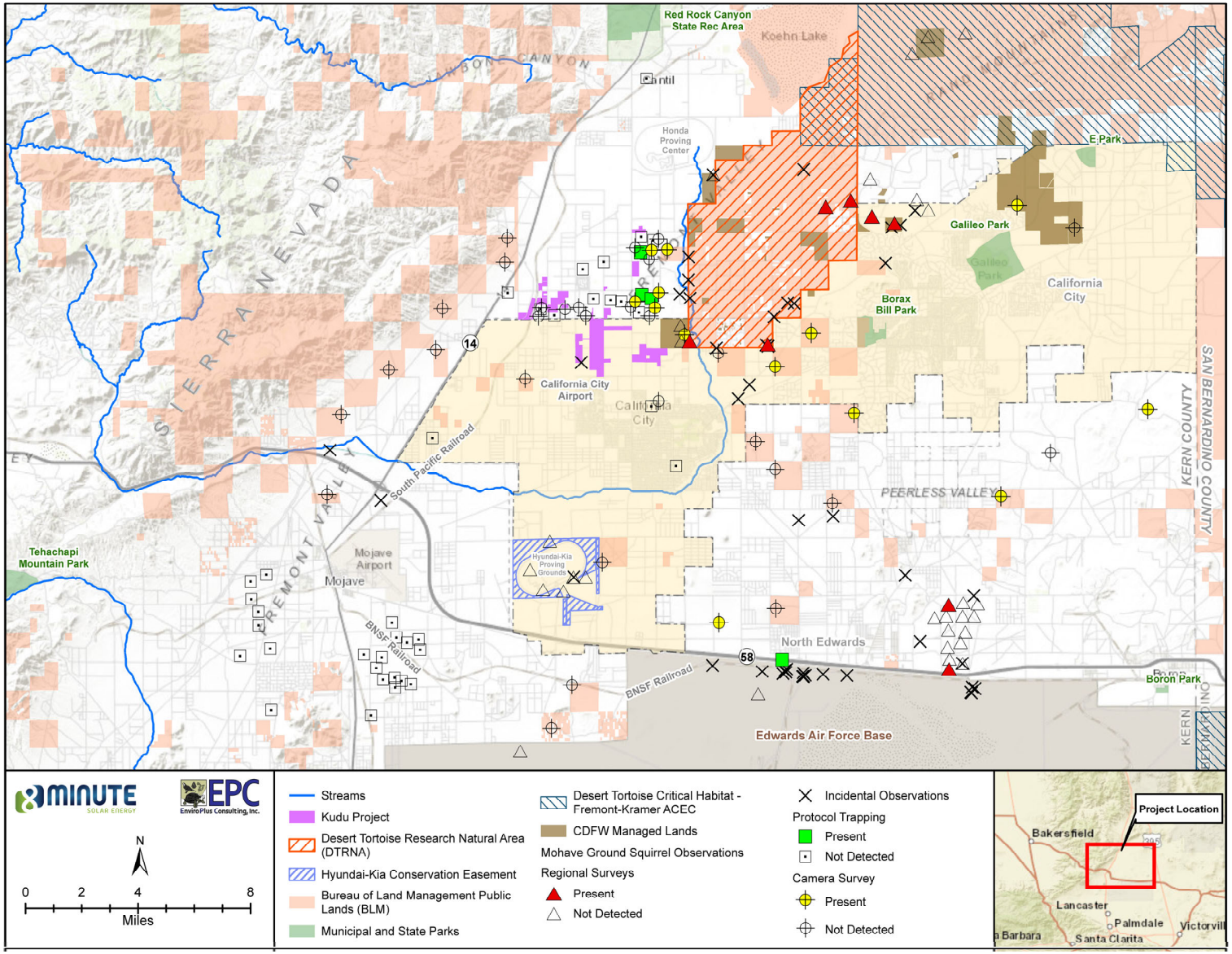

Figure 9. Kudu Solar Farm Project and Vicinity, Mohave Ground Squirrel Survey Record Locations

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Habitat Suitability of the Action Area

The results of the habitat suitability assessment are divided into 13 survey units (Figure 8). The suitability of each survey unit is characterized as "Unsuitable," "Very Low," "Low," or "Moderate." Of the 13 survey units, K-08 is the only one characterized as Unsuitable, K-09 is the only one characterized as both Unsuitable and Low, and K-06 as the only one characterized as Very Low. Survey units K-01 through K-05, K-07, K-11 through K-13 are characterized as Low. Survey unit K-10 is characterized as Moderate. The overall suitability of the Action Area is summarized in Table 5 and each parcel occurring within each survey unit, and by CUP, is described in Table 6.

Survey Unit K-01 – Low Suitability

The vegetation community in this survey unit is of low diversity creosote bush scrub-white bursage scrub. The only shrub species present are creosote bush and white bursage. The herbaceous layer is dominated by invasive species including *Schismus* grasses and red-stemmed filaree (*Erodium cicutarium*). This area has Low suitability for MGS, although dispersing juveniles as well as occasional adults could occur here.

Survey Unit K-02 – Low Suitability

The vegetation community in this survey unit is primarily low diversity creosote bush scrub. The shrub layer here consists almost entirely of creosote bush. Some creosote bush-white bursage scrub is present on the western edge of the parcel. The herbaceous layer is dominated by invasive species including *Schismus* grasses and red-stemmed filaree. This area has Low suitability for MGS, although dispersing juveniles as well as occasional adults could occur here.

Survey Unit K-03 – Low Suitability

The vegetation community in this survey unit is of low diversity creosote bush-white bursage scrub. The dominant shrub species present are creosote bush and white bursage, with patches of desert senna. The herbaceous layer is dominated by invasive species including *Schismus* grasses and red-stemmed filaree. This area has Low suitability for MGS.

Survey Unit K-04 – Low Suitability

The vegetation community in this survey unit is of low diversity creosote bush-white bursage scrub. The dominant shrub species present are creosote bush and white bursage, with patches of desert senna. The herbaceous layer is dominated by invasive species including *Schismus* grasses and red-stemmed filaree. This area has Low suitability for MGS.

Table 6. Kudu Solar Farm Action Area Mohave Ground Squirrel Habitat Suitability Assessment Results, California City and Kern County, California.

CALIFORNIA CITY

MGS Survey Parcel	APN	Owner	MGS Suitability	Acreage
K-09	302-020-08	ORTON DAVID M & PATRICIA FAMILY TRUST	**LOW**	40.17
K-09	302-020-09	ORTON DAVID M & PATRICIA FAMILY TRUST	**LOW**	80.09
K-09	302-020-11	ORTON DAVID M & PATRICIA FAMILY TRUST	**LOW**	163.68
K-09	302-020-14	ORTON DAVID M & PATRICIA FAMILY TRUST	**LOW**	40.99
K-09	302-020-15	ORTON DAVID M & PATRICIA FAMILY TRUST	**LOW**	10.52
K-09	302-020-16	ORTON DAVID M & PATRICIA FAMILY TRUST	**LOW**	10.15
K-09	302-020-17	ORTON FAMILY TR	**LOW**	9.59
K-09	302-020-18	ORTON DAVID M & PATRICIA FAMILY TRUST	**LOW**	9.98
K-09	302-290-03	PEACE JUDY ET AL	**LOW**	83.58
K-09	302-341-29	BESSONART DENIS & JULIE LIVING TRUST	**LOW**	168.79
K-09	302-342-01	MIWA MASAO & MARY LIVING TRUST	**LOW**	40.23
K-09	302-342-11	POLAN HAROLD E & AUDREY	**LOW**	2.67
K-09	302-342-12	O BRIEN SUSAN	**LOW**	2.66
K-09	302-342-19	MONTONNA WILLIAM & SHIRLEY TRUST	**LOW**	29.69
K-09	302-342-25	REINELT FAMILY TRUST	**LOW**	40.77
K-09	302-342-26	REINELT FAMILY TRUST	**LOW**	39.89
K-09	302-342-27	REINELT FAMILY TRUST	**LOW**	40.29
K-09	302-342-28	REINELT FAMILY TRUST	**LOW**	40.68
K-09	302-470-14	CAMARA MARGARET ELDRED TRZ	**LOW**	20.20
K-10	302-305-15	WANG NATHAN & LYNDA S	**MODERATE**	20.95[13]
K-10	302-321-01	ORTON JAMES L	**MODERATE**	124.60[14]
K-10	302-322-01	ORTON DAVID M & PATRICIA FAMILY TRUST	**MODERATE**	10.10
K-10	302-322-02	ORTON DAVID M & PATRICIA FAMILY TRUST	**MODERATE**	10.09
K-10	302-322-04	ORTON DAVID M & PATRICIA FAMILY TRUST	**MODERATE**	10.24
K-10	302-322-05	ORTON JAMES L	**MODERATE**	10.28
K-10	302-322-06	ORTON DAVID M & PATRICIA FAMILY TRUST	**MODERATE**	40.04
K-10	302-322-08	ORTON JAMES L	**MODERATE**	10.33
K-10	302-322-09	ORTON JAMES L	**MODERATE**	40.50
K-10	302-322-10	ORTON DAVID M & PATRICIA FAMILY TRUST	**MODERATE**	10.27
K-10	302-322-11	ORTON JAMES L	**MODERATE**	10.29
K-10	302-325-49	STILLIENS MARVIN & CAROLYN	**MODERATE**	9.74
K-10	302-330-33	GIRARD LIMITED PARTNERSHIP	**MODERATE**	20.21
K-10	302-330-37	STALKNEGT FAMILY TRUST	**MODERATE**	20.38
		TOTAL CALIFORNIA CITY ACREAGE[15]		1,222.64

[13] Only 20.95 acres of parcel 302-305-15 (43.54 acres total) is included in the Action Area within the California City CUP

[14] Only 124.60 acres of parcel 302-321-01 (160.93 acres total) is included in the Action Area within the California City CUP

[15] Does not include the 93.62 acres of Collector Lines within the California City portion of the Project.

KERN COUNTY

MGS Survey Parcel	APN	Owner	MGS Suitability	Acreage
K-01	469-170-10	KEREN & ASSCS LLC	**LOW**	10.02
K-01	469-170-18	KATZ DAVID	**LOW**	39.49
K-02	470-030-01	ANDARI GHAZIN	**LOW**	79.18
K-03	470-380-04	ROBERTO FAMILY TR ET AL	**LOW**	21.35
K-04	470-380-05	SMITH ALVA E & BETTY REV LIV TR	**LOW**	17.34
K-04	470-380-06	HIGGINS MICHAEL	**LOW**	19.88
K-04	470-380-07	CABLE JAMEY	**LOW**	21.95
K-05	470-151-09	MAZIN FAMILY TRUST	**LOW**	19.62
K-05	470-151-15	ARAGON GENARO & GUADALUPE	**LOW**	20.23
K-05	470-151-16	DEL SOL PROPERTIES INC	**LOW**	20.40
K-05	470-151-17	CLERICO ROBERT W TR	**LOW**	19.98
K-05	470-152-01	DHUPAR SURINDER K ET AL	**LOW**	39.32
K-05	470-152-18	JOHANSING LOYDELL H & DAVID	**LOW**	10.32
K-05	470-152-19	MITCHELL LORI LYNN	**LOW**	4.93
K-05	470-330-01	OAK INVS LLC	**LOW**	5.06
K-05	470-330-02	OAK INVS LLC	**LOW**	4.77
K-05	470-330-03	MEUNIER STEVEN	**LOW**	19.86
K-05	470-330-04	MEUNIER STEVEN	**LOW**	20.15
K-05	470-330-14	OAK INVS LLC	**LOW**	4.89
K-05	470-330-15	YABLONSKI FAMILY TRUST	**LOW**	5.23
K-06	470-330-06	KANE MARY	**VERY LOW**	9.95
K-06	470-330-07	AZAM JAVED & ROOBILA NAZ FAMILY TRUST	**VERY LOW**	10.02
K-07	470-020-19	JANIEKAY L C	**LOW**	4.38
K-08	470-080-15	AEK GLOBAL INV LLC	**UNSUITABLE**	20.27
K-08	470-080-16	WOLFE JEFFREY	**UNSUITABLE**	10.07
K-08	470-080-17	WOLFE JEFFREY	**UNSUITABLE**	10.10
K-08	470-080-32	MOORE JOHN & DONNA L FMLY TR	**UNSUITABLE**	10.07
K-09	470-322-13	ABRAMS STUART WILLIAM	**UNSUITABLE and LOW**	2.39
K-09	470-322-15	WEISSMAN RICHARD	**UNSUITABLE and LOW**	9.96

MGS Survey Parcel	APN	Owner	MGS Suitability	Acreage
K-11	470-360-01	BABASHOFF JOHN P & DIANE L TRUST	**LOW**	18.43
K-11	470-360-02	TRIPLE DEV CORP	**LOW**	17.85
K-11	470-360-05	NELSON ERIKA LIVING TRUST	**LOW**	21.15
K-12	470-020-08	DULBERG MARK R	**LOW**	2.31[16]
K-12	470-350-04	EQUITY TR CO CUSTDN FBO STEVEN HILBON IRA	**LOW**	18.65
K-12	470-350-05	DISCOUNTLAND INC	**LOW**	18.91
K-12	470-350-06	KHALIBI EBRAHIM	**LOW**	18.89
K-12	470-350-07	DISCOUNTLAND INC	**LOW**	18.57
K-12	470-350-08	WEST PALM DEV CO	**LOW**	19.93
K-12	470-380-01	EQUITY TR CO CUSTDN FBO STEVEN HILBON IRA	**LOW**	19.92
K-13	470-302-24	OAK INVS LLC	**LOW**	2.59
K-13	470-302-25	OAK INVS LLC	**LOW**	2.62
K-13	470-302-26	OAK INVS LLC	**LOW**	2.52
		TOTAL KERN COUNTY ACREAGE[17]		673.52

[16] Only 2.31 acres of parcel 470-020-08 (156.00 acres total) is included in the Action Area within the Kern County CUP
[17] Does not include the 186.36 acres of Collector Lines within the Kern County portion of the Project.

Survey Unit K-05 – Low Suitability

The vegetation community in this survey unit is of low diversity creosote bush-white bursage scrub. The dominant shrub species present is creosote bush, with sparsely distributed white bursage. The herbaceous layer is dominated by invasive species including *Schismus* grasses and red-stemmed filaree. This area has Low suitability for MGS.

Survey Unit K-06 – Very Low Suitability

This small survey unit appears to have been farmed in the past. The vegetation community here is of low diversity creosote bush-white bursage scrub. The area supports a stand of sparse creosote bush with occasional white bursage. The herbaceous layer is also very sparse and consists almost entirely of invasive grasses. This area has Very Low suitability for MGS.

Survey Unit K-07 – Low Suitability

The vegetation community on this small survey unit located just east of the UP Railroad right-of-way is of low diversity creosote bush-white bursage scrub-desert senna scrub. This area has Low suitability for MGS.

Survey Unit K-08 – Unsuitable

This survey unit was farmed in the past. The shrub vegetation here is strongly dominated by rubber rabbitbrush, with scattered creosote bush. This area is Unsuitable for MGS.

Survey Unit K-09 – Unsuitable and Low Suitability

Much of this large survey unit was farmed in the past. Previously farmed areas are dominated by sparse rubber rabbitbrush and are Unsuitable for MGS. Photograph 6 (Appendix D) shows the low shrub cover and lack of herbaceous vegetation in these areas. The peripheral areas of survey unit K-09 that extend to the east and west from the large central portion support creosote bush-white bursage scrub. These areas have Low suitability for MGS.

Survey Unit K-10 – Moderate Suitability

This large survey unit mostly supports low diversity creosote bush-white bursage scrub. It is largely dominated by creosote bush and white bursage. In some areas the vegetation is creosote bush scrub and in other areas it is white bursage scrub. Several large ravines drain eastward toward Cache Creek and support patches of box-thorn (Photograph 7, Appendix D). These large shrubs can provide cover for MGS burrows and the leaves and seeds are consumed by MGS as well. There are occasional Joshua trees present as well. It is possible that MGS may disperse into this survey unit through these habitat corridors

from conservation lands located northeast of the Project. This area has Moderate suitability for MGS.

Survey Unit K-11 – Low Suitability

This survey unit is north of Phillips Road and east of the UP Railroad right-of-way. The dominant vegetation is mainly creosote bush-white bursage-desert senna scrub (Photograph 8, Appendix D). This area has Low suitability for MGS.

Survey Unit K-12 – Low Suitability

This survey unit is located west of the UP Railroad right-of-way and south of Phillips Road. The shrub vegetation here consists creosote bush-white bursage-desert senna scrub. This area has Low suitability for MGS.

Survey Unit K-13 – Low Suitability

This small survey unit is located on the north side of Phillips Road about 1 mile west of Neuralia Road. The shrub vegetation consists of a monotypic stand of creosote bush scrub. This area has Low suitability for MGS.

Summary of the MGS Habitat Suitability Assessment

Habitat conditions on most of the survey units do not appear suitable for permanent residency by MGS. Agricultural activity has resulted in significant degradation of native vegetation. A total of 41.1% of the Action Area parcels have been previously farmed. This includes 811.43-acres of the 1,222.64-acres in the California City portion of the Action Area and 82.83-acres of the 673.52-acres in the Kern County portion of the Action Area (Appendix A). The remaining 1,281.88-acres have been seriously impacted by heavy sheep grazing for many years. This has resulted in the almost complete elimination of native herbaceous vegetation and forage shrubs that are essential for the maintenance of resident MGS populations. However, a few parcels show somewhat higher shrub diversity and may have moderate suitability for MGS.

There is good evidence that the DTRNA and CDFW Ecological Reserve lands to the east of the Project support a resident, reproductive MGS population. Although most juvenile MGS establish their home ranges close to their natal areas, some individuals can disperse up to 4 miles in May and June of their first summer (Harris and Leitner, 2005). Therefore, it is possible that young dispersing animals could move into the Action Area east of Neuralia Road. The presence of an adult female MGS in the Spring of 2019 on one of the Eland 1 properties east of Neuralia Road suggests that adults can occasionally occur in this area as well.

6.1.2 Agassiz's Desert Tortoise (*Gopherus agassizii*)

The ADT was listed in 1989 by the State of California as a Threatened species and by the USFWS as a Threatened species throughout its endemic range in the Sonoran and Mojave

Deserts north and west from the Colorado River. It extends from the desert areas of California south of the San Joaquin Valley, eastward across the Mojave Desert into southern Nevada, the extreme southwestern corner of Utah (i.e., the Beaver Dam Slope), and the extreme northwestern corner of Arizona, as well as southeast across the Colorado Desert to the Colorado River on the California side.

At its closest point, the Project is located approximately 1 mile west of the DTRNA (Section 1.2). The DTRNA is managed by the DTPC.

Habitat for ADT has been reduced by the development of agriculture, livestock grazing, urbanization and highway and other infrastructure development, military activities, utility projects, recreation and off-highway vehicle use, collecting, invasive species, and disease. Additional impacts also include increased presence of domestic (pet dogs), feral (wild and semi-wild dogs), and wild predators (e.g., fox [*Vulpes macrotis*], coyote, badger, mountain lion [*Felis concolor*], and common raven [*Corvus corax*]). Young tortoises are routinely preyed upon by kit fox and common raven.

ADT can be found in a wide variety of desert habitats, such as alluvial fans, washes, canyons, and saltbush plains (Coachella Valley Conservation Commission 2007; Woodbury and Hardy 1948; Lovich and Daniels 2000; USFWS 1994). Whereas most tortoises in the Mojave Desert are usually associated with creosote scrub on alluvial fans and bajadas (USFWS 2011), they can also be found in saltbush scrub (Stewart 1991). The presence of shrubs in tortoise habitat is extremely important. Shrubs supply shade for the tortoises during hot weather (Marlow 1979), but their roots also provide support and protection for tortoise burrows. Several studies have also shown that edaphic (soil) conditions are important for desert tortoises. Tortoises spend up to 98% of their lives underground (Nagy and Medica 1986). Where soils are so sandy that they cannot support the roof of a burrow, tortoises are unlikely to utilize the area (Baxter 1988). Desert tortoise burrows supply important shade and thermoregulatory resources for a variety of species, including many species of snakes, insects and spiders, and small mammals.

ADT are herbivores and wildflowers, grasses, and in some cases, cacti make up the bulk of their diet (USFWS 2010a; Woodbury and Hardy 1948). Some of the more common herbaceous species utilized by the tortoise include desert dandelion (*Malacothrix glabrata*), evening-primrose (*Camissonia* spp., *Chylismia* spp., *Eremothera* spp., *Oenothera* spp.), gilia, desert-marigold, and filaree (*Erodium* spp.). Additionally, tortoises may eat some grasses, such as sand rice grass or big galleta (*Hilaria rigida*), although the nutritional value may be less. Tortoises are known to eat some cacti such as prickly pear (*Opuntia mohavensis*), beavertail, and various cholla cacti (*Cylindropuntia* spp.). Spring desert annuals and grasses are particularly important in that they supply tortoises with much needed water (USFWS 2010a), which can be stored in the bladder of tortoises for long periods of time (Marlow 1979; Woodbury and Hardy 1948).

Home range size can vary dramatically, from 10 to over 450 acres (USFWS 1994). Females begin breeding at about 15 to 20 years of age and can store the male's sperm (Gist and Fisher 1993; Turner and Berry 1984). Egg laying occurs in the spring, but occasionally may also take place in the fall. Incubation is typically about 100 days, with the eggs hatching in the late summer and early fall. There is little or no parental care of the nest or the young. The sex of the offspring is determined by the incubation temperature; females being hatched at higher ground temperatures (above 89°F) while males are hatched below this temperature (Spotila et al. 1994). Average clutch size is 4.5 eggs (Turner et al. 1984, 1986).

ADT activity is focused on its home range and is primarily determined by temperature (USFWS 1994). Nevertheless, some relocated tortoises have moved significant distances from their release point, including crossing major highways (Stewart 1991). Duda et al. (1999) found that tortoise home ranges tend to shrink during periods of drought compared to years of high rains. Following winter hibernation, tortoises become active as low temperatures abate in the spring months. During the spring, tortoises are active throughout the day, foraging on the fresh shoots of annual plants. But as the heat continues to increase into the summer months, tortoises are active only in the cooler morning, late afternoon, and evening hours. During the hot daytime temperatures, tortoises retreat to burrows to wait out the heat or, in some cases, will aestivate through the summer.

Based on the vegetative and soil characteristics of the Action Area and surrounding lands, as well as the extensive information available for ADT throughout the general region of the Project, the potential for occurrence is determined to be Moderate to High (Figure 7 and Table 5). USFWS protocol surveys (2017b) were conducted within the Action Area to determine the extent of ADT presence. These surveys commenced in September of 2019 and were concluded in October of 2019.

6.1.3 California Condor (*Gymnogyps californianus*)

The California condor was listed in 1967 by the USFWS an Endangered species and in 1971 by the State of California as an Endangered species. In 1977 the USFWS republished this species Critical Habitat designation and map (USFWS 1977). The CESA regulates the taking of state-listed species (Fish and Game Code §86) and requires mitigation measures where the bird may be impacted. The California condor is also protected under the federal Migratory Bird Treaty Act (MBTA).

In 1996 the USFWS issued the most recent version of the Condor Recovery Plan and created an Experimental, Non-Essential population for the Arizona, Utah, and Nevada portion of its range centered around the Grand Canyon. In April of 2019, the USFWS proposed that an Experimental, Non-Essential population be considered for reintroduction into the Pacific Northwest for the purposes of delisting the species to Threatened status at a future date (USFWS 2019b).

The condor's historic range, as of the 1800's, was north from British Columbia and Alberta, Canada; east into western Montana, Wyoming, and Colorado; south into Arizona and Baja California, Mexico; and west to the coastlines of California, Oregon, Washington, and British Columbia, Canada.

Population studies between 1930 and 1950 estimated 60 to 150 condors in the wild (Robinson 1939, 1940; Koford 1953; Snyder and Johnson 1985). By the time this species was listed in 1967, it was estimated that only 42 wild birds remained. By 1987 the last individuals were trapped out of the wild for captive breeding by the USFWS and only 27 individual birds remained in the global population (i.e., zoos and other similar facilities). The precipitous decline of the condor was due to many factors such as hunting, shooting, lead poisoning, pesticides and other chemical exposures, vehicle strikes, power line collisions, and nest site disturbances. Since 1992 there have been 83 documented deaths from lead poisoning, making up 40% of the total 207 deaths where deceased condors were recovered from the free-flying population (CDFW

2018b).

The California condor currently occurs in three distinct reintroduced populations: the southern and central coast of California where Critical Habitat is designated; the Grand Canyon area of Arizona; and in Baja, California, Mexico.

The condor is an opportunistic scavenger that relies solely on the consumption of the carcasses of dead animals, typically medium to large sized mammals such as coyote, mule deer, and elk. They will also consume dead livestock, ground squirrels, prairie dogs, reptiles, and birds. For this reason, they are typically associated with roadways, highways, and interstates where road killed animals are found in higher abundance. They will watch other scavengers, such as turkey vulture (*Cathartes aura*), golden eagle (*Aquila chrysaetos*), and common ravens (*Corvus corax*), to locate most of their food source. Condor's will search for food over vast areas that encompass hundreds of linear miles, which they can travel on a daily basis (Meretsky and Snyder 1992). They may travel between 44 miles and 112 miles from their nest site with core foraging areas for nesting birds ranging between 965 to 1,081 square miles (Meretsky and Snyder 1992) and for non-breeding birds up to 1,930 square miles (USFWS 1996). In the Project, condors may forage in open terrain that includes grasslands and open desert scrub habitat.

Historical sightings near the Project prior to the 1950's included the area around Tehachapi and southwest of Lancaster. The condor is known to currently occur within the Tehachapi Mountains east of Interstate 5 (I-5), at Tejon Ranch, and in portions of the Los Padres National Forest west of I-5 (USFWS 2013). With the reintroduction of captive bred condors and successful nesting, the wild population in California was 125, with 69 inhabiting Southern California in 2013 (USFWS 2013). Within 5 years the California population increased to 188 wild condors with 80 in Southern California (CDFW 2018b; USFWS 2019c).

One GPS tracking location occurred approximately 15 miles north of Mojave (Dudek 2014) and within 12 miles north of the Project. There is no current CNDDB observational data, however, multiple sightings have been recorded and input by scientists and "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015a)[18]. The closest sighting was in April of 2019 at the Mojave lookout point, within 10 miles to the southwest of the Project. There multiple observations throughout the Tehachapi Mountains and foothills to the west and southwest of the Project dating between 2013 to 2019.

The potential for California condor to be directly or indirectly affected by the Project is Low (Table 5) based on loss of foraging habitat, additional road killed animals along major and minor collector routes into and out of the Action Area, construction of additional facilities that would allow for perching (i.e., power lines, solar panels, other similar structures), collision with overhead gen-tie lines, and potential addition of sources of drinking water during construction. This species will be included in the results of the Wildlife Survey Report, if it is observed.

[18] Cornell University's eBird on-line database is contributed to by both amateur and professional birders and includes the ability to submit photographs, videos, and sound recordings with each checklist developed from a specific survey. Each birder's checklist is thoroughly reviewed by a qualified avian biologist. Checklist errors, questions, and revisions to the checklist are routinely requested by the eBird biologist to the checklist preparer. Revisions to the checklist must be made by the birder. For the purposes of this BE, eBird data is used herein to supplement the CNDDB list with the caveat that the information presented herein for each avian species may not be accurate.

6.1.4 Swainson's Hawk (*Buteo swainsoni*)

The Swainson's hawk was listed in 1983 by the State of California as a Threatened species. It is a USFWS Bird of Conservation Concern (BCC) (USFWS 2008) as well as protected under the federal MBTA. The CESA regulates the taking of state-listed species (Fish and Game Code §86) and requires mitigation measures where the bird may be impacted.

The Swainson's hawk is an uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and Mojave Desert. It winters in South America, however, the wintering destinations of the Mojave Desert population (referred to as the Antelope Valley population) are unknown. Breeding occurs in late March to late August with peak activity in late May through July. They lay usually 2 or 3 eggs and incubate them for 34 to 35 days (Bechard et al. 2010).

The Antelope Valley population has historically nested in Joshua tree woodlands and foraged in grasslands and native desert scrub communities. With the increase in human population and subsequent development of the Antelope Valley in the 1980's, a majority of these habitats were initially type converted to agricultural lands and then residential developments. Consequently, Swainson's hawk have shifted their foraging strategy to rely more dependently upon agricultural crops (Bloom 1980, Estep 2009).

The statewide population estimate of Swainson's hawk in the early 1980's was 375 breeding pairs (Polite 2006). Bloom (1980) estimated that there had been a 90% decline in the population based on historical records dating back to 1880. This decline has been due to the loss of habitat for nesting and foraging and as a result this species was listed as Threatened by the State of California. In 1989 Estep (1989) recorded five breeding pairs in the Antelope Valley. As of 2010, the land uses in the Antelope Valley area supported approximately 10 breeding pairs (California Energy Commission and CDFG 2010). There has been no other formal breeding pair survey done in the Antelope Valley and the current number of breeding pairs is unknown (CDFW 2016).

Current nesting observations indicate that Swainson's hawks will nest in Joshua tree woodlands, ornamental non-native roadside trees (i.e., elm [*Ulmus* spp.], pine [*Pinus* spp.], and tamarisk [*Tamarisk* spp.]), and windrow or perimeter trees in active and historical agricultural areas (California Energy Commission and CDFG 2010). They typically mate for life and they have a high degree of site fidelity and return to the same nest or territory year after year (Estep 1989, England et al. 1995, Woodbridge et al. 1995, Bechard et al. 2010). Foraging habitat is typically in close proximity to the nest sites and will include a combination of agricultural land types such as dry and irrigated pastures, alfalfa fields, fallow fields, low growing row or field crops, new orchards, and cereal grain crops. They may also forage in nearby grasslands, Joshua tree woodlands, and other desert scrub habitats that support suitable prey items. Pocket gophers (*Thomomys* spp.) are their main prey item in agricultural lands and native small mammals are their main prey item in open desert habitats.

The Antelope Valley comprises the southernmost edge of the known breeding range for this species in California. The small number of breeding Swainson's hawks in the Antelope Valley and the potential isolation from other Swainson's hawk populations makes the Antelope Valley population particularly susceptible to extirpation. Due to the geographical isolation of the Antelope Valley Swainson's hawk population from other breeding populations, together with the species' high site fidelity, it is reasonable to infer that rapid re-colonization of the Antelope

Valley would be unlikely if nesting pairs were lost. Given these facts, CDFW (2016) considers impacts to breeding pairs to be potentially significant because they may cause the population to become less than self-sustaining.

There are no CNDDB observational records for Swainson's hawk in or near the vicinity of the Project (2019a, 2019b). The closest CNDDB record is within 20 miles to the southwest of the Project in proximity to agricultural fields.

Recent sightings have been recorded and input by scientists and "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015b)[15]. The closest observations to the Project and Action Area are those that have been recorded along Neuralia Road (one of the proposed collector lines). These are discussed as follows in a south to north direction from California City:

- Within 1.2 miles south of the Project and east of the California City Airport (April of 2018)
- Adjacent to the Action Area at the Ling and Orton parcels (April of 2018)
- Near the intersection of Neuralia Road and Phillips Road and less than 1 mile from the Oak Investors, Andari, and the Davis, Wolfe, and Moore Action Area (April 2017 and April 2018)
- Near the intersection of Phillips Road and SR14 and within 1 mile west of the western portion of the Action Area (April 2018)
- Within 1 mile northwest of the western portion of the Action Area and west of SR14 (April 2015)
- At the Honda Proving Center and within 3 miles north of the northern most Action Area parcels, Keren and Katz (June 2019)

Additional observations are recorded up to 12 miles north of the Project at the Honda Proving Center and west of SR14 into Jawbone Canyon and Butterbredt Spring and east of SR14 to Koehn Dry Lake dating from 1986 through 2019, primarily between April and June. Observations become more concentrated into the Owens Valley.

Multiple observations have been recorded throughout California City to include Central Park. These observations have been in the Spring and Fall seasons and are within 2 to 4 miles south and southeast of the Project, dating from 1986 through May of 2019.

East of the Project within 12 miles of the Silver Saddle Ranch and Club, recent observations were recorded in September 2019. Observations at this location have been throughout the breeding season and date back to 1994 with consistent observations beginning in 2009.

Multiple observations occur greater than 10 miles southwest and south of the Project and become more concentrated from Edwards AFB south and throughout the Antelope Valley.

The potential for Swainson's hawk to be directly or indirectly affected by the Project is Moderately High to High (Table 5) based on the close distances of very recent observations within and in close proximity to the Action Area. Additional effects to this species include loss of foraging habitat, construction of additional facilities that would allow for perching and/or foraging (i.e., power lines, solar panels, and similar structures), collision with overhead power

lines, and potential addition of sources of drinking water during construction. This species will be included in the results of the Wildlife Survey Report, if it is observed.

6.1.5 Western Snowy Plover (*Charadrius alexandrinus nivosus*)

The western snowy plover was listed in 1993 by the USFWS as a Threatened species. This listing is only for the Pacific coast population of the snowy plover that nests adjacent to tidal waters of the Pacific Ocean. This includes all nesting birds on the mainland coast, peninsulas, offshore islands, adjacent bays, estuaries, and coastal rivers (USFWS 2019d). Snowy plovers that nest at inland sites are not considered part of the Pacific coast population, although they migrate to coastal areas during winter months. The remainder of the discussion regarding snowy plovers will only include their CDFW status as a Species of Special Concern (SSC) (breeding) for the interior population (Remsen 1978, CDFG 1992; Shuford et al. 2008). The snowy plover is also protected under the federal MBTA.

It is a wide-ranging species that can be found in five continents. In North America it breeds on the Pacific and Gulf coasts of the United States and Mexico and within the Central Valley of California, into the southwest deserts. In the winter it occurs more widely in coastal areas and remains inland mainly in arid regions with mild temperatures in south-central and southern California. In the desert regions it will concentrate at alkali or saline lakes, agricultural evaporation and wastewater ponds, remnant alkali playas, reservoirs, ponds, braided river channels, and salt evaporation ponds (Page et al. 1995). In the winter months, snowy plovers concentrate in the San Joaquin Valley and at the Salton Sea (Page et al. 1995, Shuford et al. 2008) and some may not migrate at all. Resident snowy plovers will nest in these and other similar locations. In the desert regions their populations have declined due to habitat loss, water drawdown, water level fluctuations, water diversion, pesticide and herbicide use, increased saline, increasing levels of selenium and other heavy metals and trace elements, and recreational activities such as hiking and off-road vehicle use.

Western snowy plover breed from March through September, with nesting starting as early as mid-March in southern deserts (Owens Lake southward; Ruhlen et al. 2006). In the Mojave Desert within the region around the Project, they are known to breed at Koehn Dry Lake within 7 miles north and northeast of the Project. It is also known to nest at Rosamond Lake, Kern and Los Angeles Counties; and China Lake, Kern and San Bernardino Counties. They have also been documented nesting at sewage ponds on Edwards AFB, at the Piute Ponds near Rosamond Lake, and in Lancaster.

There are two CNDDB occurrences dating back to 1978 and 1988 at Koehn Dry Lake (CNDDB 2019b) (Figure 7). In total, 26 adults, two broods, and 1 nest were recorded in 1978 and 11 adults were recorded in 1988 and presumed nesting. Only three records have been recorded and input by four scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015c)[15]. These observations were in June of 1994, September of 1998, September of 2003, and March through April of 2011.

The potential for western snowy plover to be directly or indirectly affected by the Project is None to Extremely Low (Table 5), due to lack of appropriate habitat for breeding or over-wintering, however, they may be observed flying through the area to appropriate water bodies during their migration periods in the fall and spring. Because the probability of encountering a

western snowy plover in the Action Area is none to extremely low, this species will not be evaluated further in this BE.

6.1.6 Tricolored Blackbird (*Agelaius tricolor*)

The tricolored blackbird was recently listed by the State of California as a Threatened species pursuant to CESA on 19 April 2018 (CDFW 2019d). It is a USFWS BCC (USFWS 2008) as well as protected under the federal MBTA.

The CESA regulates the taking of state-listed species (Fish and Game Code §86) and requires mitigation measures where the bird may be impacted. This species is broadly distributed throughout California with the majority of the population in the Central Valley. The tricolored blackbird breeds throughout California west of the Sierra Nevada Mountains and the eastern desert areas.

Tricolored blackbird populations have declined seriously in recent decades due to loss of freshwater habitats which include freshwater marshes with dense stands of cattails or bulrushes which they require for breeding and rearing young. In response to loss of natural wetland habitats colonies will inhabit agricultural fields and dairy farms.

In 2015, the Center for Biological Diversity petitioned for the emergency listing of the tricolored blackbird based on a dramatic decline in population estimates from 2008 to 2011 and 2011 to 2014 (Center for Biological Diversity 2015). This petition was sent to both the California Game and Fish Commission and the USFWS. In response to the petition, a statewide survey was conducted by CDFW in 2017 and they estimated the California population to be over 175,000 birds (CDFW 2018c, University of California Davis 2019) and the Commission warranted the listing of this bird as Threatened. The USFWS, in August of 2019 released their Notice of 12-month Petition Findings and determined that listing of the tricolored blackbird was not warranted at that time (USFWS 2019a).

Tricolored blackbirds congregate in dense colonies during the breeding season. They forage in flocks in open areas nearby that include farm fields, pastures, cattle pens, and large lawns that will include other similar bird species such as red-winged blackbird (*A. phoeniceus*) and European starlings (*Sturnus vulgaris*). Their diet consists of mostly insects and seeds and in the winter, they will feed on grass seeds, weed seed, and waste grain.

During the breeding season hundreds to tens of thousands will colonize a freshwater marsh area in extremely small territories that are only 1 to 2 feet apart from each other or stacked vertically within cattails (*Typha* spp.) and bulrushes (*Scirpus* spp.). They will lay between 3 to 5 eggs and the young will fledge from the nest in 11 to 14 days after hatching.

Causes of mortality to nests, adults, eggs, and hatchlings include severe weather (Beedy and Hamilton 1999) with intense rainfall and strong winds; excessive heat over 100 degrees F over a 3 day period will cause an entire colony to desert that location (Beedy and Hayworth 1992, Hamilton 1998, Hamilton and Meese 2006; predation by black-crowned night herons (*Nycticorax nycticorax*), white-faced ibis (*Plegadis chihi*), and racoons (*Procyon lotor*) in wetland colonies and coyote and cattle egrets (*Bubulcus ibis*) in upland and triticale (a wheat and rye hybrid) colonies. Other predators may include northern harrier, common ravens, Cooper's hawk, and California king snake (*Lampropeltis getula*).

There are two CNDDB records of tricolored blackbirds near the Project (Figure 7). The closest record is at California City's Central Park within 2.5 miles southeast of the Project. This record dates from 1983 and 1984 where about 100 pairs were observed in 1983 and only 10 males in 1984 during a cattail removal project (CNDDB 2019b). The next closest record is from May of 1992 of 60 breeding birds at Rancho De Nada located at Koehn Dry Lake and within 6 miles northeast of the Project.

Scattered observations have been recorded and input by scientists and "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015d)[15]. The closest observations to the Project and Action Area are those that have been recorded along Neuralia Road (one of the proposed collector lines) and north of Phillips Road. These two observations are dated from April of 2018 with 12 birds recorded adjacent to the Andari parcel and from May of 2000 with 150 birds recorded at the AK Ranch located off of Barrel Cactus Street.

Observations from California City's Central Park, within 2 to 4 miles south and southeast of the Project, date from 1983 through 2015. Observational records within 5 to 7 miles north and northeast of the northern most Action Area parcel are located within Cantil and at Rancho De Nada at Koehn Dry Lake. These observations date between 1983 and 2013 with some years recording up to 500 birds.

The potential for tricolored blackbirds to be directly or indirectly affected by the Project is Extremely Low (Table 5) due to lack of appropriate habitat for breeding, however, they may be observed flying through the area to appropriate water bodies during their migration periods in the fall and spring or if conditions warrant a colony site desertion. This species will be included in the results of the Wildlife Survey Report, if it is observed.

6.2 Special Status Wildlife Species

Of the 31 listed and special status species, a total of 25 have special status designations (Table 1 and Table 5) with potential for occurring in the Action Area. These include the following species:

- **Mammals:** spotted bat; Pacific Townsend's big-eared bat; pallid bat; desert kit fox; and American badger
- **Birds:** northern harrier; Cooper's hawk; ferruginous hawk; golden eagle; prairie falcon; merlin; American peregrine falcon; mountain plover; western burrowing owl; long-eared owl; short-eared owl; loggerhead shrike; gray vireo; Bendire's thrasher; crissal thrasher; yellow warbler; and yellow-headed blackbird
- **Insects:** Crotch bumble bee; western bumble bee; and Mojave dotted-blue butterfly

These species and their potential for presence on site are discussed below. Surveys commenced for these species in August of 2019 and were concluded in October of 2016. Results will be addressed in the Wildlife Survey Report.

Spotted Bat (*Euderma maculatum*)

The spotted bat is a CDFW SSC (CDFW 2019c) and has a 'Medium' conservation priority with the Western Bat Working Group (WBWG 2019). The spotted bat occurs from central British Columbia to southern Mexico to include limited documentation throughout the desert regions. Although widespread, it is not a common species (Adams 2003). Elevational range extends from below sea level to about 10,000 feet AMSL in New Mexico (Black and Cosgriff 1999). In California its range includes the eastern half of the state and into the southern portion of the state and is found mostly in the foothills, mountains, and desert regions (Watkins 1977). Occupied habitats in California include arid deserts, grasslands, and mixed conifer forests in rough and rocky terrain. It has also been found in desert washes and desert riparian systems (Hoffmeister 1986).

The spotted bat is highly predictable forager and will use the same areas nightly and at routine times. They consume mostly moths but may eat other insects. It will drink water and prefers to forage in areas with adequate roosting habitat such as cliffs and will feed over water and along washes (Zeiner et al. 1990).

It roosts by day in rock crevices located in high cliffs (Watkins 1977) and is occasionally found in caves and buildings. It may use rock crevices for hibernaculum and reproduction. The spotted bat is capable of torpor and hibernates in some areas.

It may migrate from forested habitats to lowlands in the Fall months but little is known about the populations in California; they may be year round residents or migratory. They mate in the Fall months and most births occur before mid-June. They will produce only one offspring per year.

Because they are solitary, finding them in crevice-roosting habitats is very difficult. The best detection is through the use of electronic recording devices and listening for their echolocation call when they are foraging. Spotted bat echolocation is audible to the human ear.

There are seven CNDDB (2019b) records for spotted bat within 6 miles northeast of the northern most Action Area parcel (Figure 7). Records dating from 1905 and 1933 include specimen collections from possibly the Red Rock Canyon area. More recent records are from the Red Rock Canyon State Park area and are from 1996 and 1997.

The potential for spotted bat to be directly or indirectly affected by the Project is Very Low to Low (Table 5) based on the overall lack of information regarding its present status within the Fremont Valley and surrounding region. However, loss of foraging habitat and potential addition of sources of drinking water during construction may be considered a factor in the potential affects to this species.

Pacific Townsend's Big-eared Bat (*Plecotus townsendii townsendii*)

The Pacific Townsend's big-eared bat is a CDFW SSC (CDFW 2019c) as well as a Species of Greatest Conservation Need (SGCN) (CDFW 2019c). It has a 'High' conservation priority with the WBWG (2019b). The Virginia and Ozark population of the big-eared bat, by contrast, was listed by the USFWS as Endangered and included Critical Habitat designation in 1979. The Pacific Townsend's big-eared bat does not have any

current federal designation.

The Pacific Townsend's big-eared bat occurs throughout the western United States and Canada. It can be found in Washington, Idaho, Oregon, California, and Nevada (USFWS 2019e). In California the Townsend's big-eared bat occurs throughout the state with the exception of alpine and subalpine areas of the Sierra Nevada Mountains. Historical records (pre-1990) indicate substantial populations in the Owens Valley and areas east of the Sierra Nevada Range in Inyo County, the Providence Mountains in San Bernardino County, and the lower Colorado River in San Bernardino, Riverside, and Imperial counties (CDFG 1998).

In California, the Pacific Townsend's big-eared bat is associated with limestone caves and lava tubes located in coastal lowlands, agricultural valleys, hillsides with mixed vegetation, and in man-made structures such as abandoned mines, water diversion tunnels, abandoned railroad tunnels, abandoned and little-used buildings, and older bridge structures. These natural and man-made structures are used for roosting (diurnal and nocturnal) and as maternity roosts for birthing and raising their pups. In the Mojave Desert region they are frequently associated with abandoned mines. They may roost with other bat species such as the California myotis (*Myotis californicus*) (Kunz and Martin 1982).

Townsend's big-eared bats forage for insects from early evening through early morning in a variety of habitats, primarily between the canopy and mid-canopy of woodlands and riparian zones such as desert washes, and within shrublands (Dudek 2012a). They are not known to forage in grasslands.

Breeding begins in the autumn and peaks November through February. Females form maternity colonies in the late spring and early summer after winter hibernation and within 8 to 14 weeks they will birth one pup. The pups are capable of flying in 2.5 to 3 weeks and weaned by 6 weeks. Males and females will become reproductive within their first autumn. The preferred maternity colony locations are utilized by generations of bats and are of the highest conservation concern for this species.

This species has had substantial declines in population attributable to human disturbances at maternity and hibernation sites. Other reasons for decline include loss of habitat for roosting and maternity colonies, intentional and non-intentional destruction and disruption of colony sites, intentional killing of bats, loss of foraging habitat, and loss of prey base through the use of pesticides. A more recent and potential threat to bat species is white-nose syndrome (WNS) caused by a fungus (*Pseudogymnoascus destructans*) that weakens and eventually kills bats that hibernate in colonies (WNS Response Team 2019). WNS has been confirmed in 38 states and seven Canadian provinces and was confirmed in Northern California in 2018. It has affected the listed Virginia and Ozark population of big-eared bat in the Ozark and Central Appalachian regions of West Virginia, Virginia, and Kentucky (WNS Response Team 2019).

Pacific Townsend's big-eared bat is known to occur within 6 to 8 miles northeast of the northern most Action Area parcel in the Red Rock Canyon State Park area (CNDDB 2019b) (Figure 7). However, this is an old record dating from 1945.

CDFW conducted a 3 year Statewide Assessment from 2014 to 2017 (CDFW 2018c).

Results for the Mojave Basin and Range survey area found that this region contained the most roost sites and maternity colonies. It was the second highest for greater than 5 bats per roost site at 23% out of the total assessment, with a majority of the use occurring in the summer. Most of the maternity sites occur in abandoned mines and more than half exhibited little to no disturbance by humans. Specific details regarding the current population and status of this species within the Project and the larger Fremont Valley and Tehachapi Mountain regions was not included in the CDFW report and is therefore unknown.

The potential for Townsend's big-eared bat to be directly or indirectly affected by the Project is Low to Moderate (Table 5) based on the overall lack of information regarding its present status within the Fremont Valley and surrounding region. However, loss of foraging habitat and potential addition of sources of drinking water during construction may be considered a factor in the potential affects to this species. This species will be included in the results of the Wildlife Survey Report if there is appropriate roosting habitat and/or if it is observed.

Pallid Bat (*Antrozous pallidus*)

The pallid bat is a CDFW SSC (CDFW 2019c) and has a 'Low' conservation priority with the Western Bat Working Group (WBWG 2019). The pallid bat is common throughout arid desert regions and grasslands of the southwestern United States with higher abundance in the Sonoran Desert. In California it is found in low elevations except for the high Sierra Nevada Mountains and portions of northern California. It is a year round resident throughout most of its range in California.

The pallid bat occurs in a wide variety of habitats that include grasslands, shrublands, woodlands, and forests. It prefers rocky outcrops, cliffs, and crevices for roosting, hibernating, and maternity colonies, with access to open habitats for foraging (Zeiner et al. 1990). Day roosts include caves, crevices, mines, and occasionally a hollow tree or building. These locations must be protected from hot daytime temperatures. Night roosts may be in more open sites and include porches and open buildings.

They are a slow flying but highly maneuverable bat that is adapted to feeding on large, hard-shelled insects on the ground or in foliage. Their prey includes a wide variety of insects such as spiders, beetles, scorpions, and crickets. They need water but may also uptake water from the insect prey they consume.

They are a social bat and will roost in groups of 20 or more as well as with other chiropteran species such as *Myotis* spp. and Mexican free-tailed (*Tadarida brasiliensis*). The pallid bat forms maternity colonies in early April after mating from late October through February. Young are born between April and July with a litter size of one to two young.

Pallid bats make local movements to hibernation sites and there is post-breeding season dispersal. Their home range is known to be with 1 to 3 miles from their day roosts.

There is one CNDDB (2019b) record for pallid bat within 6 miles northeast of the northern most Action Area parcel (Figure 7). This record is from 1997 documenting a

maternity colony in the Red Rock Canyon State Park area.

The potential for pallid bat to be directly or indirectly affected by the Project is Low to Moderate (Table 5) based on the overall lack of information regarding its present status within the Fremont Valley and surrounding region. However, loss of foraging habitat and potential addition of sources of drinking water during construction may be considered a factor in the potential affects to this species.

Desert Kit Fox (*Vulpes macrotis arsipus*)

The desert kit fox currently does not have federal or State of California special status designation, however, it is protected from "take" as a furbearing mammal pursuant to the California Code of Regulations (CCR), Title 14 [Natural Resources], Division 1 [Fish and Game Commission-Department of Fish and Game], Subdivision 2 [Game, Furbearers, Nongame, and Depredators], Chapter 5 [Furbearing Mammals], Section 460 [Fisher, Marten, River Otter, Desert Kit Fox and Red Fox] (Westlaw 2019a). Section 460 specifically states that desert kit fox "…may not be taken at any time." Current population trends for the desert kit fox are unknown due to a lack of population monitoring by CDFW.

In the California desert region, desert kit fox populations are closely associated with creosote bush scrub communities (McGrew 1979). In California, the desert kit fox lives in the Mojave and Colorado deserts in inland Southern California from Inyo County to the Mexican border. Desert kit fox range extends into southern Nevada, western Arizona, the southwest tip of Utah, and Mexico.

The kit fox is semi fossorial and primarily nocturnal, residing in subterranean dens with typical keyhole shaped entrances. They generally require friable soils with little or no relief for excavating dens which they use throughout the year for cover, thermoregulation, water conservation, and raising young (CEC 2012). Kit foxes prefer the presence of short, patchy vegetation in their denning habitat (Egoscue 1962, O'Farrell and Gilbertson 1986). Kit fox are also able to adapt to open habitats including creosote flats and grasslands (Rodrick and Mathews 1999). Egoscue (1962) suggested kit fox can also utilize sandy dune habitat for foraging.

The kit fox is an opportunistic primary, secondary and tertiary consumer and scavenger, likely regulated by prey abundance (Cypher 2003 in Meaney et al. 2006). The primary prey of kit fox is kangaroo rats (*Dipodomys* spp.) that are locally abundant. Several authors have emphasized the correlation between the ecological and geographical distribution of kit foxes and *Dipodomys* spp. (Meaney et al. 2006). Merriam's Kangaroo rat (*Dipodomys merriami*) is the primary prey of the desert kit fox in the Californian Desert (National Park Service 2012). Other common prey species include leporids (rabbits and hares), rodents, and insects. Kit fox also consume birds, reptiles, carrion, and rarely, plant material such as cactus fruits (List and Cypher 2004). Kit fox are known to cache food and consume anthropogenic food (Cypher 2003).

Nightly foraging distance is greater in males than females, home range sizes between sexes do not differ, with estimates of home range varying from 251 ha to 1,160 ha (Cypher 2003 in Meaney et al. 2006). Difference in the size of home ranges may be

related to food availability (Spiegel 1996).

Litters of three to five young are born in February or March (Egoscue 1962; McGrew 1979). Kit fox can live for about seven years in the wild.

The desert kit fox is primarily threatened by large-scale industrial energy development, which causes habitat loss, degradation, and fragmentation (Kadaba 2014). This species is also affected by increased nonnative plant cover, urbanization, mortality from vehicle strikes, mortality from off-road vehicle impacts, increased competition with other canids, depredation, agriculture, grazing, climate change, and disease such as rabies and canine distemper transmitted by feral and domestic dogs.

The potential for occurrence of desert kit fox in the Action Area is Moderate to High (Table 5). This species will be included in the results of the Wildlife Survey Report, if it is observed.

American badger (*Taxidea taxus*)

The American badger is a furbearing mammal that is designated as a CDFW SSC (CDFW 2019c) and is also subject to hunting regulations under CCR, Title 14, Division 1, Subdivision 2, Chapter 5, Section 641 (Westlaw 2019b).

American badger occurs throughout most of California and is an uncommon and permanent resident of open desert shrublands, interior and coastal shrublands, forests, herbaceous habitats, and open areas in grasslands and agricultural areas. It digs large burrows in dry, friable soils and feeds mainly on fossorial mammals such as ground squirrels, gophers, rats, and mice. They may reuse older burrows, dig new a den every night (Messick and Hornocker 1981), or use the burrows of other animals such as coyote, desert tortoise, and kit fox. The American badger is primarily active during the day but may become somewhat nocturnal when occurring in proximity to humans. They will go into various stages of torpor during the winter months (Long 1973).

American badger are non-migratory and the home range of badgers varies both geographically and seasonally. Home range has been measured to be 1,327 to 1,549 acres for males and 338 to 751 acres for females in Utah (Lindzey 1978) and 400 to 600 acres in Idaho (Messick and Hornocker 1981). Males are generally solitary except during the breeding season in summer through early fall. Litters of 2 to 3 are born in March and April (Long 1973).

Threats to the American badger include road mortality, habitat loss, loss of prey base, poisoning of prey base, predator control/depredation, indiscriminate trapping, and largescale development that fragments its habitat.

There are currently 11 CNDDB (2019b) records for American badger in the proximity of the Project (Figure 7). The oldest record dates from 1925 at 10 to 12 miles southwest of the Project. Specimen collection records from 1969 and 1970 are from the Cantil area within 5 miles north of the northern most Action Area parcel and records from the Red Rock Canyon State Park area date from 1979 and 1984 within 8 miles north of the northern most Action Area parcel. The most recent records are from 2014 and 2015 video recordings (trail cameras) of adult badgers on the west side of SR14 and within 1 to 1.5

miles west of the Project.

Due to the mobility of this species and its preferred foraging habitat, this species is anticipated to potentially occur on site as an occasional transient or forager if no active dens are discovered. The potential for the occurrence of badger within the Action Area is Moderate (Table 5). This species will be included in the results of the Wildlife Survey Report, if it is observed.

Northern Harrier (*Circus hudsonius*)

The northern harrier is a CDFW SSC (CDFW 2019c) and is protected under the federal MBTA. It breeds widely but locally in North America from northern Alaska and Canada south to mid- and lower latitudes of the United States and northern Baja California. It occurs year-round in much of its breeding range in California and the contiguous United States. It occurs more broadly and in much greater numbers during migration and winter than during the breeding season, which extends from March through August (Loughman and McLandress 1994). Northern harrier appears to be nomadic, ranging widely, both within the breeding season and across years (Pavelka 1992).

In the early part of the 20th Century, northern harrier were considered a "common" breeder in California (Dawson 1923, Mailliard 1927, Willett 1912). By the early 1940's the breeding population had declined substantially due to loss of suitable habitat, namely wetlands (Grinnell and Miller 1944). By 1939 up to 85% of wetlands had been modified for agricultural and development purposes (Hartman and Goldstein 1994). Another component of northern harrier habitat, native grasslands, was lost up to 70% to agricultural and urban development, livestock grazing, fire suppression, and exotic and invasive species by 1945 (Noss et al. 1995).

Suitable breeding habitat for northern harrier is extremely limited in the southern deserts of California (Davis and Niemela 2008). They are known to breed in Saline and Panamint Valleys in Inyo County and in Fremont Valley near Cantil in eastern Kern County (Heindel 2000). The center of abundance in northern Los Angeles County is in Antelope Valley near Lancaster. They breed and forage in a variety of open and treeless habitats that provide adequate vegetative cover, suitable prey, and scattered hunting, plucking, and lookout perches such as shrubs or fence posts. In the desert they utilize weedy fields; ungrazed or lightly grazed pastures; alfalfa, grain, and other croplands; desert sinks; and natural areas with low growing shrubs. They nest on the ground in patches of dense, often tall, vegetation in undisturbed areas (MacWhirter and Bildstein 1996). They forage for a variety of small to medium sized prey species such as rodents and songbirds but will also consume rabbits and reptiles.

Primary threats to northern harrier are loss and degradation of nesting and foraging habitat and nest failure due to human disturbance, predator-control projects (i.e., removal of northern harriers where the federally listed western snowy plover breeds), and agricultural practices to include the spraying of pesticides and herbicides, affecting prey base populations and potentially affecting northern harrier eggs (i.e., DDT until it was regulated in the early 1970s).

Although there are no CNDDB records for northern harrier in the vicinity of the Project,

there have been multiple observations of northern harrier by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015e)[15]. Multiple observations have been documented within the California City area and north of California City in the Project and Action Area location from 1983 to present. The closest and most relevant observations are along Neuralia Road. These include an observation from 2017 near the Orton parcel; an observation from 2016 near the Andari parcel with two older records from 1985 and 1986; and observations from 2011 between the Andari and Katz parcels. Also within the Project and Action Area vicinity are older observations from 1988 and 1989 along Phillips Road near the Oak Investors parcels.

Further to the north, northwest, and northeast of the Project to SR14, the Honda Proving Center, Jawbone Canyon, Cantil, Red Rock Canyon State Park, and Koehn Dry Lake there have been multiple observations dating from 1980 through to June of 2019. South of the Project and into the California City area, to include Central Park, there have been numerous observations dating from 1983 through September of 2019. Observations south and southeast of the Project are from 2015 west of the Rio Tinto Mine and from Edwards AFB.

The potential for northern harrier to be directly or indirectly affected by the Project is Moderate to High (Table 5) based on loss of foraging habitat, construction of additional facilities that would allow for perching and/or foraging (i.e., power lines, solar panels, and similar structures), collision with overhead power lines, and potential addition of sources of drinking water during construction. This species will be included in the results of the Wildlife Survey Report, if it is observed.

Cooper's Hawk (*Accipiter cooperii*)

The Cooper's hawk is a CDFW SSC (CDFW 2019c) and is protected under the federal MBTA. In Southern California it is a breeding resident in wooded habitats that include Sierra Nevada foothills, New York Mountains, Owens Valley, and other similar localities (Zeiner et al. 1990). It ranges from sea level to 9,000 feet in elevation and most frequently utilizes dense stands of trees such oak, riparian, and forested habitats. It also occurs throughout the desert regions.

Cooper's hawk primarily consumes small birds, especially young during the nesting season. They also consume small mammals, reptiles, and amphibians. They prefer to hunt in broken woodland and habitat edges and catch their prey in the air, on the ground or in vegetation. They will also soar and make low gliding search flights.

Cooper's hawk nest in deciduous trees and prefer to be near water sources. They breed March through August with peak activity in May through July. They will produce a single brood of 4 to 5 eggs with incubation of between 35 and 65 days (Brown and Amadon 1968). Success is about 2 young per breeding pair (Craighead and Craighead 1956). Breeding numbers have declined in recent decades (Zeiner et al. 1990).

There were no CNDDB (2019a, 2019b) records for Cooper's hawk in the region around or within proximity to the Project.

There have been multiple observations of Cooper's hawk by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015f)[15]. Multiple observations have been documented within the California City area, north of California City, and within the community of Mojave from 1995 to present. The closest and most recent observations near and within the Project and Action Area limits are along Neuralia Road. These observations are located near the Andari parcel and date from March of 2016 and March of 2019. Two observations were recorded near Phillips Road in 1995 and 1997 near the Oak Investors parcels. Further north, northwest, and northeast of the Project within 3 to 12 miles, there are scattered observations from the Honda Proving Center, Cantil, Jawbone Canyon, Koehn Dry Lake, and Red Rock Canyon State Park dating from 1982 to 2019. East of the Project within 6 miles at the DTRNA there is a record from 2016. South of the Project within California City, to include Central Park, there are records from the winter of 1983 through October 2019.

The potential for Cooper's hawk to be directly or indirectly affected by the Project is Low to Moderate (Table 5) based on loss of foraging habitat, construction of additional facilities that would allow for perching and/or foraging (i.e., power lines, solar panels, and similar structures), collision with overhead power lines, and potential addition of sources of drinking water during construction. This species will be included in the results of the Wildlife Survey Report, if it is observed.

Ferruginous Hawk (*Buteo regalis*)

The ferruginous hawk is a CDFW SSC (CDFW 2019c), is a USFWS BCC, and is protected under the federal MBTA. It only breeds from Oregon into Canada but is only a winter resident and migrant in California, with a higher known abundance in Southern California throughout various habitat types such as open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats. They arrive in California in September and depart by mid-April.

Ferruginous hawks will roost in open areas, usually in a lone tree or on a utility pole. In hot weather they will hunt in the early morning or late afternoon, otherwise they will hunt throughout the day. Their diet consists of rabbits, ground squirrels, and small rodents as well as birds, reptiles, and amphibians. Their population trends may follow the lagomorph population cycles (Polite and Pratt 1999). They will search for their prey from low flights, gliding to intercept prey on the ground. They will also hover, and they will hunt from high mound perches. Cooperative hunting and ground pursuit of their prey has been observed.

They may displace red-tailed hawks (*Buteo jamaicensis*) and Swainson's hawks. They will compete for food resources with other avian and mammalian species that prey upon small mammals. Factors in their loss of wintering habitat in Southern California include habitat loss and rodent and small mammal control and poisoning.

There are no CNDDB (2019a, 2019b) records for ferruginous hawk in the vicinity around the Project. However, there are CNDDB records from within the region that include observations of overwintering ferruginous hawk between 1998 and 2011 within

agricultural and open desert settings in the Antelope Valley area, south of the Project. Some of these occurrences included observations of golden eagle, Swainson's hawk, and northern harrier.

There have been multiple observations of ferruginous hawk by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015g)[15]. Scattered observations have been documented in eBird within the California City area, north of California City, west of the community of Mojave, and at Edwards AFB. Concentrated observations are found throughout the Antelope Valley area of the region. The closest observation within the Project and Action Area limits is from 1985 along Neuralia Road near the Andari parcel and another observation from 1986 at Phillips Road near the Oak Investors parcels. East of the Project within 2.5 miles there was an observation from 1986. Further north and northeast of the Project within 3 to 12 miles, there are scattered observations from the Honda Proving Center, Cantil, Koehn Dry Lake, and Red Rock Canyon State Park dating from 1982 to 2018. South of the Project within California City, to include Central Park, there are limited records from 1988, 1992, and 2018.

The potential for ferruginous hawk to be directly or indirectly affected by the Project is Low (Table 5) based on limited observational records, loss of foraging habitat, construction of additional facilities that would allow for perching and/or foraging (i.e., power lines, solar panels, and similar structures), collision with overhead power lines, and potential addition of sources of drinking water during construction. This species will be included in the results of the Wildlife Survey Report, if it is observed.

Golden Eagle (*Aquila chrysaetos*)

The golden eagle is a California Fully Protected (FP) species (CDFW 2019c); a USFWS BCC (USFWS 2008); is a on the watch list of CDFW SSC (CDFW 2019c); and is designated as sensitive by the California Department of Forestry and Fire Protection (CALFIRE) (CDFW 2019c).

The golden eagle is also protected under the federal Migratory Bird Treaty Act (MBTA) and the federal Bald and Golden Eagle Protection Act, both of which prohibit 'take' of individual eagles or their active nests. 'Take,' under the ESA federal definition, means pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb.

The golden eagle occurs in open habitats, especially in the mountains and hills, where it can spot prey from the air. Its diet in the desert regions consists mainly of rabbits and ground squirrels but also includes small mammals; birds; reptiles; insects; and newborn or juvenile mule deer, bighorn sheep, and domestic livestock. It will also eat carrion to include roadkill animals.

Golden eagles nest atop tall trees, high on rocky cliffs, or on electrical transmission towers. Often, a breeding pair uses 2-3 or more nests, alternately, over their lifetime. Consequently, the nests can become very large. In the western United States, territories are occupied year-round and can be 22-33 sq km in size during the breeding season (Kochert et al. 2002).

Major threats to this species include habitat destruction and fragmentation, especially the conversion of grasslands to agriculture, shooting, and human disturbances at nest sites (Remsen 1978, Zeiner et al. 1990).

The CNDDB database search included the following USGS 7.5-minute quadrangle maps to obtain golden eagle records within at least 20 miles of the Project: Mojave NE, California City North, Cross Mountain, Cinco, Cantil, Saltdale SE, Galileo Hill, Cache Peak, Mojave, Sanborn, California City South, and North Edwards. Of these quadrangles, Tehachapi NE, Tehachapi South, Cache Peak, California City North, California City South, North Edwards, Soledad Mountain, Little Buttes, and Monolith (Figure 3). Quadrangles with golden eagle records include Cantil, Cross Mountain, Cinco, California City North, Cache Peak, California City South, and North Edwards (Figure 3).

The CNDDB and CNDDB QuickView database searches resulted in up to 9 confirmed and possible nesting locations for golden eagles in the region surrounding the Project (Figure 10) and dating from 1973 to 2012. The most recent record of nesting was in 2012 at a location south of Jawbone Canyon, within 6 miles northeast of the Project. The next most recent record is from 2001 within 5 miles southeast of the Project and due east of California City (CNDDB 2019b). No additional nesting information was provided by the BLM (Woods 2019) or Edwards AFB (Zimmerman 2019).

There have been multiple observations of golden eagles by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015h)[15]. These non-nesting observations have been documented throughout the region around the Project. The closest observations within the Project and Action Area limits are along Neuralia Road from 1985 and 1986 near the Andari parcel. Immediately north and east of the Project within 2 miles, there are observations from 2011 and 1986, respectively. Farther east within 8 miles there are observations from 1981 and 2017. Immediately west of the Project within 2 miles east and west of SR14, there are recent records from 2017 and 2018. Further north, northwest, and northeast of the Project within 3 to 12 miles, there are scattered observations from Koehn Dry Lake, Jawbone Canyon, and Red Rock Canyon State Park dating from 1978 to 2018. South of the project within California City, to include Central Park, there are limited records from 1983, 1986, 2006, and 2007. Southwest of the Project in Mojave (within 6 to 8 miles) there are records from 2003 and 2012. Observations become numerous and concentrated within the Tehachapi foothills to the west and southwest of the Project as well as further south throughout the Antelope Valley region.

While there is no nesting habitat on-site, the Action Area may be within the home range of nesting golden eagles. Foraging several kilometers from nest sites, golden eagles may use the Action Area as it likely supports populations of black-tailed jackrabbits (*Lepus californicus*), California ground squirrels (*Otospermophilus beecheyi*), and other ground squirrel species.

The potential for golden eagles to be directly or indirectly affected by the Project is Moderate (Table 5) (Dr. Eric Dugan, personal communication, December 19, 2019) based on lack of nesting habitat on or within 2 miles of the Project and Action Area, loss of foraging habitat for nesting pairs, additional road killed animals along major and minor collector routes into and out of the Action Area, construction of additional facilities that

would allow for perching (i.e., power lines, solar panels, other similar structures), low potential for collision with or electrocution from overhead power lines, low potential for roadway mortality from vehicle strikes, and potential addition of sources of drinking water during construction. This species will be included in the results of the Wildlife Survey Report, if it is observed.

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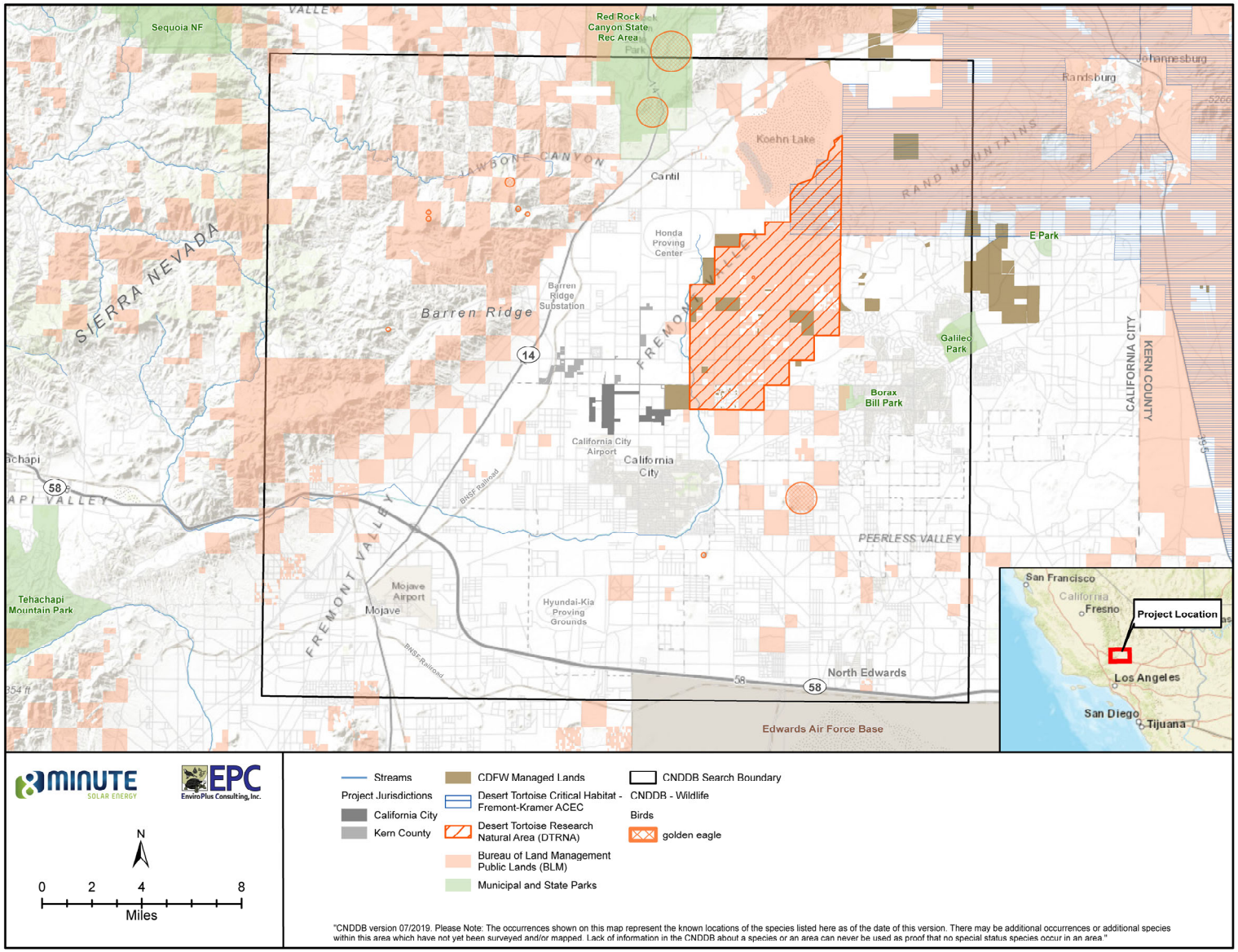

Figure 10. Kudu Solar Farm Project CNDDB Golden Eagle Nesting Locations Map

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Prairie Falcon (*Falco mexicanus*)

The prairie falcon is a USFWS BCC (USFWS 2008) and is on the watch list of CDFW SSC (CDFW 2019c). The prairie falcon is also protected under the MBTA.

Prairie falcons are uncommon permanent resident birds that range from the southeastern deserts, northwest throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada Mountains. This species is distributed from annual grasslands to alpine meadows and is primarily associated with perennial grasslands, savannahs, rangeland, some agricultural fields, and desert scrub.

Prairie falcons require sheltered cliff ledges for cover and nesting where they nest in a scrape or utilize an old raven or eagle stick nest on cliff, bluff, or rock outcrop. Males will perform aerial courtship displays near the nest site. Prairie falcons breed from mid-February through mid-September, with the peak in April to early August. Clutch size is 3 to 6 eggs with an average of 5. Young birds begin to disperse in June and July (Polite and Pratt 2005).

Water sources near the nest sites may be important for various life requirements such as drinking and foraging (Denton 1975). The average home range of a breeding pair of prairie falcons in California is from 59-288 km^2 (Harmata 1978, Haak 1982).

Prairie falcons mostly consume small mammals, small birds, and reptiles where the terrain is open or sparsely vegetated. They catch their prey in the air as well as on the ground, from either a perch or while in flight 15-90 m (50-300 feet) above the ground.

Threats to this species include poisoning by consuming rodents affected by poisoned baits; egg and nestling predation by mammals, owls, and golden eagles; and recreational uses in and around nest sites by rock climbers, hunters, and others.

The CNDDB data for prairie falcon records is considered sensitive by CDFW and there are no details available for the 10 observations in the CNDDB (2019b). Records of occurrence are only provided for by USGS quadrangle. These included the Soledad Mountain, Cache Peak, Galileo Hill, Tehachapi NE, and California City South USGS quadrangles. The California City South and the Soledad Mountain quadrangles are the closest records to the Project (Figure 7). Soledad Mountain is located southwest and California City South is located south of the Project.

Observations of prairie falcon have been recorded by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015i)[15]. These observations have been documented throughout the region around the Project. Within the Project and Action Area along Neuralia Road there is an observation from 2016 within 0.5 mile south of the Orton parcel; an observation from 2018 adjacent to the Orton parcel; and an observation from 2016 just south of Phillips Road; and observations dating from 1985 and 2016 through 2018 adjacent to the Andari parcel. There is an older observation from 1989 at Phillips Road near the Oak Investors parcels and a more recent observation in 2018 within 0.5 mile west of the Project. Further north, east, and west of the Project within 5 to 10 miles near the Honda Proving Center, Cantil, Jawbone Canyon, Red Rock Canyon State Park, and Koehn Dry Lake, there are scattered observations dating from 1982 through 2019. South of the Project within and near

California City and Central Park, there are multiple and concentrated observations dating from 1983 through to 2019. Further southeast and southwest of California City and the Project, within 10 to 15 miles, there are scattered observations dating sporadically between 1981 and 2018.

While there is no appropriate nesting habitat on-site, the Project and Action Area is within the home range of an unknown number of foraging and/or nesting prairie falcons based on the multiple species accounts described above. Foraging several kilometers from nest sites, prairie falcons may use the Project facilities, including but not limited to the power transmission structures, for perching and foraging as it likely supports populations of black-tailed jackrabbits, California ground squirrels, and other small mammal, reptile, and avian species.

The potential for prairie falcons to be directly or indirectly affected by the Project is Moderately High to High (Table 5) based on loss of foraging habitat, construction of additional facilities that would allow for perching (i.e., power lines, solar panels, other similar structures), collision with overhead power lines, and potential addition of sources of drinking water during construction. This species will be included in the results of the Wildlife Survey Report, if it is observed.

Merlin (*Falco columbarius*)

The merlin is a CDFW SSC (CDFW 2019c) and is protected under the federal MBTA. It is found in California as an uncommon winter migrant from September to May in various habitats that include heavily wooded areas and open deserts. It frequents coastlines, open grasslands, savannahs, woodlands, lakes, wetlands, edges, and early successional stage vegetation communities. It is considered a rare winter migrant in the Mojave Desert (Polite 1999). It breeds in Alaska and Canada. Numbers of merlin have declined markedly in California in recent decades.

Merlins require dense tree stands close to bodies of water for cover, however, they will hunt in a wide variety of habitats foraging for small birds, small mammals, and insects during the daytime. They search for prey while flying low and attack with a short dive or dash from above. They will capture their prey on the ground or in the air. They are not known to defend a feeding territory and feeding home ranges tend to overlap between individuals (Becker and Sieg 1987, Warkentin and Oliphant 1990, and Sodhi and Oliphant 1992).

There are no CNDDB (2019) records for merlin within the vicinity of the Project.

Observations of merlins have been recorded by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015j)[15]. These observations are widely scattered and have been documented throughout the region around the Project. There are nearby observations from California City and Central Park within 3 miles southeast of the Project dating between 1983 and 2018. Further north and west of the Project, to the Honda Proving Center, at SR14, and at Koehn Dry Lake, the observations are from 2002 through 2018. Observations of merlins are concentrated and numerous south of the Project throughout Antelope Valley.

The potential for merlins to be directly or indirectly affected by the Project is Low (Table 5) based on limited observational records. They may be observed flying through the Project and Action Area as they migrate to appropriate nearby habitats. Affects to merlins may include loss of foraging habitat, construction of additional facilities that would allow for perching and/or foraging (i.e., power lines, solar panels, and similar structures), collision with overhead power lines, and potential addition of sources of drinking water during construction. This species will be included in the results of the Wildlife Survey Report, if it is observed.

American Peregrine Falcon (*Falco peregrinus anatum*)

The American peregrine falcon was listed as Endangered by the USFWS in 1970 and Critical Habitat was designated in 1977. Due to restrictions in pesticide uses (i.e., the organochlorine pesticide known as DDT and other chemicals used for agricultural insecticide purposes) in the United States, Canada, and Mexico; nest and egg monitoring efforts; and breeding status surveys conducted by USFWS, state wildlife agencies, tribes, non-governmental organizations, volunteers, and others, this species was delisted in 1999 (USFWS 2003). It was delisted by California Fish and Game Commission in 2009 (California Fish and Game Commission 2009, Dudek 2012). However, due to continued habitat loss and other threats to the American peregrine falcon, CDFW considers it as a FP species for nesting birds (CDFW 2019c). The USFWS considers this species a BCC (USFWS 2008) and it is also protected under the federal MBTA.

In California it is an uncommon breeder and uncommon winter migrant (Zeiner et al. 1990). However, since the 1970s, the breeding population has dramatically increased and active nest sites are known from 40 counties, spanning the length of California (Comrack and Logsdon 2008). Active nests have been documented along the coast north of Santa Barbara, in the Sierra Nevada, and in other mountains of Northern California. As a transient winter species, it may occur almost anywhere in there is suitable habitat (Garrett and Dunn 1981). It is generally absent from desert regions, but occurs along the Colorado River, in the Coachella Valley and south in the Salton Sink, and the Imperial Valley to the U.S. – Mexico border where non-breeding individuals may occur year-round (Patten et al. 2003; Comrack and Logsdon 2008).

Peregrine falcons consume birds as a primary food source and can be found in close association with large concentrations of shorebirds at playas that provide important seasonal wetland resources for a variety of migratory and wintering birds. In the desert regions, Searles Dry Lake east of Trona and Koehn Dry Lake northeast of California City have spring-fed wetlands that expand with winter rains, producing highly productive alkali meadows and mudflats used by shorebirds (National Audubon Society 2011). Non-breeding peregrine falcons, including subadults and immatures, may use these seasonal resources as foraging habitat (Dudek 2012).

Range maps for California do not show the Project and surrounding desert regions to be inhabited by peregrine falcon. The CNDDB does not have any records of peregrine falcon for the USGS quadrangles searched for the Project. Additionally, observations of peregrine falcon that have been recorded by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015k)[15] occur to

the north, northeast, and south of the Project. The closest observations to the Project are from January and February of 2017 within 3 miles north of the northernmost Action Area parcel, west of the Honda Proving Center. An observation from the Silver Saddle Ranch and Club within 12 miles northeast of the Project from April of 2012; from Butterbredt Springs within 15 miles northwest of the Project from June of 2011; and an observation in 2018 at Piute Ponds south of Rosamond in Antelope Valley.

The potential for peregrine falcons to be directly or indirectly affected by the Project is Extremely Low (Table 5), due to lack of appropriate habitat for breeding or over-wintering and foraging, however, they may be observed flying through the area to appropriate water bodies during the fall and spring migratory seasons or while foraging. Construction of additional facilities that would allow for perching and/or foraging (i.e., power lines, solar panels, and similar structures), collision with overhead power lines, and potential addition of sources of drinking water during construction may also affect this species. This species will be included in the results of the Wildlife Survey Report, if it is observed.

Mountain Plover (*Charadrius montanus*)

The mountain plover is a USFWS BCC (USFWS 2008) and is a CDFW SSC (CDFW 2019c). The mountain plover is protected under the MBTA.

Mountain plovers are migratory birds that winter in California between September and March. Their populations are declining due to habitat loss and fragmentation in the United States on their breeding grounds where short-grass prairie has been converted to farmland or has been developed. In some areas, their decline may be linked to the decline in prairie dog (*Cynomys* spp.) colonies (Hunting and Edson 2008).

Mountain plovers are found in semi-arid plains, grasslands, and plateaus where they favor areas of very short grass and bare soils for nesting. Their nests are associated with prairie dog colonies. Their winter habitats include desert flats and plowed fields where they range widely in winter flocks of up to 100 or more individuals. Their diet consists primarily of insects such as grasshoppers, beetles, flies, and crickets. Water availability is not a factor (Hunting and Edson 2008).

Wintering mountain plover have been recorded in the CNDDB as occurring at Rancho De Nada at Koehn Dry Lake within 6 miles northeast of the Project associated with agricultural lands and ponds (Figure 7). This observation of three individuals is from October of 2002.

Observations of mountain plovers that have been recorded by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015l)[15] at Koehn Dry Lake and northeast of the Koehn Dry Lake are dated from December of 1986. The closest observation of mountain plover to the Project and Action Area is along Neuralia Road adjacent to the Andari parcel and dated from October of 2011. To the south and southeast of the Project, there are records at Edwards AFB and Piute Ponds with the majority of observations throughout the Antelope Valley area further to the south.

The potential for mountain plovers to be directly or indirectly affected by the Project is None to Extremely Low (Table 5), due to lack of appropriate habitat for breeding or over-wintering, however, they may be observed flying through the area to appropriate water bodies during the fall and spring migratory seasons. Because the probability of encountering a mountain plover in the Action Area is none to extremely low, this species will not be evaluated further in this BE.

Western Burrowing Owl (*Athene cunicularia* ssp. *hypugaea*)

The burrowing owl is a USFWS BCC (USFWS 2008) and is a CDFW SSC (CDFW 2019c). It is also protected under the MBTA. Under its designation as a CDFW SSC, this species must be observed at a burrow site or evidence of recent occupation such as whitewash and feathers must be present in order to positively determine its presence.

The burrowing owl is declining in numbers throughout its range due to fragmentation and loss of habitat in resident, breeding, or wintering grounds within the United States. Other threats include predation by domestic or feral dogs and cats, poisoning, urbanization, utility developments, and wild predators such as fox, coyote, bobcat, skunk, eagles, falcons, and even reptiles such as snakes that might predate on the eggs or chicks. Burrowing owls located within or adjacent to suburban or urbanized areas suffer a high mortality from vehicle strikes.

Human alteration of the landscape can inadvertently or intentionally create suitable habitat, but it can also make potential habitat unsuitable by way of "habitat loss, associated prey reduction, and human disturbance" (Lincer and Bloom 2007) and various pesticides are known to adversely affect burrowing owls, directly or indirectly (James and Fox 1987; Haug and Oliphant 1987). Agriculture and surface irrigation systems (i.e., earthen canals and ditches) can create habitat by providing bankside burrow sites and prey in the adjacent fields (Gervais et al. 2008; Poulin et al. 2011).

Burrowing owls typically use a variety of arid and semi-arid environments with well-drained, level to gently sloping areas characterized by sparse vegetation and bare ground. They occur in a wide variety of habitats including annual and perennial grasslands, deserts, and scrublands with low-growing vegetation. Suitable habitat may include trees and shrubs if the canopy cover is less than 30%. Burrows are an essential habitat component for this species, and both natural and artificial burrows will be used for nesting. The western burrowing owl typically uses burrows made by desert tortoise, ground squirrels, or badgers, but also may use structures such as cement culverts, wood debris piles; openings beneath cement or asphalt pavement, soil embankments, agricultural fields and canal embankments, stored pipe, and stored shipping pallets.

Nesting generally occurs between February and August, with peak activity from March to July (Zeiner et al. 1990; Thomsen 1971; Gervais et al. 2008). Nesting sites always have available perching sites, such as fences or raised rodent mounds (Johnsgard 1988). They are primarily monogamous and typically breed once per year (Poulin et al. 2011). One clutch per year of 6-12 eggs is produced and within approximately 44 days young burrowing owls fledge.

Approximately 6% of the California population of western burrowing owls occurs within the Western Mojave Desert (Wilkerson and Siegel 2010). California supports both year-round and resident burrowing owls as well as overwintering migrants (Gervais et al. 2008). Many owls remain resident throughout the year in their breeding locales (especially in central and southern California) while some apparently migrate or disperse in the fall (Haug et al. 1993; Poulin et al. 2011; Coulombe 1971; Barclay 2007).

CNDDB records for burrowing owls are numerous throughout the entire desert region around the Project (CNDDB 2019b) as well as within the proximity of the Project. There are two records that fall within the Mojave NE and California City North USGS quadrangles associated with the Project out of a total of 22 records from the CNDDB search area (Figure 7). The closest record is within 2 miles west of the Project, west of SR14 and Phillips Road, with one adult owl observed in 2015 at a burrow. The other observation is located within 1.5 miles south of the Project in California City, with one breeding pair observed in 2007. The remaining 20 CNDDB records are dated from 1978, 1992, 2004, 2006, 2007, 2009, 2010, 2013, 2015, 2016, and 2017 with observations of breeding pairs, individuals, family groups, and burrows. The closest of these is within 2.5 miles northwest of the northernmost Action Area parcel and west of the Honda Proving Center dated from 2013 through 2017. South of California City and the Project, within 5 to 6 miles, the record is from 2004. South of California City and the Project at the Hyundai-Kia Proving Grounds and within 6 to 7 miles, there are seven records dating from 2004 and 2006.

Observations of burrowing owl have been recorded by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015m)[15]. These observations are scattered and have been documented throughout the region around the Project. The closest observations within the Project and Action Area are along Neuralia Road adjacent to the Andari parcel and dated from 2017 and 2018 of individual birds. West of the Project and north of Phillips Road on the east side of SR14, within 0.5 miles is an observation from 2017 of one individual. Northwest of the Project and west of SR14, within 1.5 miles is an observation from 2017 of one individual. North, northwest and northeast of the Project and within 3 to 9 miles, near Cinco, the Honda Proving Center, and Jawbone Canyon there are observations from 2012, 2016, and 2017 of individual or paired burrowing owls. Within 3 to 5 miles south and southeast of the Project in the California City area, there are eight observations from 1987, 1993, 1998, 2008, and 2016 of mostly individual owls.

CDFW protocol surveys for burrowing owls commenced in August of 2019 to determine this species presence or absence within the Action Area. Due to the documented presence of burrowing owl within close proximity to and within the Project and Action Area, the potential for burrowing owls to be directly or indirectly affected by the Project is Moderate to High (Table 5). Effects to burrowing owl may include loss of foraging habitat, loss of nesting (burrowing) habitat, construction of additional facilities that would allow for perching and/or foraging (i.e., power lines, solar panels, and similar structures), collision with overhead power lines, and potential addition of sources of drinking water during construction. This species will be included in the results of the Wildlife Survey Report, if it is observed.

Long-eared Owl (*Asio otus*)

The long-eared owl is a CDFW SSC (CDFW 2019c) and is protected under the federal MBTA. It is distributed throughout North America across central Canada and south into the United States through northern Baja California and east to Virginia. It is a year-round resident in California and breeds from February through July (Marks et al. 1994, Haas 2004). It has been described as an uncommon resident distributed widely but locally over the Mojave and Colorado Deserts in California, to include the Antelope Valley area in Los Angeles County (Garrett and Dunn 1981).

Long-eared owls nest in conifer, oak, riparian, pinyon-juniper, and desert woodlands that are either open or are adjacent to grasslands, meadows, or shrublands (Marks et al. 1994). In the desert this can include riparian areas and desert washes in native and non-native trees (i.e., tamarisk) where open water sources are available or where there is an abundance of prey. Key habitat components include some dense cover for nesting and roosting, suitable nest platforms, and open foraging areas. In the Antelope Valley area, long-eared owls have been found to nest in planted trees in ranch yards and elsewhere in natural desert woodlands such as Joshua tree (Hunting 2008). They will nest mainly in old corvid (e.g., common raven) or hawk nests but also in old woodrat and squirrel nests, mistletoe brooms, and on natural platforms of trees or within debris piles (Voous 1988, Bloom 1994, Marks et al. 1994). They will occasionally nest on cliffs, in tree cavities, in orchards or ornamental trees, in man-made structures, or on the ground.

Long-eared owls forage primarily at night by flying low over open ground, including grasslands, meadows, active or fallow agriculture, sagebrush, and desert scrub (Marti et al. 1986, Bloom 1994, Marks et al. 1994). They feed almost entirely on small mammals such as mice and kangaroo rats but will also consume small birds and rabbits.

The continued degradation and loss of breeding and foraging habitats has led to this species decline in population throughout California. Other threats include nest predation by common ravens (*Corvus corax*) and other corvids and the exposure to agricultural pesticides and indirect exposure to rodenticides.

The CNDDB (2019b) has one record from 1992 of long-eared owls located northwest of the Project within 9 miles, of 10 to 15 birds in a desert wash near a spring (Figure 7).

The closest observations of long-eared owl that have been recorded by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015n)[15] occur in California City at Central Park with only 2 records in 1993 and 2006 and located within 3 miles south of the Project. Within 12 miles to the north, northwest, and east of the Project there are additional observations from at the Silver Saddle Ranch and Club dating from 1988 to 2018, at Rancho de Nada at Koehn Dry Lake in 1992 and 1993, at Red Rock Canyon State Park from 1980, and from Butterbredt Spring between 1980 and 2019.

The potential for long-eared owl to be directly or indirectly affected by the Project is Low (Table 5) based on lack of appropriate nesting and roosting habitat, loss of foraging habitat, construction of additional facilities that would allow for perching and/or foraging (i.e., power lines, solar panels, and similar structures), collision with overhead power lines, and potential addition of sources of drinking water during construction. This

species will be included in the results of the Wildlife Survey Report if it is observed.

Short-eared Owl (*Asio flammeus*)

The short-eared owl is a CDFW SSC (CDFW 2019c) and is protected under the federal MBTA. It breeds throughout much of North America and their populations fluctuate with their prey cycles. In California it is restricted to parts of the Central Valley, eastern side of the Sierra Nevada, and in the northeast corner of the state on a year-round basis. It migrates into California from the north as well as locally during the fall to overwinter in the deserts and along the coastline. Their breeding season is from March through July (Dixon 1934, Gill 1977).

Breeding in Southern California is exceptional and limited to years of unusually wet weather patterns as seen with El Niño winter rains. These wet years produce increased amounts of herbaceous cover that coincide with peak cycles of vole (*Microtus* spp.) productivity in their breeding locations (Roberson). Their breeding ranges retract dramatically in drought conditions and during prey reductions as seen with the 3 to 4 year cycle of the year-round breeding of California voles (*Microtus californicus*) (Krebs 1966).

Breeding records from the desert regions in California are limited and where recorded they have been in close association with water-filled dry lakes and marshes adjacent to alfalfa fields. Nesting short-eared owls required open country that supports concentrations of microtine rodents and herbaceous cover thick enough to conceal their ground nests from predators (Holt and Leasure 1993). Suitable habitats may include salt- and fresh-water marshes, irrigated alfalfa or grain fields, and ungrazed grasslands and old pastures.

Short-eared owls are crepuscular hunters and their diet is comprised of small mammals in their year-round and wintering locations.

There are no records of short-eared owl within the CNDDB search area (CNDDB 2019).

Observations of short-eared owl that have been recorded by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015o)[15] are widely scattered throughout the region around and within the Project and Action Area. The closest occurrence was on Neuralia Road adjacent to the Andari parcel and dated from 1986. North of the Project at the Honda Proving Center there are observations from 2011 and at the Koehn Dry Lake there are observations from 1984, 1993, 2006, and 2011. South of the Project within 3 miles from California City at Central Park, there is one observation from 2011 and further south at the Hyundai-Kia Proving Grounds there is one observation from 2005. Scattered records occur throughout Antelope Valley.

The potential for short-eared owl to be directly or indirectly affected by the Project is Low (Table 5) based on loss of foraging habitat, construction of additional facilities that would allow for perching and/or foraging (i.e., power lines, solar panels, and similar structures), collision with overhead power lines, and potential addition of sources of drinking water during construction. This species will be included in the results of the

Wildlife Survey Report, if it is observed.

Loggerhead Shrike (*Lanius ludovicianus*)

The loggerhead shrike is a CDFW SSC (CDFW 2019c), is a USFWS BCC, and is protected under the federal MBTA.

It occurs widely from Canada, south into the United States and into western Mexico. In the United States is can be found everywhere except the northeast and the northwest. They are present year-round throughout most of California and they breed as early as January or February through July in Southern California (Unitt 2004). Breeding populations in the northern part of the state and possibly elsewhere are migratory with the remainder populations being primarily resident (Yosef 1996). Wintering individuals augment resident populations and occupy non-forested areas locally where none breed (Grinnell and Miller 1944, Unitt 2004). Breeding and overwintering abundance has been documented for many years and is high in the southeastern deserts (Sauer et al. 1996, Sauer et al. 2005) to include the Antelope Valley area.

Loggerhead shrikes breed mainly in shrublands or open woodlands with a fair amount of grass cover and areas of bare ground. They require tall shrubs or trees, fence line and fence posts, and powerlines for hunting perches, territory defense, and pair maintenance. Open areas of short grass, forbs, or bare ground are used for hunting and tall shrubs and trees for nesting. Of importance are impaling sites for prey manipulation or storage, which can include sharp spiny, thorny, or multi-stemmed plants as well as barbed wire fences, nails, and other similar objects or features (Yosef 1996, Pruitt 2000). In the deserts they can be in desert scrub and sparse riparian woodland habitats (Rosenberg et al. 1991) and occasionally found throughout rural and agricultural hedgerows.

Prey is taken by loggerhead shrikes from perch locations or on the ground. They will impale their prey on a sharp object in order to consume it or store it for later consumption (Craig 1978, Morrison 1980, Yosef 1996). Their diet varies by season and includes grasshoppers, crickets, beetles, caterpillars, reptiles, amphibians, small rodents, and songbirds (Craig 1978, Yosef 1996).

Threats to the loggerhead shrike include habitat loss or degradation in breeding and wintering locations and along their migratory routes, and pesticide and rodenticide contamination through the consumption of insects and small mammals in and around agricultural fields.

There are six records in the CNDDB (2019a, 2019b) for loggerhead shrike dated from 2004 through 2015 in proximity to the Project (Figure 7). These records include wintering and/or breeding loggerhead shrikes in various locations, the most numerous being in the conservation easement of the Hyundai-Kia Proving Grounds within 6 miles south of the Project. Northwest of the Project and west of SR14 within 1.5 miles, there is one record from 2015. Some of the observations are within desert habitats like Joshua tree woodland or in association with solar and wind projects or powerlines.

Observations of loggerhead shrike that have been recorded by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell

University 2015p)[15] are extremely numerous throughout the region around and within the Project and Action Area. Within or near to the Project and Action Area there are observations along Neuralia Road, less than 0.5 mile south of the Orton parcel from 2017; west of Neuralia Road and south of Phillips Road from 2017; and adjacent to the Andari parcel with numerous records from 1985, 1987, 2016, and 2018. Observations from along Phillips Road within the Action Area near the Oak Investors parcels are from 1988, 1989, 1995, and 2017 with up to 7 loggerhead shrikes observed; and one observation at the west end of the Action Area on the east side of the UP Railroad. North, northwest, and east of the Project there are numerous observations within 1 to 12 miles from Cinco, the Honda Proving Center, Cantil, Koehn Dry Lake, Jawbone Canyon, Red Rock Canyon State Park, and the DTRNA and dating from 1975 through 2019.

The potential for loggerhead shrike to be directly or indirectly affected by the Project is High (Table 5) based on loss of foraging habitat, construction of additional facilities that would allow for perching and/or foraging (i.e., power lines, solar panels, and similar structures), collision with overhead power lines, and potential addition of sources of drinking water during construction. This species will be included in the results of the Wildlife Survey Report, if it is observed.

Gray Vireo (*Vireo vicinior*)

The gray vireo is a USFWS BCC (USFWS 2008), is a CDFW SSC (CDFW 2019c), and is protected under the MBTA.

The population status of gray vireo is not well known throughout its range. This small songbird inhabits brushy mountain slopes, mesas, open chaparral, scrub oak, and juniper habitats. It breeds in dry thorn scrub, chaparral, pinyon-juniper and oak-juniper scrub, or sagebrush and mesquites of arid foothills and mesas, between 2,000-6,500 feet in elevation in the eastern and southern portions of California. The gray vireo is a short-distance migrant that winters in northwestern Mexico near the coast in dry thorn scrub of elephant trees and giant cacti. It migrates to Mexico at the end of August and returns to the southwestern U.S. between March and early May (Unitt 2008).

The gray vireo forages within 5 feet of the ground, moving actively through the brush on dry slopes seeking out insects and fruits. It nests in shrubs, usually oak or juniper, and lays 3 to 5 eggs and has two broods per year. Nests are parasitized by brown-headed cowbirds (*Molothrus ater*) but the female gray vireo may build a second nest on top of the cowbird eggs to keep them from hatching. Young birds fledge the nest 13 to 14 days after hatching (Unitt 2008).

There is one CNDDB (2019b) record from 1977 of a gray vireo within two miles east of the Project on the DTRNA (Figure 7). There are no records of gray vireo that have been recorded by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015q)[15] anywhere in close proximity to the Project. The closest observations are at Edwards AFB from May of 2016, within 26 miles southeast of the Project.

The potential for gray vireo to be present on the Project or directly or indirectly affected by the Project is None to Extremely Low (Table 5) as they may only be detected during

migration between nesting areas to wintering locations in Mexico. Additionally, because there is a lack of observational records for this species, the gray vireo will not be evaluated further in this BE.

Bendire's Thrasher (*Toxostoma bendirei*)

The Bendire's thrasher is a USFWS BCC (USFWS 2008), is a CDFW SSC (CDFW 2019c), and is protected under the MBTA.

Bendire's thrasher is a spring and summer resident and breeder in flat areas of desert succulent scrub and Joshua tree habitats in the Mojave Desert area. They primarily migrate to southern Arizona, southwestern New Mexico, or Mexico to overwinter. They occur primarily in San Bernardino and eastern Kern Counties (Grinnell and Miller 1944, Remsen 1978, and Garrett and Dunn 1981). A 1989 study by England and Laudenslayer found that they were more widespread than previously recorded, which included the Colorado Desert. Migrants arrive in California in February and leave their breeding grounds by August, although fall and winter records occasionally are reported from breeding areas and to the north and west of their range in Kern County (Zeiner et al. 1990).

Bendire's thrasher forages on the ground within flat desert floors with scattered groups of cactus, yucca, and thorny scrub. They feed on caterpillars, beetles, other insects, and invertebrates by pecking and probing into the soil and leaf litter (Bent 1948).

Bendire's thrasher nests in cholla, yucca, palo verde, thorny shrubs, or small trees. These same plant species are also used for cover, roosting, and foraging. They breed from late February into early August with a clutch size of 3 or 4 and they may raise 2 or 3 broods per season (Bent 1948).

Remsen (1978) reported fewer than 200 pairs in California. Threats to Bendire's thrasher include loss of habitat to include Joshua trees and other yuccas, livestock grazing, urbanization, and OHV activity within this species limited breeding range (Zeiner et al. 1990).

There is only one record in the CNDDB (2019b) from 1987 within 15 miles northwest of the Project in the Butterbredt Spring area. There are no records of Bendire's thrasher that have been recorded by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015r)[15] anywhere in close proximity to the Project. The closest observations are from the same location in the Butterbredt Spring area and are dated from 1997 and 2003.

The potential for Bendire's thrasher to be present on the Project or directly or indirectly affected by the Project is None to Extremely Low (Table 5) as they may only be detected during migration between nesting areas to wintering locations in the southwestern United States or Mexico. Additionally, because there is a lack of observational records for this species in the Project vicinity, the Bendire's thrasher will not be evaluated further in this BE.

Crissal Thrasher (*Toxostoma crissale*)

The crissal thrasher is a CDFW SSC (CDFW 2019c) and is protected under the MBTA.

Crissal thrashers are non-migratory year-round residents of the southeastern California, southern Nevada, Arizona, and New Mexico deserts (Zeiner et al. 1990). In California their range includes the Colorado River Valley, the eastern Mojave Desert, the Colorado Desert, and southeastern Inyo County.

Crissal thrashers occupy dense thickets of shrubs or low trees in desert riparian and desert wash habitats. They may also occupy, at higher elevations, dense sagebrush and other shrubs in washes within juniper and pinyon-juniper habitats. Compared to all of the other arid-land thrashers, the crissal thrasher occurs in the coolest, most shaded, and moist habitats.

Nesting and cover requirements will include plants species such as mesquite (*Prosopis* spp.), screwbean mesquite (*P. pubescens*), ironwood (*Olneya tesota*), catclaw acacia (*Acacia greggii*), arrowweed (*Pluchea sericea*), and willow (*Salix* spp.). They forage mostly on the ground, especially between and under shrubs and use their bill to dig in friable soil and to probe for insects in the leaf litter. Crissal thrashers eat a variety of insects, berries and other small fruits, seeds, and occasionally small lizards (Bent 1948).

Crissal thrasher breeding season is from February through June with a clutch size of 2 to 4 eggs and two broods per year. Small groups, assumed to be families, have been noted to congregate at the end of the breeding season and in the fall.

There is only one record in the CNDDB (2019b) from 1978 within 8 miles north of the northernmost Action Area parcel at Red Rock Canyon State Park (Figure 7). There are no records of crissal thrasher that have been recorded by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015s)[15] anywhere in close proximity to the Project.

The potential for crissal thrasher to be present on the Project or directly or indirectly affected by the Project is None (Table 5) as the Project is outside of their current known range and there are no appropriate habitats within the Project or within the proximity of the Project that would support this species. The CNDDB record from 1978 is most likely an aberrant observation. For these reasons, the crissal thrasher will not be evaluated further in this BE.

Yellow Warbler (*Setophaga petechia*)

The yellow warbler is a USFWS BCC, a CDFW SSC (CDFW 2019c), and is protected under the federal MBTA. It is one of the most abundant warblers in North America and is found into northern South America and the Caribbean (Heath 2008). In California it occurs principally as a migrant and summer resident from late March through early October and breeds from April through July (Dunn and Garrett 1997). Historically, it was not known to occur in the Colorado Desert or the Mojave Desert except in the Panamint and Grapevine Mountains and along the Mojave River (Grinnell and Miller 1944). Despite local declines throughout California, yellow warblers still occupy much of their historic breeding range with the inclusion of the desert regions as demonstrated by recent

observational records (The Cornell Lab of Ornithology 2019t).

Yellow warblers have a high degree of site fidelity with over 60% of males and up to 44% of females returning to their previous year's breeding grounds and many to the same territory (Studd and Robertson 1989, Knopf and Sedgwick 1992). They prefer to nest in more dense habitats with cottonwoods, willows, and other riparian vegetation and a tree or shrub layer is essential for reproduction, cover, and foraging (Laudenslayer 2007). This strategy may reduce the risk of nest parasitism from brown-headed cowbirds and other predators (Staab and Morrison 1999, Cain et al. 2003). In the desert areas they will utilize areas that contain both riparian and upland desert scrub during migration and breeding which will include the following habitat types: desert riparian, desert wash, Joshua trees and Joshua tree woodland, irrigated agricultural fields, and deciduous orchards (Laudenslayer 2007).

The presence of open water is a requirement for yellow warblers and they will drink regularly in desert habitats. Along with water, edges between habitat types are also essential for yellow warblers. This is typically seen as a tree/shrub edge with some sort of a riparian inclusion. The riparian inclusion can be replaced with agricultural fields. Their diet consists primarily of insects.

There are no CNDDB (2019b) records for yellow warbler in or around the Project.

There are numerous observations over many years for yellow warbler as recorded by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015t)[15]. Within the Project and Action Area there is one record of an individual bird from 2013 north of the California City Airport and within or adjacent to the Orton parcels. Along Neuralia Road adjacent to the Andari parcel there is one record an individual bird from April of 2018. Along and north of Phillips Road at the AK Ranch, there have been observations of one to five yellow warblers in 1989 and 1997 through 2000. Within 3 to 12 miles northwest and north of the northernmost Action Area parcel there are scattered observations at the Honda Proving Center, Koehn Dry Lake, Jawbone Canyon, and Red Rock Canyon State Park from 1983 through May of 2019 of individual birds and migrating flocks of up to 35 birds. South of the Project in California City and at Central Park there have been numerous and concentrated observations dating from 1983 through October of 2019 with anywhere from one individual bird up to 40 and as high as 70 birds within a migrating flock.

Records around the community of Mojave comprise multiple observations from 1985 to 2016 associated with parks, hedgerows, and other locations where water and structural cover may be present. Numerous and concentrated observations have been recorded further south and southeast in Rosamond and Edwards AFB and throughout the Antelope Valley region.

Although there is no appropriate breeding habitat within the Project, the Project is within proximity to nearby appropriate breeding habitat based on the multiple observational records available. The Project is within potential migratory paths for yellow warbler moving to appropriate breeding habitat or to or from their overwintering locations. The potential for yellow warbler to be directly or indirectly affected by the Project is Moderate (Table 5) based on potential migratory movements to appropriate breeding habitats, loss of foraging habitat, and potential addition of sources of drinking water

during construction. This species will be included in the results of the Wildlife Survey Report, if it is observed.

Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*)

The yellow-headed blackbird is a CDFW SSC (CDFW 2019c) and is protected under the federal MBTA. It breeds widely and abundantly across western Canada and the United States but is distributed patchily in the southwestern portion of its breeding range. It migrates across western and central North America to wintering grounds in western and northern Mexico (Jaramillo and Burke 1999). The highest breeding densities are found in regions with large and productive marshes. In California it occurs primarily as a migrant and summer resident from April to early October and breeds from mid-April to late July (Twedt and Crawford 1995). Historically they were found breeding only along the lower Colorado River in the desert regions of California (Grinnell and Miller 1944).

Although yellow-headed blackbirds have declined overall in population there has been an increase in the western Mojave Desert since the early 1950's with the introduction of agricultural operations and other developments that created wet conditions and appropriate habitat for this species (Patten et al. 2003) such as parks, water treatment plants, and golf courses.

Yellow-headed blackbirds breed almost exclusively in marshes with tall emergent vegetation such as cattails and bulrush, generally in open areas and edges over relatively deep water. Males will choose territories with ample open water and within these females will choose edges with moderately dense vegetation that can support nests and provide safety from predators (Orians and Wittenberger 1991). One male may have up to six nesting females in his territory. Individuals show low site fidelity (Beletsky and Orians 1991) and considerable shifting of colonies to different locations may occur on a year to year basis.

Factors regulating populations in California are not well understood but water availability and quantity and quality of habitat, related to water levels, may have a direct effect on population sizes (Lederer et al. 1975). Other threats include habitat loss and degradation, pesticides and other chemicals used in agricultural and park settings.

There is only one CNDDB (2019b) record for yellow-headed blackbirds near the Project (Figure 7). This record is from 1983 through 1985 when yellow-headed blackbirds moved into the California City's Central Park during a cattail removal project that displaced tricolored blackbirds (see Section 5.2.6).

There are numerous observations over many years for yellow-headed blackbird as recorded by scientists or "citizen-scientists" through The Cornell Lab of Ornithology eBird on-line program (Cornell University 2015u)[15]. The closest observation within the Project and Action Area is a record of 4 individuals observed in 2013, north of the California City Airport and within or adjacent to the Orton parcels. Along Neuralia Road and adjacent to the Andari parcel there are two records from April of 2018 of up to 2 birds. North of Phillips Road at the AK Ranch there is a record from 2000 of 20 birds. Within one mile north of the northernmost Action Area parcel there is a record from 2011. Further north, northwest, and northeast to Honda Proving Center, Jawbone Canyon,

Koehn Dry Lake, and Red Rock Canyon State Park, the observations are widely scattered except for concentrated records at Koehn Dry Lake. These observations are dated from 1983 to 2019 and up to 300 birds in a flock have been recorded at Koehn Dry Lake (Rancho De Nada).

In California City and at Central Park, there have been up to 27 birds observed in 2019. and between 1983 and 2018 north of California City with up to 100 birds observed in May of 2015. To the southwest of the Project in the community of Mojave there are records from 2016 of up to 15 birds, records from 2006 through 2016 at the Mojave Water Treatment Plant with up to 4 birds, and 2 older records from 1984 and 1986 at the Camelot Golf Course.

Numerous and concentrated observations have been recorded further south and southeast in Rosamond and Edwards AFB and throughout the Antelope Valley region in appropriate habitats.

Although there is no appropriate breeding habitat for yellow-headed blackbirds within the Project, the Project is within close proximity to appropriate breeding habitat based on the multiple observational records available. The Project is within potential migratory paths for yellow-headed blackbirds moving to appropriate breeding habitat or to or from their overwintering locations. The potential for yellow-headed blackbirds to be directly or indirectly affected by the Project is Low (Table 5) based on potential migratory movements to appropriate breeding habitats, loss of foraging habitat, and potential addition of sources of drinking water during construction. This species will be included in the results of the Wildlife Survey Report, if it is observed.

Crotch Bumble Bee (*Bombus crotchii*)

The Crotch bumble bee is an important pollinator of wild flowering plants and agricultural crops. Bumble bees are able to fly in cooler temperatures and lower light levels than many other bees, making them excellent pollinators, especially at higher elevations and latitudes. They also perform a behavior called "buzz pollination," in which the bee grabs the flower in her jaws and vibrates her wing muscles to dislodge pollen from the flower. Many plants, including a number of wildflowers and crops like tomatoes, peppers, and cranberries, benefit from buzz pollination. Because bumble bees are essential pollinators, their population declines can have far ranging ecological consequences. Recent collaboration between the Xerces Society and the International Union for Conservation of Nature (IUCN) Bumble Bee Specialist Group, indicates that some species have experienced rapid and dramatic declines, with more than one quarter (28%) of all North American bumble bees facing some degree of extinction risk (IUCN 2019; Hatfield et al. 2015a). The Crotch bumble bee is listed as Endangered on the IUCN Red List.

Bumble bees face many threats including habitat loss, disease, pesticide use, and climate change to include severe weather, drought, temperature extremes, flooding and habitat shifts. Unlike honeybees which have large (>10,000 individuals) perennial hives, bumble bees produce smaller annual colonies (50-1,500 individuals). Due to their smaller annual population sizes, life cycle, and genetic makeup, they are uniquely susceptible to

extinction.

On October 16, 2018, the Xerces Society in corroboration with Defenders of Wildlife and Center for Food Safety submitted a petition to CDFW to list the Crotch bumble bee and three other species (i.e., Western bumble bee) as Endangered (Xerces Society 2019a). These four species are primarily threatened by habitat loss, diseases, and pesticides. Although their combined historic ranges span most of the state of California, they currently exist in only a few areas.

California has recognized the importance of conserving important pollinators such as Crotch bumble bee by preparing and issuing the Biodiversity Initiative in November 2018, which calls for fallowed agricultural lands to be transformed into habitat for bees, thus creating "pollinator highways" across the state (California Governor's Office of Planning and Research 2018).

Currently, the Crotch bumble bee only persists in 20% of its historic range and has declined by 98% in relative abundance (its abundance relative to other species of bumble bees) (Xerces Society 2019a and Bumble Bee Watch 2019). Analysis suggests sharp declines in both relative abundance and persistence over the last ten years. This species was historically common in the Central Valley of California, but now appears to be absent from most of it, especially in the center of its historic range. Current range size relative to historic range is 74.67% (Xerces Society 2019a). This species occurs primarily in California, including the Mediterranean region, Pacific Coast, Western Desert, Great Valley, and adjacent foothills through most of southwestern California. It has also been documented in southwest Nevada, near the California border.

Potential for occurrence within or in close proximity to the Project is Very Low (Table 5) based on three CNDDB (2019b) records from 1968 and 1992 near Red Rock Canyon State Park and nearby in the Fremont Valley region (Figure 7). This species will be included in the results of the Wildlife Survey Report, if it is observed.

Western Bumble Bee (*Bombus occidentalis*)

Like the Crotch bumble bee discussed above, the western bumble bee is an important pollinator of agricultural crops and wild plants. It too is imperiled by habitat loss, disease, pesticide use, and climate change to include severe weather, drought, temperature extremes, flooding and habitat shifts.

Historically, the western bumble bee was broadly distributed throughout western North America. The western bumble bee was one of the most common bumble bees within its range prior to the late-1990s, but in California is now found only in a few sites in the Sierra Nevada and the northern coast. Outside of California it is known to occur in the western interior of North America, from Arizona, New Mexico, north through the Pacific Northwest and into Alaska. Eastward, the distribution stretches to the northwestern Great Plains and southern Saskatchewan. Its relative abundance has declined by 84%. The western bumble bee is listed as Vulnerable on the IUCN Red List (IUCN 2019; Hatfield et al. 2015b).

On October 16, 2018, the Xerces Society in corroboration with Defenders of Wildlife and

Center for Food Safety submitted a petition to CDFW to list the western bumble bee and three other species (i.e., Crotch bumble bee) as Endangered (Xerces Society 2019a). These four species are primarily threatened by habitat loss, diseases, and pesticides. Although their combined historic ranges span most of the state of California, they currently exist in only a few areas.

California has recognized the importance of conserving important pollinators such as Crotch bumble bee by preparing and issuing the Biodiversity Initiative in November 2018, which calls for fallowed agricultural lands to be transformed into habitat for bees, thus creating "pollinator highways" across the state (California Governor's Office of Planning and Research 2018).

There are no records in the CNDDB (2019a, 2019b) for western bumblebee in or around the vicinity of the Project, however, there are records from the Fremont Valley region east of the Project near Kramer Junction. Potential for occurrence within or in close proximity to the Project is Very Low (Table 5). This species will be included in the results of the Wildlife Survey Report, if it is observed.

Mojave Dotted-blue Butterfly (*Euphilotes mojave*)

The Mojave dotted-blue butterfly does not currently have any federal or state designations. It is designated by the Xerces Society as Imperiled (Xerces Society 2019b, Vaughan and Shepherd 2005). The Mojave dotted-blue butterfly is found in the Mojave Desert region of southeastern California, southern Nevada, southeastern Utah, and northwestern Arizona. There is also a small isolated population in northern Baja California, Mexico. It is considered imperiled due to its limited range and an uncertain number of populations, probably less than twenty across its known range.

This butterfly lives in a fragile habitat characterized by dry desert washes and sandy areas with two host plants that include yellow turbans (*Eriogonum pusillum*) and kidney-leaf wild buckwheat (*E. reniforme*). Adults drink nectar mainly from the host plants.

There is a single flight from mid-March to June when males patrol around these host plants looking for females to mate with. Eggs are laid singly on flowers or buds and the caterpillars eat flowers and fruits. The larvae may be tended by ants. This butterfly hibernates as a chrysalid in leaf litter.

The desert habitat for the Mojave dotted-blue butterfly is increasingly invaded by fire-susceptible cheatgrass (*Bromus tectorum*) as well as other non-native invasive species of grasses and forbs. The Mojave dotted-blue butterfly is threatened by housing developments and other types of developments that remove native habitat. Off-road vehicle use may also impact the habitat of the Mojave dotted-blue butterfly as desert washes and sandy areas serve as typical routes for this user group.

There are no records in the CNDDB (2019b) for the Mojave dotted-blue butterfly in or around the vicinity of the Project. There is an unprocessed record on the Cantil Quadrangle somewhere north of the Project (CNDDB 2019a). Potential for occurrence within or in close proximity to the Project is Low (Table 5) as the host plants, yellow turbans and kidney-leaf wild buckwheat, likely occur in the major wash located in the

northwest corner of the Action Area. This species will be included in the results of the Wildlife Survey Report if it is observed.

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Appendix A. Conditional Use Permit (CUP) Assessor's Parcel Number (APN), Owner, Acreage, and Current Zoning, Kudu Solar Farm Action Area, California City and Kern County, California

CALIFORNIA CITY

APN[1]	Owner	Zoning[2]	Total Acreage	Prior Agriculture Acreage[3]
302-020-08	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	40.17	40.17
302-020-09	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	80.09	80.09
302-020-11	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	163.68	163.68
302-020-14	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	40.99	40.99
302-020-15	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	10.52	10.52
302-020-16	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	10.15	10.15
302-020-17	ORTON FAMILY TR	O/RA	9.59	9.59
302-020-18	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	9.98	9.98
302-290-03	PEACE JUDY ET AL	O/RA	83.58	
302-305-15	WANG NATHAN & LYNDA S	O/RA	20.95[4]	
302-321-01	ORTON JAMES L	O/RA	124.60[5]	
302-322-01	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	10.10	
302-322-02	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	10.09	
302-322-04	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	10.24	
302-322-05	ORTON JAMES L	O/RA	10.28	
302-322-06	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	40.04	
302-322-08	ORTON JAMES L	O/RA	10.33	
302-322-09	ORTON JAMES L	O/RA	40.50	
302-322-10	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	10.27	
302-322-11	ORTON JAMES L	O/RA	10.29	
302-325-49	STILLIENS MARVIN & CAROLYN	O/RA	9.74	
302-330-33	GIRARD LIMITED PARTNERSHIP	O/RA	20.21	20.21
302-330-37	STALKNEGT FAMILY TRUST	O/RA	20.38	20.38
302-341-29	BESSONART DENIS & JULIE LIVING TRUST	O/RA	168.79	168.79
302-342-01	INLAND MANAGEMENT LLC	O/RA	40.23	40.23
302-342-11	POLAN HAROLD E & AUDREY	O/RA	2.67	2.67
302-342-12	O BRIEN SUSAN	O/RA	2.66	2.66
302-342-19	MONTONNA WILLIAM & SHIRLEY TRUST	O/RA	29.69	29.69
302-342-25	REINELT FAMILY TRUST	O/RA	40.77	40.77
302-342-26	REINELT FAMILY TRUST	O/RA	39.89	39.89
302-342-27	REINELT FAMILY TRUST	O/RA	40.29	40.29

APN[1]	Owner	Zoning[2]	Total Acreage	Prior Agriculture Acreage[3]
302-342-28	REINELT FAMILY TRUST	O/RA	40.68	40.68
302-470-14	CAMARA MARGARET ELDRED TR	O/RA	20.20	
California City - Total Parcel Acreage and Prior Agriculture Acreage			1222.64	811.43

KERN COUNTY

APN[1]	Owner	Zoning[2]	Total Acreage	Prior Agriculture Acreage[3]
469-170-10	KEREN & ASSCS LLC	A	10.02	
469-170-18	KATZ DAVID	A	39.49	
470-020-08	DULBERG MARK R	A	2.31[6]	
470-020-19	JANIEKAY L C	A	4.38	
470-030-01	ANDARI GHAZIN	A	79.18	
470-080-15	AEK GLOBAL INV LLC	A	20.27	20.27
470-080-16	WOLFE JEFFREY	PL RS MH	10.07	10.07
470-080-17	WOLFE JEFFREY	PL RS MH	10.10	10.10
470-080-32	MOORE JOHN & DONNA L FMLY TR	PL RS MH	10.07	10.07
470-151-09	MAZIN FAMILY TRUST	A	19.62	
470-151-15	ARAGON GENARO & GUADALUPE	A	20.23	
470-151-16	DEL SOL PROPERTIES INC	A	20.40	
470-151-17	CLERICO ROBERT W TR	A	19.98	
470-152-01	DHUPAR SURINDER K ET AL	A-1 MH	39.32	
470-152-18	JOHANSING LOYDELL H & DAVID	A-1 MH	10.32	
470-152-19	MITCHELL LORI LYNN	A-1 MH	4.93	
470-302-24	OAK INVS LLC	PL RS MH	2.59	
470-302-25	OAK INVS LLC	PL RS MH	2.62	
470-302-26	OAK INVS LLC	PL RS MH	2.52	
470-322-13	ABRAMS STUART WILLIAM	A-1 MH	2.39	2.39
470-322-15	INLAND MANAGEMENT LLC	A-1	9.96	9.96
470-330-01	OAK INVS LLC	PL RS	5.06	
470-330-02	OAK INVS LLC	PL RS	4.77	
470-330-03	MEUNIER STEVEN	A	19.86	
470-330-04	MEUNIER STEVEN	A	20.15	
470-330-06	KANE MARY	A-1	9.95	9.95
470-330-07	AZAM JAVED & ROOBILA NAZ FAMILY TRUST	A-1	10.02	10.02
470-330-14	OAK INVS LLC	PL RS	4.89	

APN[1]	Owner	Zoning[2]	Total Acreage	Prior Agriculture Acreage[3]
470-330-15	YABLONSKI FAMILY TRUST	PL RS	5.23	
470-350-04	EQUITY TR CO CUSTDN FBO STEVEN HILBON IRA	A	18.65	
470-350-05	DISCOUNTLAND INC	A	18.91	
470-350-06	KHALIBI EBRAHIM	A	18.89	
470-350-07	DISCOUNTLAND INC	A	18.57	
470-350-08	WEST PALM DEV CO	A	19.93	
470-360-01	BABASHOFF JOHN P & DIANE L TRUST	A	18.43	
470-360-02	TRIPLE DEV CORP	A	17.85	
470-360-05	NELSON ERIKA LIVING TRUST	A	21.15	
470-380-01	EQUITY TR CO CUSTDN FBO STEVEN HILBON IRA	A	19.92	
470-380-04	ROBERTO FAMILY TR ET AL	A	21.35	
470-380-05	SMITH ALVA E & BETTY REV LIV TR	A	17.34	
470-380-06	HIGGINS MICHAEL	A	19.88	
470-380-07	CABLE JAMEY	A	21.95	
Kern County - Total Parcel Acreage and Prior Agriculture Acreage			673.52	82.83
Total Kudu Action Area Parcels			**1896.16**	**894.26**

1. - APN - Accessor's parcel number

2 - Land use zoning codes

California City

O/RA - Open space district combined with residential and agriculture

Kern County

A - Exclusive agriculture - Agricultural uses and other activities compatible with agricultural uses

A-1 - Limited agriculture - Combination of estate-type residential development, agricultural uses, and other compatible uses

FPS - Floodplain Secondary combining district - areas potentially subject to flooding with additional regulations in addition to the base district with which the FPS district is combined

MH - Mobile home combining district - Allows for the installation of mobile homes with or without foundations.

PL - Platted lands - Residential uses and other compatible activities; future land divisions are prohibited

RS - Residential suburban combining - Expand the number and type of permitted domestic agricultural uses within rural residential areas; allows one large animal for each ¼ acre of lot area

RA - Residential-Agricultural - Single-family residential and agricultural type uses, service uses, roadside stands for agricultural products

3 – Prior agricultural use was determined by reviewing historical aerial photographs of the region

4 – Only 20.95 acres of parcel 302-305-15 (43.54 acres total) is included in the Action Area within the California City CUP

5 – Only 124.60 acres of parcel 302-321-01 (160.93 acres total) is included in the Action Area within the California City CUP

6 - Only 2.31 acres of parcel 470-020-08 (156.00 acres total) is included in the Action Area within the Kern County CUP

Appendix B. List of Federal, State, Xerces Society, and California Native Plant Society Ranking Codes for the Kudu Solar Farm Project, California City and Kern County, California

USFWS / ESA Listing Codes:
FE Federally listed as Endangered
FT Federally listed as Threatened
FPE Federally proposed for listing as Endangered
FPT Federally proposed for listing as Threatened
FPD Federally proposed for delisting
FC Federal candidate species (former Category 1)
BCC Birds of Conservation Concern
BGEPA Bald and Golden Eagle Protection Act

CDFW / CESA Listing Codes:
SE State listed as Endangered
ST State listed as Threatened
SCE State candidate for listing as Endangered
SCT State candidate for listing as Threatened
SCD State candidate for delisting
R Rare
FP Fully Protected
SGCN Species of Greatest Conservation Need
SSC Species of Special Concern
WL Watch List

Birds of Conservation Concern are species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973 (ESA, USFWS 2008).

California Fully Project Species are identified as those animals that are rare or face extinction and require additional protection. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of bird species for the protection of livestock (CDFW 2019f).

Watch List of Species of Special Concern include species that are not on the current special concern list that 1) formerly were on the 1978 (Remsen 1978) or 1992 (CDFG 1992) special concern lists and are not currently listed as state threatened and endangered; 2) have been removed (delisted) from either the state or federal threatened and endangered lists (and remain on neither); or 3) are currently designated as Fully Protected in California (Shuford and Gardali 2008).

CALFIRE Sensitive Species are those species that warrant special protection during timber operations (CDFW 2019c).

Global Rank (G-Rank):
G1 = **Critically Imperiled**—At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
G2 = **Imperiled**—At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
G3 = **Vulnerable**—At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
G4 = **Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
G5 = **Secure**—Common; widespread and abundant.

> **Subspecies/variety level:**
> Subspecies/varieties receive a **T-rank** attached to the G-rank. With the subspecies/varieties, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the subspecies or variety.

State CNDDB Rank (S-Rank):
S1 = **Critically Imperiled**—Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.
S2 = **Imperiled**—Imperiled in the state 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.
S3 = **Vulnerable**—Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.
S4 = **Apparently Secure**—Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.
S5 = **Secure**—Common, widespread, and abundant in the state.

Uncertainty about the rank of an element is expressed in two major ways: 1) by expressing the rank as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3; and 2) by adding a "?" to the rank: e.g., S2? This represents more certainty than S2S3, but less than S2

Xerces Society Red List of Bees, Butterflies, and Moths (Xerces 2019a, 2019b)**:**
PE — Possibly Extinct: Missing; known from only historical occurrences, but still some hope of rediscovery.
CI — Critically Imperiled: At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
I — Imperiled: At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
V — Vulnerable: At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
DD — Data Deficient: Inadequate information to make an assessment of its risk category, either through lack of knowledge of population size, threats to it, or to taxonomic uncertainty of the validity of the taxon.

CNPS Rare Plant Rank (CNPS 2019)**:**
1A Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
1B Plants Rare, Threatened, or Endangered in California and Elsewhere
2A Plants Presumed Extirpated in California But Common Elsewhere
2B Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
3 Plants About Which More Information is Needed
4 Plants of Limited Distribution

Threat Ranking:
0.1 Seriously Threatened in California
0.2 Moderately Threatened in California
0.3 Not Very Threatened in California

Plants with an "E" are endemic to CA

Appendix C. Annual and Perennial Plant Species Occurring in the Kudu Solar Farm Action Area, California City and Kern County, California, August - September 2019

FAMILY / SCIENTIFIC NAME	COMMON NAME	HABIT
EUDICOT FLOWERING PLANTS		
ASTERACEAE	**SUNFLOWER FAMILY**	
Acamptopappus sphaerocephalus var. *hirtellus*	goldenhead	shrub
Ambrosia acanthicarpa	annual bur-sage	annual herb
Ambrosia dumosa	burro bush	shrub
Ambrosia salsola	cheesebush	shrub
Ericameria cooperi var. *cooperi*	Cooper's goldenbush	shrub
Ericameria nauseosa	rubber rabbitbrush	shrub
Ericameria paniculata	black-banded rabbitbrush	shrub
Stephanomeria pauciflora	wire-lettuce	perennial herb/subshrub
Tetradymia axillaris var. *longispina*	cottonthorn	shrub
Tetradymia stenolepis	Mojave horsebrush	shrub
BORAGINACEAE	**BORAGE FAMILY**	
Amsinckia menziesii	common fiddleneck	annual herb
Amsinckia tessellata var. *tessellata*	desert fiddleneck	annual herb
Cryptantha dumetorum	scrambling cryptantha	annual herb
Cryptantha micrantha var. micrantha	red-root cryptantha	annual herb
Phacelia tanacetifolia	tansy phacelia	annual herb
Plagiobothrys arizonicus	Arizona popcornflower	annual herb
BRASSICACEAE	**MUSTARD FAMILY**	
Caulanthus lasiophyllus	California mustard	annual herb
Hirschfeldia incana[1]	Mediterranean mustard	annual/perennial herb
CACTACEAE	**CACTUS FAMILY**	
Cylindropuntia echinocarpa[2]	silver cholla	perennial stem succulent
CHENOPODIACEAE	**GOOSEFOOT FAMILY**	
Krascheninnikovia lanata	winter fat	shrub
EUPHORBIACEAE	**SPURGE FAMILY**	
Croton setigerus	doveweed	annual herb
Euphorbia micromera	Sonoran sandmat	annual herb
Euphorbia polycarpa	golondrina	perennial herb
FABACEAE	**LEGUME FAMILY**	
Senna armata	desert senna	shrub

GERANIACEAE	**GERANIUM FAMILY**	
Erodium cicutarium[1]	red-stemmed filaree	annual herb
LAMIACEAE	**MINT FAMILY**	
Salvia columbariae	chia	annual herb
LOASACEAE	**LOASA FAMILY**	
Petalonyx thurberi ssp. *thurberi*	Thurber sandpaper-plant	shrub
POLEMONIACEAE	**PHLOX FAMILY**	
Gilia sp.	gilia	annual herb
Eriastrum eremicum ssp. *eremicum*	desert eriastrum	annual herb
POLYGONACEAE	**BUCKWHEAT FAMILY**	
Eriogonum brachyanthum	short-flower wild buckwheat	annual herb
Eriogonum gracillimum	rose-and-white wild buckwheat	annual herb
Eriogonum maculatum	spotted wild buckwheat	annual herb
SOLANACEAE	**NIGHTSHADE FAMILY**	
Datura wrightii	jimson weed	annual/perennial herb
Lycium andersonii	desert tomato	shrub
Lycium cooperi	box-thorn	shrub
ZYGOPHYLLACEAE	**CALTROP FAMILY**	
Larrea tridentata	creosote bush	shrub
MONOCOT FLOWERING PLANTS		
AGAVACEAE	**CENTURY PLANT FAMILY**	
Yucca brevifolia[2]	Joshua tree	perennial leaf succulent
POACEAE	**GRASS FAMILY**	
Bromus berteroanus	Chilean chess	annual grass
Bromus madritensis ssp. *rubens*[1]	red brome, foxtail chess	annual grass
Bromus tectorum[1]	cheatgrass	annual grass
Hordeum murinum[1]		
Schismus arabicus[1]	Arabian grass	annual grass
Schismus barbatus[1]	Mediterranean grass	annual grass
Stipa hymenoides	sand rice grass	perennial grass
Stipa speciosa	desert needlegrass	perennial grass

[1] non-native weed
[2] CDNPA species

Appendix D. Vegetation Community Assessment and Mohave Ground Squirrel Habitat Suitability Assessment Photographs of the Kudu Solar Farm Action Area, California City and Kern County, California

Photograph 1. *Larrea tridentata* – *Ambrosia dumosa* Shrubland Alliance

Photograph 2. *Ericameria nauseosa* Shrubland Alliance

Photograph 3. *Larrea tridentata* Shrubland Alliance

Photograph 4. *Ambrosia dumosa* Shrubland Alliance

Photograph 5. ***Larrea tridentata – Ambrosia dumosa – Senna armata*** **Association**

Photograph 6. Previously Farmed Area in Survey Unit K-09, with Sparse Invasive Rubber Rabbitbrush. Lack of Cover and Food Resources Make this Area Unsuitable for MGS Occupancy.

Photograph 7. Ravine in Survey Unit K-10 with Large Patches of Cooper's Boxthorn and Joshua Trees in the Background. More Diverse Woody Vegetation Indicates Moderate Suitability for MGS.

Photograph 8. View of Survey Unit K-11 Showing Low Diversity Creosote Bush with Occasional Desert Senna. This Area has Low Suitability for MGS.

Appendix D-2
Wildlife Survey Report

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WILDLIFE SURVEY REPORT

KUDU SOLAR FARM
CALIFORNIA CITY AND KERN COUNTY, CALIFORNIA

5 May 2020

EnviroPlus Consulting, Inc.

Wildlife Survey Report
Kudu Solar Farm

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5 May 2020

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EXECUTIVE SUMMARY

69SV 8me LLC (Applicant) proposes to develop up to a 500 megawatt-alternating current (MW-ac) utility-scale solar farm and 600 MW-hour (MWh) Energy Storage System (ESS) known as the Kudu Solar Farm Project (Project) in unincorporated Kern County and California City, California. Features that comprise the Project, include but not are not limited to, the solar array, collector lines, ESS, substation, and ancillary facilities.

The Project is adjacent to the approved 68SF 8me LLC, Eland 1 Solar Farm, south of the existing Springbok 1 & 2 Solar Farms, and southeast of the Los Angeles Department of Water and Power (LADWP) Beacon Solar Facility. The Project would use gen-tie lines already approved for the adjacent Eland 1 Solar Farm. The gen-tie lines for the Project are a part of the Eland 1 project.

The permanent disturbance acreage associated with development of the Project would be located within a subset of the Project, referred to as the Action Area. The Applicant will be applying for Conditional Use Permits (CUP) from Kern County and from California City for development and operation of this Project.

The Action Area includes 2,176.14 gross acres on 75 privately owned parcels in unincorporated Kern County and in California City (Table 1). A total of 42 parcels are located within Kern County and comprise 673.52 gross acres and a total of 33 parcels are located within California City and comprise 1,222.64 gross acres. In addition, the Project includes collector lines in Kern County (186.36 gross acres) and California City (93.62 gross acres).

This report details the results of protocol wildlife surveys conducted between late August and early October of 2019, for Agassiz's desert tortoise (*Gopherus agassizii*) and western burrowing owl (*Athene cunicularia* ssp. *hypugaea*). Other protected, special status, listed, and general wildlife species were incidentally included in the survey recordation and these results are also included in this report.

The desert tortoise protocol survey effort adhered to the 2019 U.S. Fish and Wildlife Service (USFWS) requirements. Under this protocol the USFWS defines the "action area" of a project to include all areas to be affected directly or indirectly by a project action. The Kudu Solar Farm desert tortoise protocol survey "action area" included all Project parcels to be developed and collector line alternatives. The "action area" excluded all existing public use paved and/or dirt roads. The "action area" is synonymous with the previously defined "Action Area".

The burrowing owl protocol survey effort adhered to the 2012 California Department of Fish and Wildlife (CDFW) requirements. This included survey efforts within the Action Area as well as survey efforts within the required 150-meter wide buffer areas around the Action Area.

A total of 33 wildlife species and/or their sign were observed during the survey. These included 14 bird species, 7 mammal species, and 12 reptile species. Of this total, five species are special status or listed species and the remaining 28 animals have no state or federal status.

No definitive sign of habitation by the state and federally Threatened desert tortoise was detected in the Action Area or within the burrowing owl buffer survey areas. The disarticulated carcass remains of a subadult female tortoise were located in the California City portion of the Action Area The animal was estimated to have died between 2 - 4 years prior to the observation. Approximately 477 meters to 986 meters northeast of this carcass and within the California City portion of the Action Area, a total of seven Class 4 burrows (deteriorated condition, possibly tortoise) were located and recorded. No live tortoises, recent carcasses, scat, high quality

burrows, tracks, courtship rings, eggs or eggshell fragments, or drinking depressions were detected within the California City portion of the Action Area There was no desert tortoise sign identified within the Kern County portion of the Action Area These data indicate a low potential for desert tortoise occupation within the Action Area.

Detection of the California Threatened Mohave ground squirrel (*Xerospermophilus mohavensis;* MGS) requires trapping surveys during specific time periods. MGS trapping was outside the scope of the current survey and not conducted. However, a habitat assessment was conducted for MGS by Dr. Philip Leitner between September 9 to 12, 2019. This habitat assessment was completed to determine the potential for occurrence as well as impacts to this species from proposed project development.

The Project is within the geographic range of MGS and there are multiple records of this species being trapped and identified during surveys within the general vicinity of the Project. Within the California City portion of the Action Area, the potential for MGS to occur is low to moderate based on appropriate habitat and nearby known occurrences. Within the Kern County portion of the Action Area, the potential for MGS to occur varies from unsuitable to very low, to low to moderate based upon a mix of inappropriate and appropriate habitat and nearby known occurrences.

One live burrowing owl was observed in the California City portion of the Action Area. This owl was not associated with a burrow. There were a total of seven inactive burrows recorded and no active burrows detected. Within the Kern County portion of the Action Area a total of three inactive burrowing owl burrows were recorded and no live owls or active burrows detected. These data suggest a low potential for habitation of the Project by burrowing owl. No live burrowing owls or burrows were detected within the buffer survey areas.

A total of 66 inactive desert kit fox (*Vulpes macrotis arsipus*; DKF) dens were located within the Action Area. Forty-two inactive DKF dens were located within the California City portion of the Action Area and 24 inactive DKF dens were located within the Kern County portion of the Action Area. There were no active or pupping dens detected. These data suggest that there is a low potential for future desert kit fox occurrence but that the Action Area is not currently occupied.

One northern harrier (*Circus hudsonius*) was observed within the Kern County portion of the Action Area. It flew into the Action Area from the north, landed on a wooden power pole, then flew to the south. Northern harriers build their nests on the ground in dense vegetation (Peterson 1993). No suitable habitat for ground nesting occurs in the Action Area due to a lack of dense vegetation.

PROJECT DESCRIPTION AND LAND OWNERSHIP

69SV 8me LLC (Applicant) proposes to develop up to a 500 megawatt-alternating current (MW-ac) utility-scale solar farm and 600 MW-hour (MWh) Energy Storage System (ESS) known as the Kudu Solar Farm Project (Project) in unincorporated Kern County and California City, California (Figure 1). The Project includes all features that comprise the project, to include but not be limited to, the solar array, collector lines, ESS, substation, and ancillary facilities.

The Project is adjacent to the approved 68SF 8me LLC, Eland 1 Solar Farm, south of the existing Springbok 1 & 2 Solar Farms, and southeast of the Los Angeles Department of Water and Power (LADWP) Beacon Solar Facility (Figure 2). The Project would utilize gen-tie lines already approved for the adjacent Eland 1 solar farm.

The permanent disturbance acreage associated with development of the Project would be located within a subset of the Project, referred to as the Action Area. The Applicant will be applying for Conditional Use Permits (CUP) from Kern County and from California City for development and operation of this Project.

The Action Area includes 2,176.14 gross acres on 75 privately owned parcels in unincorporated Kern County and in California City (Table 1). A total of 42 parcels are located within Kern County and comprise 673.52 gross acres and a total of 33 parcels are located within California City and comprise 1,222.64 gross acres. In addition, the Project includes collector lines in Kern County (186.36 gross acres) and California City (93.62 gross acres).

Power generated by the Project would be collected using up to 230 kilovolt (kV) collector lines which will run underground and/or overhead to the LADWP Barren Ridge Substation. The Project intends to share the Eland 1 gen-tie line and right-of-way, which may require stringing additional conductor on the Eland 1 transmission structures or increasing the capacity of the Eland 1 gen-tie by reconductoring the line with thicker cable. If the Project cannot share these facilities, a new gen-tie line would be developed within one of the routes previously analyzed in the Eland 1 Environmental Impact Report (Kern County 2018). The gen-tie lines for the Project are a part of the Eland 1 project.

The Project may share an operations and maintenance (O&M) building, ESS, and/or transmission facilities, as necessary, with one or more nearby solar projects, and/or it may be remotely operated. Any unused O&M building, substation, and/or transmission facility areas on-site may be covered by solar panels under such scenarios.

The Project is located north of the California City Municipal Airport and is bisected by Washburn Boulevard (the California City and Kern County boundary) and Neuralia Road. State Route 14 (SR14) is located to the west of the Project with a single line track of Union Pacific (UP) Railroad bisecting the western portion of the Project in a north-south direction in the Kern County parcels. Phillips Road bisects the western portion of the Project in an east-west direction also within the Kern County parcels (Figure 2).

The construction period for the Project, from site preparation through construction, testing, and commercial operation, is expected to commence as early as the fourth quarter of 2021 and will extend for approximately 12 to 18 months.

Table 1. Conditional Use Permit (CUP) Assessor's Parcel Number (APN), Owner, Acreage, and Current Zoning, Kudu Solar Farm Action Area, California City and Kern County, California

CALIFORNIA CITY CUP

APN[1]	Owner	Zoning[2]	Action Area Acreage	Prior Agriculture Acreage[3]
302-020-08	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	40.17	40.17
302-020-09	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	80.09	80.09
302-020-11	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	163.68	163.68
302-020-14	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	40.99	40.99
302-020-15	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	10.52	10.52
302-020-16	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	10.15	10.15
302-020-17	ORTON FAMILY TR	O/RA	9.59	9.59
302-020-18	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	9.98	9.98
302-290-03	PEACE JUDY ET AL	O/RA	83.58	
302-305-15	WANG NATHAN & LYNDA S	O/RA	20.95[4]	
302-321-01	ORTON JAMES L	O/RA	124.60[5]	
302-322-01	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	10.10	
302-322-02	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	10.09	
302-322-04	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	10.24	
302-322-05	ORTON JAMES L	O/RA	10.28	
302-322-06	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	40.04	
302-322-08	ORTON JAMES L	O/RA	10.33	
302-322-09	ORTON JAMES L	O/RA	40.50	
302-322-10	ORTON DAVID M & PATRICIA FAMILY TRUST	O/RA	10.27	
302-322-11	ORTON JAMES L	O/RA	10.29	
302-325-49	STILLIENS MARVIN & CAROLYN	O/RA	9.74	
302-330-33	GIRARD LIMITED PARTNERSHIP	O/RA	20.21	20.21
302-330-37	STALKNEGT FAMILY TRUST	O/RA	20.38	20.38

[1] APN - Accessor's parcel number

[2] **California City: O/RA** - Open space district combined with residential and agriculture

Kern County:

A - Exclusive agriculture - Agricultural uses and other activities compatible with agricultural uses

A-1 - Limited agriculture - Combination of estate-type residential development, agricultural uses, other compatible uses

MH - Mobile home combining district - Allows for the installation of mobile homes with or without foundations.

PL - Platted lands - Residential uses and other compatible activities; future land divisions are prohibited

RS - Residential suburban combining - Expand the number and type of permitted domestic agricultural uses within rural residential areas; allows one large animal for each ¼ acre of lot area

[3] Prior agricultural use was determined by reviewing historical aerial photographs of the region

[4] Only 22.60 acres of parcel 302-305-15 (43.54 acres total) is included in the Action Area

[5] Only 36.33 acres of parcel 302-321-01 (160.93 acres total) is included in the Action Area

APN[1]	Owner	Zoning[2]	Action Area Acreage	Prior Agriculture Acreage[3]
302-341-29	BESSONART DENIS & JULIE LIVING TRUST	O/RA	168.79	168.79
302-342-01	INLAND MANAGEMENT LLC	O/RA	40.23	40.23
302-342-11	POLAN HAROLD E & AUDREY	O/RA	2.67	2.67
302-342-12	O BRIEN SUSAN	O/RA	2.66	2.66
302-342-19	MONTONNA WILLIAM & SHIRLEY TRUST	O/RA	29.69	29.69
302-342-25	REINELT FAMILY TRUST	O/RA	40.77	40.77
302-342-26	REINELT FAMILY TRUST	O/RA	39.89	39.89
302-342-27	REINELT FAMILY TRUST	O/RA	40.29	40.29
302-342-28	REINELT FAMILY TRUST	O/RA	40.68	40.68
302-470-14	CAMARA MARGARET ELDRED TR	O/RA	20.20	
California City - Total Parcel Acreage and Prior Agriculture Acreage			**1222.64**	**811.43**

KERN COUNTY CUP

APN[1]	Owner	Zoning[2]	Action Area Acreage	Prior Agriculture Acreage[3]
469-170-10	KEREN & ASSCS LLC	A	10.02	
469-170-18	KATZ DAVID	A	39.49	
470-020-08	DULBERG MARK R	A	2.31[6]	
470-020-19	JANIEKAY L C	A	4.38	
470-030-01	ANDARI GHAZIN	A	79.18	
470-080-15	AEK GLOBAL INV LLC	A	20.27	20.27
470-080-16	WOLFE JEFFREY	PL RS MH	10.07	10.07
470-080-17	WOLFE JEFFREY	PL RS MH	10.10	10.10
470-080-32	MOORE JOHN & DONNA L FMLY TR	PL RS MH	10.07	10.07
470-151-09	MAZIN FAMILY TRUST	A	19.62	
470-151-15	ARAGON GENARO & GUADALUPE	A	20.23	
470-151-16	DEL SOL PROPERTIES INC	A	20.40	
470-151-17	CLERICO ROBERT W TR	A	19.98	
470-152-01	DHUPAR SURINDER K ET AL	A-1 MH	39.32	
470-152-18	JOHANSING LOYDELL H & DAVID	A-1 MH	10.32	
470-152-19	MITCHELL LORI LYNN	A-1 MH	4.93	
470-302-24	OAK INVS LLC	PL RS MH	2.59	
470-302-25	OAK INVS LLC	PL RS MH	2.62	
470-302-26	OAK INVS LLC	PL RS MH	2.52	
470-322-13	ABRAMS STUART WILLIAM	A-1 MH	2.39	2.39

[6] Only 2.31 acres of parcel 470-020-08 (156.00 acres total) is included in the Action Area

APN[1]	Owner	Zoning[2]	Action Area Acreage	Prior Agriculture Acreage[3]
470-322-15	INLAND MANAGEMENT LLC	A-1	9.96	9.96
470-330-01	OAK INVS LLC	PL RS	5.06	
470-330-02	OAK INVS LLC	PL RS	4.77	
470-330-03	MEUNIER STEVEN	A	19.86	
470-330-04	MEUNIER STEVEN	A	20.15	
470-330-06	KANE MARY	A-1	9.95	9.95
470-330-07	AZAM JAVED & ROOBILA NAZ FAMILY TRUST	A-1	10.02	10.02
470-330-14	OAK INVS LLC	PL RS	4.89	
470-330-15	YABLONSKI FAMILY TRUST	PL RS	5.23	
470-350-04	EQUITY TR CO CUSTDN FBO STEVEN HILBON IRA	A	18.65	
470-350-05	DISCOUNTLAND INC	A	18.91	
470-350-06	KHALIBI EBRAHIM	A	18.89	
470-350-07	DISCOUNTLAND INC	A	18.57	
470-350-08	WEST PALM DEV CO	A	19.93	
470-360-01	BABASHOFF JOHN P & DIANE L TRUST	A	18.43	
470-360-02	TRIPLE DEV CORP	A	17.85	
470-360-05	NELSON ERIKA LIVING TRUST	A	21.15	
470-380-01	EQUITY TR CO CUSTDN FBO STEVEN HILBON IRA	A	19.92	
470-380-04	ROBERTO FAMILY TR ET AL	A	21.35	
470-380-05	SMITH ALVA E & BETTY REV LIV TR	A	17.34	
470-380-06	HIGGINS MICHAEL	A	19.88	
470-380-07	CABLE JAMEY	A	21.95	
Kern County - Total Parcel Acreage and Prior Agriculture Acreage			**673.52**	**82.83**

Total Kudu Action Area Parcels	**1896.16**	**894.26**

Construction of the facility will include the following activities:

- Site preparation
- Grading and earthwork
- Concrete foundations
- Structural steel work
- Electrical/instrumentation work
- Collector line installation
- Architecture and landscaping

No public roadways will be affected by the Project, except during the construction period. Construction traffic would access the Project from Phillips Road, Gantt Road, and Neuralia Road, or through the Eland 1 project site. It is estimated that up to 1,000 workers per day, during peak construction periods, will be required for the construction of the Project.

Heavy construction is expected to occur between 6:00 am and 5:00 pm, Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Some activities may continue 24 hours per day, seven days per week. Low-level noise activities may potentially occur between the hours of 10:00 pm and 7:00 am. Nighttime activities could potentially include, but are not limited to, refueling equipment, staging material for the following day's construction activities, quality assurance/control, and commissioning.

Materials and supplies will be delivered to the Project by truck. Truck deliveries will normally occur during daylight hours. However, there will be offloading and/or transporting to the Project on weekends and during evening hours.

Earthmoving activities are expected to be limited to the construction of the access roads, any O&M building, any substation, any energy storage systems, and any storm water protection or storage (detention) facilities. Final grading may include revegetation with low lying grass or applying earth-binding materials to disturbed areas.

The Project could require an operational staff of up to 20 full-time employees. As discussed, the Project may share O&M, substation, ESS, and/or transmission facilities with one or more nearby projects. In such a scenario, the projects would share personnel, thereby potentially reducing the Project's on-site staff.

The facility would operate seven days a week, 24 hours a day, generating electricity during normal daylight hours when the solar energy is available. Maintenance activities may occur seven days a week, 24 hours a day to ensure photovoltaic (PV) panel output when solar energy is available.

After the useful life of the Project, the panels will be disassembled from the mounting frames and the Project restored to its pre-development condition.

SITE DESCRIPTION

The Project is situated within an unincorporated area of southeastern Kern County and within the limits of California City, California (Figure 2). The Project is located north of the California City Municipal Airport and is bisected by Washburn Boulevard (the California City and Kern County boundary).

The Project is on private lands located on the Mojave NE and California City North USGS 1:24,000 topographic maps (7.5-minute quadrangle). The Project is cadastrally located as follows:

- Township 31S, Range 37E – portions of Sections 14, 15, 22, 23, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35
- Township 32S, Range 37E – portions of Sections 1, 2, 3, 4, 8, 9, 10, 11, 12

The following features occur in areas surrounding the Project:

- North – Beacon Solar Farm, Springbok 1 and 2 Solar Farms, and the Honda Proving Center of California a few miles to the north,
- West – State Route 14 with the Cinco Solar Farm and the Sierra Nevada Mountains further to the west,
- South – California City airport and the developed portions of California City, and
- East – similar vacant land with the fenced Desert Tortoise Research Natural Area (DTRNA) further to the east.

The Project is located within the Fremont Valley. The terrain of the Project is relatively flat with elevations ranging between 2,174 feet above mean sea level (AMSL) in the northeastern portion to 2,460 feet AMSL in the southwestern portion. Drainage is towards Koehn Dry Lake, located 10 miles to the northeast. Due to the relatively flat terrain over most of the Project, hydrology is largely characterized by percolation and small washes.

Population centers and employers within the vicinity of the Project include but are not limited to California City, Mojave, Edwards AFB, and the Honda Proving Center of California (Honda Proving Center). The developed portion of California City (population 14,120 in the 2010 census), incorporated in 1965, is located south of the Project.

There are several constructed features within and in the vicinity of the Project. The small unincorporated community of Phillips Ranch lies in the vicinity but not adjacent to parcels in the Action Area. Several small ranches also lie in the general area but not within the Action Area. The California City airport lies adjacent to the southernmost Action Area parcel at the corner of Yerba Boulevard.

North of the Project within 2 to 4 miles is the unincorporated community of Cantil, California located within Kern County. It is the home of the Honda Proving Center and the Red Rock Elementary School and Community Day School. Cantil was founded in 1908 or 1909 as a station stop for the Nevada and California Railroad when it was extended from Owens Lake to Mojave (Wikipedia 2019). The unincorporated community of Mojave (population 4,238 in the 2010 census), located within Kern County, is within 10 miles southwest of the Project.

SR14, a generally north-south four-lane divided highway lies within 0.5 mile (at its closest point), west of the Project. Neuralia Road, a two-lane paved County road traverses north-south

through the Project while Phillips Road, a two-lane road paved County road traverses east-west through the Project. There are also several short paved roads within the Phillips Ranch community. Many unmaintained dirt roads crisscross the area. The UP Railroad, a single line track, passes through the Project in the west generally paralleling SR14.

There are several electrical distribution lines within the Project including lines along both Neuralia and Phillips Roads. No electrical transmission lines or large natural gas or petroleum transmission pipelines are known to occur within or adjacent to the Project.

The 3,840-acre Honda Proving Center is located a few miles northeast of the Project, within the community of Cantil. This facility was built in 1990, closed in 2010, and then was reopened in 2017 after major repairs were made to the track (PR Newswire Association 2017).

There are existing and proposed solar farms in the vicinity of the Project (Figure 2). These include Springbok 1 and 2 located immediately south of the Honda Proving Center, the Beacon Solar Farm located between Springbok 1 and SR14, and Cinco Solar Farm which is located just west of SR14 about a mile west of the western-most parcels of the Project. Eland 1 is a proposed solar farm immediately adjacent to and intermixed with the Kudu parcels for which a draft Environmental Impact Report has been completed (Kern County Planning and Community Development Department 2018).

At its closest point the Project is located approximately one mile west of the DTRNA. The DTRNA was established in 1974 and includes 39.5 square miles of desert habitat of which a majority of the private land inholdings have been purchased by the Bureau of Land Management (BLM), by the California Department of Fish and Wildlife (CDFW), or by the Desert Tortoise Preserve Committee (DTPC), a 501(3)c non-profit organization (DTPC 2019). The southern and eastern boundary of the DTRNA is shared with California City. In 1980 the BLM designated the DTRNA as an Area of Critical Environmental Concern (ACEC) and perimeter fencing was installed as well as a visitor's center. The bottom strand of the DTRNA fence is lifted off the ground in order to allow unimpeded ingress and egress of the DTRNA by desert tortoises and other wildlife. The DTPC manages the DTRNA and over 30 years of research has been conducted there on the desert tortoise (ADT) (*Gopherus agassizii*), the Mohave ground squirrel (MGS) (*Xerospermophilus mohavensis*), and many other species of wildlife and plants.

The Project is not located within critical habitat for any species. At its closest point, the Project is 6.3 miles southwest of designated desert tortoise critical habitat at the BLM Fremont-Kramer ACEC.

Evidence of human impacts are present throughout the Action Area. Agricultural activity has resulted in significant degradation of native vegetation. A total of 45.7% of the Action Area has been previously farmed (Table 1 and Photograph 1). This included 811.43-acres of the 1,222.64-acres in the California City portion of the Action Area and 82.83-acres of the 673.52-acres in the Kern County portion of the Action Area. Although these parcels have not been in agricultural production for decades, preparation of the land for farming resulted in complete removal of native vegetation. Much of this abandoned farmland is still barren of native shrub cover and has been colonized by rubber rabbitbrush (*Ericameria nauseosa*), a fast-growing, early seral shrub that establishes after disturbance. Other disturbed areas are undergoing the slow process of reverting back to their original vegetation communities.

The Action Area has also been heavily impacted by recent and historic domestic sheep grazing. Evidence of sheep grazing included sheep scat, sheep trails, denuded areas in the vicinity of watering sites, and trampling of annual and small perennial vegetation.

Off-highway vehicle (OHV) activity within the Action Area was relatively common as evidenced by tracks and observations of OHVs. The level of OHV activity is likely influenced by the proximity of the BLM's Jawbone Canyon OHV area a few miles to the north. Evidence of shooting activity was found sporadically throughout the Action Area and illegal dump sites and wind-blown trash were routine observations.

The Action Area includes a variety of vegetation communities (Figure 3 and Photographs 2 - 3). These are summarized in Table 2. Vegetation communities are discussed in detail in the Biological Evaluation, submitted under separate cover, dated 26 April 2020 (EnviroPlus 2020).

Table 2. Acreage of Vegetation Communities and Unvegetated Features within the Kudu Solar Farm Action Area, California City and Kern County, California.

VEGETATION COMMUNITY[7]	KERN COUNTY CUP ACRES (%)	CALIFORNIA CITY CUP ACRES (%)	OVERALL ACRES (%)
***Larrea tridentata – Ambrosia dumosa* Shrubland Alliance (Creosote Bush - White Bursage)**	478.87 (55.7%)	563.69 (42.8%)	1,042.56 (47.9%)
***Ericameria nauseosa* Shrubland Alliance (Rubber Rabbitbrush Scrub)**	56.93 (6.6%)	579.56 (44.0%)	636.49 (29.2%)
***Larrea tridentata – Ambrosia dumosa – Senna armata* Association (Creosote Bush - White Bursage – Desert Senna Scrub) - Sensitive**	203.12 (23.6%)	0.85 (0.1%)	203.97 (9.4%)
***Larrea tridentata* Shrubland Alliance (Creosote Bush Scrub)**	78.81 (9.2%)	83.90 (6.4%)	162.71 (7.5%)
***Ambrosia dumosa* Shrubland Alliance (White Bursage Scrub)**	18.05 (2.1%)	87.14 (6.6%)	105.19 (4.8%)
Mediterranean California Naturalized Annual and Perennial Grassland Group	10.10 (1.2%)	-	10.10 (0.5%)
Unvegetated (developed: paved roadways, structures, or other features and disturbed: dirt roadways, etc.)	14.00 (1.6%)	1.12 (0.1%)	15.12 (0.7%)
TOTAL ACRES	**859.88 (100%)**	**1,316.26 (100%)**	**2,176.14 (100%)**

7 Vegetation communities per Sawyer et al. 2009.

METHODS

Literature Review and Database Search

Information on potential species occurrences has been obtained from existing databases and published and non-published resources. Databases were reviewed to assess whether occurrences of special status species have been documented in the vicinity of the Project within the Mojave NE and California City North 7.5-minute USGS quadrangles (Figure 4 and Table 3).

A 20-mile radius around the Project included a review of all surrounding USGS maps to include Cross Mountain, Cinco, Cantil, Saltdale SE, Galileo Hill, Cache Peak, Mojave, Sanborn, California City South, and North Edwards.

Databases and resources reviewed and researched included but were not limited to the following:

- The California Natural Diversity Database (CNDDB) QuickView and the CNDDB Occurrences List (2019a) within a 20-mile radius of the Project;
- CDFW Natural Communities List (CDFW 2018a) and California Wildlife Habitat Relationships System Maps and Descriptions (CDFW 2019b);
- BLM (2015) species databases;
- CDFW Special Animals List (CDFW 2019c) and the CDFW and U.S. Fish and Wildlife Service (USFWS) Threatened or Endangered Animal Species List (CDFW 2019d);
- Desert Renewable Energy Conservation Plan (DRECP) (Dudek 2014), DRECP Data Basin (Dudek 2014), and DRECP Kern County Gateway (Dudek 2014);
- CDFW West Mohave Desert Ecological Reserve (CDFW 2019e);
- U.S. Department of Agriculture (USDA) Web Soil Survey (USDA 1982);
- Federal Emergency Management Agency (FEMA) 100-year floodplain database (FEMA 2019);
- Western Bat Working Group (WBWG) (2019);
- Regional hydrologic information was obtained from the Geospatial Data Gateway website of the Natural Resources Conservation Service (NRCS) (USDA 2019); and
- Weather and precipitation data were obtained from the Western Region Climate Center (2019).

The full literature review and database search included plants, natural communities, sensitive habitats, soils, and flood potential. Table 3 includes all of the special status wildlife species that have the potential to occur on the Project and were noted as, or in combination with the designation of "None," "Low," "Moderate," or "High." The Biological Evaluation (EnviroPlus 2020) discusses in detail the potential for occurrence on the Project, to include each species natural history and previously recorded observations (based on CNDDB, eBird[8], or other sources or documents).

[8] Cornell University's eBird on-line database (2015) is contributed to by both amateur and professional birders and includes the ability to submit photographs, videos, and sound recordings with each checklist developed from a specific survey. Each birder's checklist is thoroughly reviewed by a qualified avian biologist. Checklist errors, questions, and revisions to the checklist are routinely requested by the eBird biologist to the checklist preparer. Revisions to the checklist must be made by the birder. For the purposes of this BE, eBird data is used herein to supplement the CNDDB list with the caveat that the information presented herein for each avian species may not be accurate.

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Table 3. Federal and State Listed and Special Status Species and IUCN and Xerces Society Red List Species Identified for the Kudu Solar Farm Project, California City and Kern County, California.[9]

SPECIES	ESA	CESA OR CDFW	G-RANK / S-RANK	POTENTIAL FOR OCCURRENCE
Spotted Bat (*Euderma maculatum*)	-	SSC WBWG[10] - Med	G4 / S3	**VERY LOW to LOW** - May forage throughout or migrate through the area. Records nearby.
Pacific Townsend's Big-eared Bat (*Plecotus townsendii* ssp. *townsendii*)	-	SSC and SGCN WBWG[9] - High	G3G4 / S2	**LOW to MODERATE** – May forage throughout or migrate through the area. Records nearby.
Pallid Bat (*Antrozous pallidus*)	-	SSC WBWG[9] - Low	G5 / S3	**LOW to MODERATE** – May forage throughout or migrate or move through the area. Records nearby.
Mohave Ground Squirrel (*Xerospermophilus mohavensis*)	-	ST	G2G3 / S2S3	**LOW to MODERATE** – **California City CUP**: Appropriate habitat and nearby known occurrences to the Project. **UNSUITABLE, VERY LOW, LOW, and MODERATE – Kern County CUP**: A mix of inappropriate habitat and appropriate habitat with nearby known occurrences to the Project.
Desert Kit Fox (*Vulpes macrotis arsipus*)	-	CCR Title 14[11]		**MODERATE to HIGH** – Appropriate habitat and nearby known occurrences.
American Badger (*Taxidea taxus*)	-	SSC	G5 / S3	**MODERATE** – Appropriate habitat and nearby known occurrences.
Agassiz's Desert Tortoise (*Gopherus agassizii*)	FT	ST	G3 / S2S3	**MODERATE to HIGH** – Appropriate habitat and nearby known occurrences.
California Condor (*Gymnogyps californianus*)	FE	SE	G1 / S1	**LOW –** Year-round foraging opportunities throughout the area and nearby known occurrences.
Northern Harrier (*Circus hudsonius*)	-	SSC	G5 / S3	**MODERATE to HIGH –** Appropriate habitat for foraging and perching in the area with suitable nesting habitats nearby; known occurrences within the Project and Action Area limits.
Cooper's Hawk (*Accipiter cooperii*)	-	WL	G5 / S4	**LOW to MODERATE** – Appropriate habitat for foraging and perching in the area with suitable nesting habitats nearby; known occurrences within the Project and Action Area limits.
Swainson's Hawk (*Buteo swainsoni*)	BCC	ST	G5 / S3	**MODERATELY HIGH to HIGH –** Appropriate habitat for foraging and perching in the area with suitable nesting habitats nearby; nearby known and recent occurrences along Neuralia

[9] See Appendix 1 for the definition of all Rank codes.
[10] WBWG = Western Bat Working Group Conservation Priorities: High, Medium, Low (2019)
[11] Desert kit fox are a protected fur-bearing mammal under Title 14 of the California Code of Regulations, Section 460 (Westlaw 2019).

SPECIES	ESA	CESA OR CDFW	G-RANK / S-RANK	POTENTIAL FOR OCCURRENCE
				Road within and adjacent to the Project and Action Area.
Ferruginous Hawk (*Buteo regalis*)	BCC	WL	G4 / S3S4	**LOW** – Appropriate foraging, perching, and roosting habitat; very limited occurrences within and near the Project and Action Area limits.
Golden Eagle (*Aquila chrysaetos*)	BCC BGEPA	FP WL	G5 / S3	**MODERATE –** Appropriate habitat for foraging and perching in the area with suitable nesting habitats nearby; very limited occurrences within and near the Project and Action Area limits with the exception of the Tehachapi Mountains where more sightings occur.
Prairie Falcon (*Falco mexicanus*)	BCC	WL	G5 / S4	**MODERATE to MODERATELY HIGH –** Appropriate habitat for foraging and perching in the area with suitable nesting habitats nearby; nearby known occurrences.
Merlin (*Falco columbarius*)	-	WL	G5 / S3S4	**LOW** – Appropriate foraging, perching, and roosting habitat and nearby known but limited occurrences.
American Peregrine Falcon (*Falco peregrinus anatum*)	BCC	FP	G4T4 / S3S4	**EXTREMELY LOW –** No appropriate habitat on site; direct or indirect effects from the Project not anticipated but this species may forage or migrate through the Project. Recent known locations nearby.
Western Snowy Plover (*Charadrius alexandrinus nivosus*)	FT BCC	SSC	G3T3 / S2S3	**NONE to EXTREMELY LOW –** No appropriate habitat on site; direct or indirect effects from the Project are not anticipated. **No further consideration.**
Mountain Plover (*Charadrius montanus*)	BCC	SSC	G3 / S2S3	**NONE to EXTREMELY LOW –** No appropriate habitat on site; direct or indirect effects from the Project are not anticipated. **No further consideration.**
Western Burrowing Owl (*Athene cunicularia* ssp. *hypugaea*)	BCC	SSC	G4 / S3	**MODERATE to HIGH** – Appropriate habitat and nearby known occurrences.
Long-eared Owl (*Asio otus*)	-	SSC	G5 / S3	**LOW** – No appropriate nesting habitat nearby and very few known occurrences in the proximity of the Project and Action Area.
Short-eared Owl (*Asio flammeus*)	-	SSC	G5 / S3	**LOW** – No appropriate nesting habitat nearby and very few known occurrences in the proximity of the Project and Action Area.
Loggerhead Shrike (*Lanius ludovicianus*)	BCC	SSC	G4 / S4	**HIGH** – Appropriate habitat and nearby known occurrences.
Gray Vireo (*Vireo vicinior*)	BCC	SSC	G4 / S2	**NONE to EXTREMELY LOW –** Not expected on site; direct or indirect effects from the Project are not anticipated. **No further consideration.**
Bendire's Thrasher (*Toxostoma bendirei*)	BCC	SSC	G4G5 / S3	**NONE to EXTREMELY LOW –** Not expected on site; direct

SPECIES	ESA	CESA OR CDFW	G-RANK / S-RANK	POTENTIAL FOR OCCURRENCE
				or indirect effects from the Project are not anticipated. **No further consideration.**
Crissal Thrasher (*Toxostoma crissale*)	-	SSC	G5 / S3	**NONE –** Not expected on site; direct or indirect effects from the Project not anticipated. **No further consideration.**
Yellow Warbler (*Setophaga petechia*)	BCC	SSC	G5 / S3S4	**MODERATE** – Appropriate habitat for migration movements and nearby known occurrences.
Tricolored Blackbird (*Agelaius tricolor*)	SC BCC	ST	G2G3 / S1S2	**EXTREMELY LOW** - No appropriate habitat for nesting. Nearest and most recent observations are within the Project along Neuralia Road where they were observed possibly migrating to potential breeding sites nearby.
Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*)	-	SSC	G5 / S3	**LOW** - No appropriate habitat for nesting. Known observations within the Project limits; nearest nesting occurrences in close proximity to the Project; they may be observed migrating to and from breeding sites nearby.
Crotch Bumble Bee (*Bombus crotchii*)	-	PL[12]	G3G4 / S1S2 IUCN[13] - Endangered	**VERY LOW** – Not expected in dry years. Occurrences recorded in the region.
Western Bumble Bee (*Bombus occidentalis*)	-	PL[11]	G2G3 / S1 IUCN[12]/Xerces[12] – Vulnerable/ Imperiled	**VERY LOW** – Not expected on site. Occurrences recorded in the Fremont Valley region.
Mojave Dotted-blue Butterfly (*Euphilotes mojave*)	-	-	G2G3 / S1S2 Xerces[12] - Imperiled	**LOW** - Host plants are likely to be present but limited to the major wash in the NW corner of the Action Area.

[12] PL = Petitioned for Listing under the California Endangered Species Act (CESA) as Endangered (Xerces Society 2019a).
[13] IUCN (International Union for Conservation of Nature) Red List (IUCN 2019) and Xerces Society Red List (2019a, 2019b).

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The literature research conducted for listed and special status wildlife species identified a total of 21 species within the USGS quadrangles in and around the Project (CNDDB 2019a) (Figure 4). This included 19 wildlife species, 1 insect, and 1 mollusk. Out of the 21 species identified, 18 species have the potential to occur within the Action Area. In addition to the 2019 CNDDB list, 13 more species were identified with a potential for occurring in or near the Action Area, increasing the total to 31 species (Table 3).

Of the 31 species, there are 6 mammals, 1 reptile, 21 birds, and 3 insects. Of the 31 species, six are federal and/or state listed. Of these six species, only two have the potential to inhabit the Action Area: the state listed as Threatened MGS and the federal and state listed as Threatened ADT. The federal and state listed Endangered California condor, the state listed Threatened Swainson's hawk, the federal listed Threatened western snowy plover, and the state listed Threatened tricolored blackbird are not known to nest within the limits of the Action Area but may potentially occur on site to forage, hunt, roost, perch, drink, or migrate through.

Of the 31 species analyzed, five species have been determined to not have potential for occurrence in the Action Area or be affected by the Project for various reasons (Table 3 and Project Biological Evaluation). These species include the western snowy plover, the mountain plover, the gray vireo, Bendire's thrasher, and crissal thrasher.

Protocols

Desert Tortoise

ADT is a state and federally listed Threatened species (USFWS 1990) (Table 3). It is the only *Gopherus* species that occurs in California. It is also the State reptile. In this report, the term "ADT," "tortoise," or "desert tortoise" refers to Agassiz's desert tortoise.

USFWS protocols (USFWS 2019) define the "action area" of a project to include all areas to be affected directly or indirectly by a project action. For Kudu, the "action area" was defined as the area within the Project parcels to be developed and the collector line alternatives. All of the access routes are existing public use paved and/or dirt roads and no new access routes would be constructed. Therefore, the "action area" excludes these access routes (Figure 2) and is the same as the Action Area.

A 100% coverage survey as defined in the USFWS's 2019 protocol (USFWS 2019) was conducted for desert tortoise within the "action area." In brief, these protocols specify the following:

- An option to conduct 100% coverage surveys or probabilistic sampling if the site is large enough. The threshold to allow probabilistic sampling for the Western Mojave Desert is 3,290 acres.
- Transects spaced at 10 meter intervals if 100% coverage surveys are utilized.
- Surveys for large projects to be conducted during tortoise active periods, April 1 to May 31 or September 1 to October 31 when the shaded air temperatures are below 40ºC (104ºF) at 5 cm (2 inches) above ground.
- Surveys to cover the "action area" which includes all areas to be affected directly or indirectly by a project action.

Burrowing Owl

The burrowing owl is a USFWS Bird of Conservation Concern (BCC) (USFWS 2008) and is a CDFW Species of Special Concern (SSC) (CDFW 2019c) (Table 3). It is also protected under the federal Migratory Bird Treaty Act (MBTA). Under its designation as a CDFW SSC, this species must be observed at a burrow site or evidence of recent occupation such as whitewash and feathers must be present in order to positively determine its presence.

A survey for burrowing owl was conducted according to CDFW protocols (CDFG 2012; note: prior to 2013 CDFW was known as the California Department of Fish and Game [CDFG]).

In brief, these protocols specify the following:

- A total of four site surveys either within the breeding season (1 February to 31 August) or outside of the breeding season with breeding season surveys conducted at least 3 weeks apart between 15 April and 15 July with at least one visit after 15 June. The Kudu survey was a breeding season survey.
- Transects spaced at 7 to 20 meters apart and adjusted for vegetation height and density.
- Recording all potential burrows used by burrowing owls as determined by the presence of one or more burrowing owls, pellets, prey remains, whitewash, or decoration.
- Survey of a 150-meter wide buffer around the perimeter of the project.
- A provision by CDFW to propose alternate survey methods for large projects.

Mohave Ground Squirrel

Detection of the state Threatened MGS requires that trapping surveys be conducted during specific time periods. MGS trapping was outside the scope of the EnviroPlus wildlife survey. However, a habitat assessment was conducted for MGS by Dr. Philip Leitner from September 9 to 12, 2019. This habitat assessment was completed to determine the potential for occurrence as well as impacts to this species from proposed project development (Table 3). The habitat assessment also included a review of the CNDDB and maps for MGS occurrences within the project vicinity.

Other Species

In addition to protocol surveys for desert tortoise and burrowing owls, the entire Action Area was surveyed for other wildlife species. All other special status species and their sign were noted if observed. This included, but was not limited to, desert kit fox, American badger, sensitive bird species, and nesting birds and/or nests.

The desert kit fox currently does not have federal or State of California special status designation, however, it is protected from "take" as a furbearing mammal pursuant to the California Code of Regulations (CCR), Title 14 [Natural Resources], Division 1 [Fish and Game Commission-Department of Fish and Game], Subdivision 2 [Game, Furbearers, Nongame, and Depredators], Chapter 5 [Furbearing Mammals], Section 460 [Fisher, Marten, River Otter, Desert Kit Fox and Red Fox] (Westlaw 2019). Section 460 specifically states that desert kit fox "…may not be taken at any time." Current population trends for the desert kit fox are unknown due to a lack of population monitoring by CDFW.

Field Methods

The entire Action Area was surveyed at ten meter transect intervals for a total of 547 transect miles. In accordance with CDFW burrowing owl protocols (CDFG 2012), 150-meter wide buffer areas adjacent to the Action Area were surveyed at 20 meter intervals. Burrowing owl buffers were not walked adjacent to the gen-ties. A total of 186 miles of burrowing owl buffer transects were walked. The location of burrowing owl buffer survey areas are shown in Figure 5. Burrowing owl buffers were established around the entire Action Area perimeter.

All transects were walked in a north-south direction except for some east-west oriented gen-tie routes and east-west burrowing owl buffer areas. North-south transects were preferred to increase visibility by reducing glare from walking directly into the sun in the early morning.

All desert tortoise surveys and burrowing owl buffer surveys were conducted between August 20 and October 11, 2019. Burrowing owl buffer surveys were completed between August 20 and September 1 and desert tortoise surveys were conducted between September 1 and October 11 within the respective protocol survey periods. The survey was conducted by a team of two experienced desert biologists that included Gilbert Goodlett and Tracy Bailey.

All transects and the boundaries of the survey areas were downloaded to handheld GPS units for ease of navigation. Each team member was equipped with a GPS unit. For efficiency, team members worked independently. Team members nominally completed 8 miles of transects per day.

Biologists focused their search within an approximate 180º arc and 5 meter radius centered in front of them. The survey team generally remained on their transect centerline except to investigate shrubs, trees, and other landscape features which prevented the biologist from seeing an item of interest. After investigation of a feature, the biologist returned to the transect centerline. This ensured accurate coverage of the survey area. Biologists avoided staring at the GPS units to maintain their track. Instead they selected an object on the horizon to use as a target and occasionally checked the GPS for their position with respect to the intended transect. Less than 10% of the biologist's time was spent looking at the GPS. The survey team has substantial prior experience in this type of GPS navigation.

The following desert tortoise related data was collected:

- Observer name
- Date
- Location of observation (UTM, WGS84)
- Burrows and coversites
- Burrow class
    - Class 1 - Currently active, with tortoise or recent tortoise sign
    - Class 2 - Good condition, definitely tortoise, no evidence of recent use
    - Class 3 - Deteriorated condition; definitely tortoise
    - Class 4 - Deteriorated condition; possibly tortoise

    - Class 5 – Good condition; possibly tortoise
- Burrow dimensions (length, width, height, soil cover [mm])
- Burrow aspect – direction mouth of burrow is facing
- Scat
    - Class (this year [TY] or not this year [NTY])
    - Number of individual items of scat
- Live tortoise
    - Maximum carapace length (MCL, mm)
    - Sex – male, female, or unknown. Sex cannot be reliably determined for animals under 180 mm MCL
    - Location – in burrow, under shrub, in open, etc.
    - Activity - resting, basking, walking, feeding, interacting, other
    - Health notes - signs of upper respiratory tract disease, cutaneous dyskeratosis, etc.
- Carcasses
    - MCL (mm)
    - Sex – male, female, or unknown. Sex cannot be reliably determined for animals under 180 mm MCL
    - Sun exposure – percentage of time carcass is exposed to sun – for a carcass in the open the value is 100%
    - Position - upright, inverted, disarticulated
    - Cause of death – often unknown; detectable indications of cause of death could include predator chew marks, predator scat nearby, or gunshot wounds
    - Time-since-death in standard categories (Berry and Woodman, 1984)
        - < 1 year
        - 1 to 2 years
        - 2 to 4 years
        - > 4 years
- Other sign such as tracks, drinking depressions (tortoise created water catchments), courtship rings (circular disturbed areas in the soil created by tortoise courtship activities), etc.
- Additional notes

The following desert kit fox related data was collected:

- Observer name
- Date

- Location of observation (UTM, WGS84)
- Status of den
    - Inactive
    - Active
    - Pupping
- Number of entrances to den
- Detailed notes on observation

The following burrowing owl related data was collected:

- Observer name
- Date
- Location of observation (UTM, WGS84)
- Status of burrow
    - Inactive
    - Active
- Burrowing owl sign observed at burrow
    - Feathers
    - Pellets
    - Prey items
    - Whitewash
- Observation of a live burrowing owl
    - At a burrow
    - Not associated with a burrow
- Detailed notes on observation

The following data was collected for special status species observations:

- Observer name
- Date
- Location of observation (UTM, WGS84)
- Species
- Detailed notes on observation

In the field, all data were collected using an Apple iPhone® and the application Avenza Maps for which a custom data collection schema was developed. The cumulative data were uploaded daily to a cloud storage site (Dropbox.com). Photographs were taken of every item of sign trackable to a unique sequential sign identification number assigned in Avenza Maps. Photographs were also taken of typical habitat features. The application Theodolite was used to take all photographs. Theodolite imprints data to a digital photograph. These data include the date and time, location in Universal Transverse Mercator (UTM) coordinates, altitude, datum, direction the camera is pointed, elevation and horizon angles, zoom level, and custom notes.

No desert tortoises were handled during the survey. All burrows and potential coversites were investigated by using a mirror to reflect sunlight into the burrow. Neither probes nor downhole cameras were utilized to investigate burrows to prevent potentially harassing tortoises.

At 0800 and 1200, weather conditions were recorded. Weather conditions included the shaded air temperature at 1.5 meters measured with a 0.1 °C precision thermistor, an estimated percentage of cloud cover and type of clouds, and wind speeds and direction. Winds speeds were measured with a Kestrel® brand electronic wind meter. Measurements were taken until average wind speeds stabilized. The average and maximum wind speeds were recorded. Wind direction was estimated by observing the drift direction of a handful of fine soil that was dropped. These data are listed in Appendix 2.

In addition to recorded temperature data, 5 cm shaded air temperatures were routinely taken on warm days during the active survey time period to ensure that the peak desert tortoise survey temperature of 40 ºC at 5 cm was not exceeded. Cooler temperatures prevailed during the survey and the 5 cm temperature never approached the maximum.

The focus of this report is to address the federal and state required protocol wildlife survey results based on the literature review and special status species identified. These include ADT, MGS, and western burrowing owl. Other special status species surveyed for during the ADT and western burrowing owl protocol surveys included desert kit fox, American badger, and migratory bird species. A comprehensive list of all special status and general wildlife species observed during these surveys can be found in Appendix 3.

Specific to burrowing owls, sign observations were placed in the following categories: live burrowing owls that did not appear to be associated with a burrow, live burrowing owls at or otherwise associated with a burrow or burrows, active burrowing owl burrows, and inactive burrowing owl burrows. Active burrowing owl burrows were of an appropriate size for use by a burrowing owl and one or more of the following recent items of sign were present – whitewash (uric acid excretions which are the equivalent of urine in mammals), owl feathers, pellets (undigested parts of owl's food that are regurgitated), remains of prey items, and disturbed area in the mouth of a burrow consistent with owls. Inactive burrows were similar to active burrowing owl burrows except that the sign was not recent. Inactive burrows are often difficult to determine because the sign persists for a limited time after a burrow becomes inactive.

Specific to desert kit fox, sign observations included pupping, active, and inactive kit fox dens. Pupping or natal dens were identified by observation of pups, hearing pups in the den, or den characteristics. Pupping den characteristics include multiple entrances to a den that show evidence of heavy use. The presence of prey items and scat tended to confirm a den's designation as a pupping den.

An active kit fox den was identified as an appropriately sized den with a typically narrow entrance, often with multiple access points, and with one or more of the following recent items of

sign present: disturbance in one or more entrances showing recent use, fox tracks in the vicinity, remains of prey items nearby, live foxes heard or seen in the den, or flies in the burrow indicating a likely uneaten or decomposing prey item inside. Inactive kit fox dens possess the same general characteristics less the recent sign and are more difficult to identify that active kit fox dens.

Species Identification Resources

Identification of plants followed The Jepson Manual: Vascular Plants of California (Baldwin, 2012) and plant communities followed A Manual of California Vegetation: Second Edition (Sawyer and Keeler-Wolf and Evens, 2009).

Bird identification resources included A Field Guide to Western Birds (Peterson, 1993), Field Guide to the Birds of North America (National Geographic Society, 1987), and Stokes Field Guide to Birds: Western Region (Stokes, 1996).

Mammal identification resources included California Mammals (Jameson, 1988) and A Field Guide to the Mammals of North America North of Mexico (Burt and Grossenheider, 1980).

Reptile identification resources included A Field Guide to Western Reptiles and Amphibians (Stebbins, 1985).

RESULTS

Figure 6 shows observations of special status and listed species and their sign within the Kudu Solar Farm Action Area and buffer survey areas. Appendix 3 includes the comprehensive list of wildlife species observed during the survey. MGS are not included on the list because only a habitat assessment was conducted. The MGS habitat assessment results are discussed below in further detail as well as within the Biological Evaluation (EnviroPlus 2020).

Desert Tortoise

California City CUP

No definitive sign of desert tortoise habitation of the Action Area was detected. One carcass was located within the California City portion of the Action Area (Table 4; Figure 6; Photograph 4). The disarticulated carcass remains were of a subadult female tortoise. The animal was estimated to have died within the last 2 to 4 years prior to the observation (Berry and Woodman 1984). The cause of death could not be determined. Approximately 477 meters to 986 meters to the northeast of this carcass, a total of seven Class 4 burrows (deteriorated condition, possibly tortoise) were located and recorded (Table 4; Figure 6; Photograph 5).

When burrows deteriorate from weathering and disuse, it is often difficult to determine the species that created or last inhabited the burrow and the observation of Class 4 burrows alone is not indicative of desert tortoise habitation.

No live tortoises, scat, high quality burrows, tracks, courtship rings, eggs or eggshell fragments, or drinking depressions were detected. Observation of any of these items would indicate current habitation by the species.

Kern County CUP

No desert tortoise sign was detected within the Kern County portion of the Action Area.

Mohave Ground Squirrel

The Project is located on the western edge of the geographic range of MGS. There is a single CNDDB (2019a) record of the species on or near one of the parcels proposed for development. This record is a 1975 visual observation about one mile to the north of the California City Airport (CNDDB Occurrence #20). There are also three records dating from 1974 to 1992 approximately 8 miles to the north near Jawbone Canyon (CNDDB Occurrences #87, #186, #282). There is considerable recent evidence that MGS are present in the area approximately 1 to 2 miles east of Neuralia Road at the DTRNA (Leitner 2008; Leitner 2015). Protocol surveys conducted in 2019 on properties just to the east of Neuralia Road resulted in the capture of juvenile MGS on three live-trapping grids and trail camera detections of an adult female and several young (Leitner, 2019). Figure 7 shows the locations of MGS records in the region surrounding the Project.

Table 4. Desert Tortoise Sign Detected within the Kudu Solar Farm Action Area, California City CUP, California, 20 August – 11 October 2019

Coordinates (WGS 84, Grid 11)			BURROWS*				
Date (2019)	**Northing**	**Easting**	**Class**	**Length (mm)**	**Width (mm)**	**Height (mm)**	**Burrow Aspect**
9/11	3892372	410893	4	300	300	130	Northwest
9/11	3892488	410866	4	800	360	160	Northeast
9/12	3892494	410797	4	1800	200	150	Southeast
9/12	3892138	410779	4	300	360	140	East
9/12	3891899	410757	4	240	170	70	South
9/12	3892304	410689	4	700	300	160	West
9/12	3892414	410673	4	630	300	130	Northeast
			CARCASSES**				
			MCL (mm)		**Sex**		**Time Since Death**
9/14	3891651	410349	Subadult		Female		2 – 4 Years

*__Burrow Class__
Class 1 – Currently active, with tortoise or recent tortoise sign
Class 2 – Good condition, definitely tortoise, no evidence of recent use
Class 3 – Deteriorated condition; definitely tortoise
Class 4 – Deteriorated condition; possibly tortoise
Class 5 – Good condition; possibly tortoise

__Burrow Aspect__ – Direction mouth of burrow is facing

**__Carcass__
MCL – maximum carapace length in mm or size class
Sex – male or female
Time Since Death – based on Berry and Woodman, 1984
<1Year
1-2 Years
2-4 Years
>4 Years

MGS habitat requirements include soils suitable for burrow construction and native desert vegetation that provides adequate food resources and cover. The soils in the Action Area appear to meet the requirements for burrow construction. However, human land uses in the Action Area have resulted in significant degradation of native vegetation. A total of 42% of the gross acreage of the Action Area (896.58-acres) has been in agricultural production in the past, resulting in complete removal of native vegetation. Some of this abandoned farmland is still barren of native shrub cover and is unsuitable for MGS occupancy. In other locations of the Action Area there has been some re-growth of weedy and invasive shrubs, but this habitat is still lacking food resources needed to support a resident MGS population. It is possible that juveniles could disperse through these areas.

Unregulated sheep grazing has been carried out over this entire region for over 100 years, resulting in severe impacts to both herbaceous and shrub community structure. The original diverse native herbaceous community has been replaced by invasive Mediterranean grasses (*Schismus* spp.) which have little to no food value for MGS. The region originally supported a diverse shrub community dominated by creosote bush scrub that included a number of other shrub species that provided important food resources for MGS. Sheep grazing has removed almost all shrub species that provide high quality forage for MGS. Locations in the Action Area that have not been developed for agriculture are now mainly comprised of low diversity creosote bush scrub, which provides little food value for MGS.

There is good evidence that the DTRNA and CDFW Ecological Reserves located to the east of the Project support a resident, reproductive MGS population. Although most juvenile MGS establish their home ranges close to their natal areas, some individuals can disperse up to 4 miles in May and June of their first summer (Harris and Leitner 2005). The presence of an adult female MGS in the Spring of 2019 on one of the Eland 1 parcels located east of Neuralia Road suggests that adults can occasionally occur in this area as well. Therefore, it is possible that young dispersing animals could move into the Action Area parcels on the east side of Neuralia Road (Figure 7). However, these parcels exhibit some degree of habitat suitability for MGS. Given their proximity to known populations within the DTRNA and CDFW Ecological Reserves, the potential for MGS to occur within the Action Area parcels is likely, but their presence may be sporadic.

The California City portion of the Action Area has a Low to Moderate potential for occurrence based on other known occurrences of MGS in and around the Project and the Kern County portion of the Action Area includes Unsuitable, Very Low, Low, and Moderate potential for occurrence based on other known occurrences of MGS in and around the Project. Additional detail on the distribution of these habitat characterizations can be found in the Biological Evaluation for Kudu Solar Farm (EnviroPlus 2020).

Burrowing Owl

California City

One live burrowing owl was observed within the northern portion of the California City CUP. This bird was not associated with a burrow, however there were two inactive burrows located in close proximity to the west of this observation (Figure 6 and Table 5). No other live burrowing owls or active burrowing owl burrows were detected within the California City portion of the Action Area.

A total of seven inactive burrowing owl burrows were observed sporadically within the

California City portion of the Action Area (Table 5, Figure 6, Photograph 6). Two inactive burrows were located west of the live burrowing owl observation west of Yerba Boulevard; three inactive burrows were located in the southern portion west of Yerba Boulevard and north of the California City Airport; one inactive burrow near Batz Street and south of Rudnick Boulevard; and one inactive burrow north of Hans Boulevard. No burrowing owl sign was found within the burrowing owl buffer survey areas (Figure 6).

Kern County

No live burrowing owls or active burrows were observed within the Kern County portion of the Action Area including the burrowing owl buffer survey areas. A total of three inactive burrowing owl burrows were observed sporadically within the Kern County portion of the Action Area (Table 5, Figure 6, Photograph 6). One inactive burrow was located in the southwestern portion north of Washburn Boulevard and west of the UP Railroad; one inactive burrow was located east of Gantt Road and south of Phillips Road; and one inactive burrow was located east of Neuralia Road and south of Dodson Avenue. No other burrowing owl sign was found within the burrowing owl buffer survey areas (Figure 6).

Table 5. Burrowing Owl Sign Detected within the Kudu Solar Farm Action Area, California City and Kern County, California, 20 August – 11 October 2019

California City CUP*

Date (2019)	Northing	Easting	Observation
9/8	3891619	411567	Inactive Burrow
9/10	3892079	411040	Inactive Burrow
10/5	3891384	408453	Inactive Burrow
10/5	3891160	408479	Inactive Burrow
10/5	3891237	408503	Inactive Burrow
10/6	3893194	407888	Inactive Burrow
10/7	3893246	408027	Inactive Burrow
10/8	3893255	408207	Live Burrowing Owl

*Coordinates (WGS 84, Grid 11)

Kern County CUP*

Date (2019)	Northing	Easting	Observation
9/2	3896778	410617	Inactive Burrow
9/20	3894846	406038	Inactive Burrow
10/1	3894026	404156	Inactive Burrow

*Coordinates (WGS 84, Grid 11)

Desert Kit Fox

A total of 66 inactive desert kit fox (DKF) dens were located within the Action Area (Figure 6, Photographs 7 and 8). Forty-two inactive DKF dens were located within the California City portion of the Action Area and 24 inactive DKF dens were located within the Kern County portion of the Action Area. No dens were found within the burrowing owl buffer survey area. There were no active or pupping dens detected. These data are detailed in Appendix 4.

Other Special Status Species

One northern harrier was observed in the early afternoon of 21 September 2019 within the Kern County portion of the Action Area. It flew into the Project from the north, landed on a wooden power pole, then flew to the south (Figure 6; UTM coordinates 04 08 673E, 38 93 931N [WGS84, Grid 11]).

General Species Observations

A total of 33 wildlife species and/or their sign were observed during the Kudu wildlife survey that was conducted between 20 August and 8 October 2019 (Appendix 3). These included 14 bird species, 7 mammal species, and 12 reptile species. Of this total, five species are special status or listed species and the remaining 28 animals have no state or federal status. MGS is not included on this list as protocol trapping surveys were not conducted during this time period.

Survey Weather Conditions

Surveys were conducted when weather conditions were conducive to the observation of active desert tortoises. In cooler temperatures, surveys could be conducted during the mid-day while in warmer conditions bimodal surveys in the early morning and late afternoon were utilized. In general though, the survey effort was skewed towards the morning, hence the collection of weather data at 0800 and 1200 (Appendix 2, Figure 8).

The average 0800 temperature was 69.3 °F and the average 1200 temperature was 84.9 °F. The minimum 0800 temperature encountered was 52.5 °F and the maximum 1200 temperature was 99.0 °F.

Temperatures throughout the survey period were relatively cool and below the protocol maximum of 40 °C (104 °F) shaded air temperature at 5 cm on all survey days. No precipitation events occurred during the survey.

Winds blew from all directions during the survey with easterly winds most common. This is an unusual observation in an area where the prevailing winds are generally from the southwest to west. The average wind speed for the 0800 to 1200 time frame was 4.8 mph, with an average survey 0800 wind speed of 3.2 mph and average 1200 wind speed of 6.3 mph. The average maximum wind speed encountered at 0800 was 4.8 mph, while the average maximum wind speed encountered at 1200 was 9.8 mph. Maximum winds encountered were 35.0 mph on September 29, 2019.

DISCUSSION

No recent desert tortoise sign was detected by the biological team. The lack of live tortoises, recent carcasses, high quality burrows, scat, tracks, courtship rings, and drinking depressions in 547 miles of transects walked by two experienced biologists lends credence to the idea that the Action Area is not occupied by desert tortoise. Additionally, no desert tortoise or associated sign were detected within the 150-meter wide burrowing owl buffer survey areas.

One live burrowing owl, not associated with a burrow, was observed. No active burrowing owl burrows were observed but 10 inactive burrowing owl burrows were detected suggesting a low potential for burrowing owl habitation within the Action Area. No burrowing owls or associated sign were detected within the 150-meter wide buffer survey areas.

Multiple inactive desert kit fox dens (N=66) were found throughout the Action Area. However, no active or pupping dens were detected. The lack of desert kit fox dens with sign of recent activity suggests that the Action Area is not currently occupied by the species.

There was a single observation of a northern harrier perched on a power pole and overflying the site. Northern harriers build their nests on the ground in dense vegetation. No suitable nesting habitat occurs for this species within the Action Area.

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FIGURES

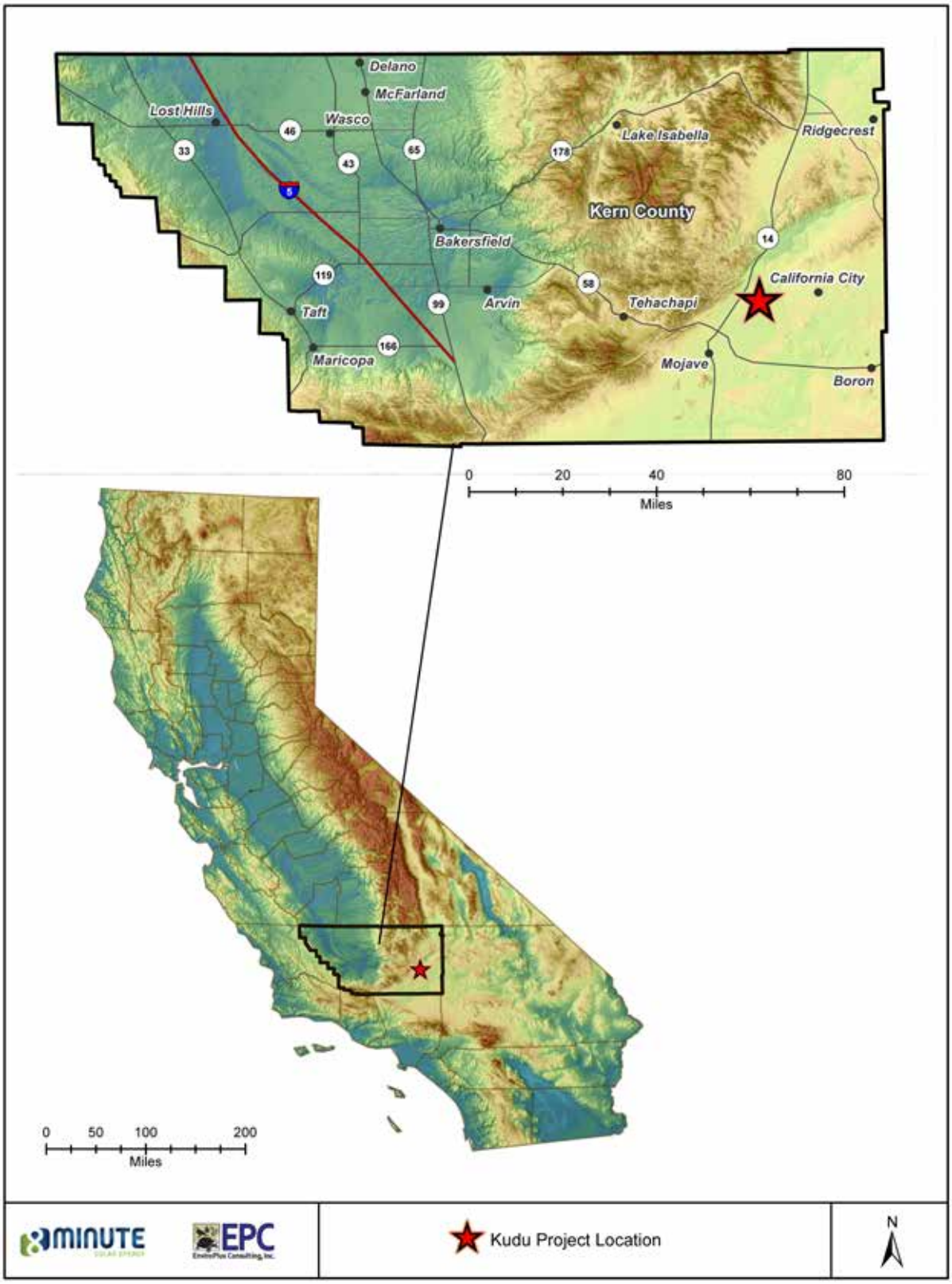

Figure 1. Kudu Solar Farm Project Location Map

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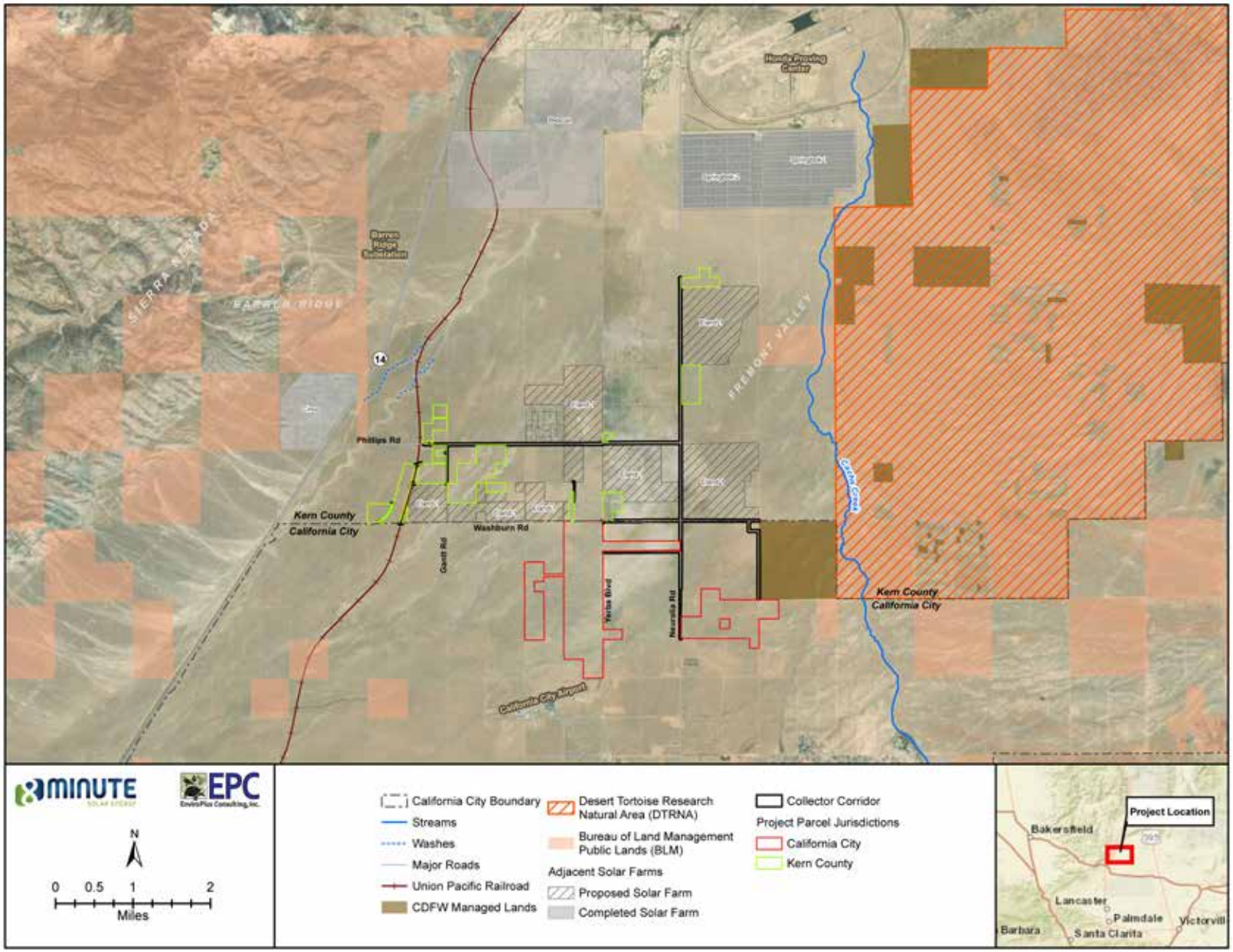


Figure 2. Kudu Solar Farm Action Area, California City and Kern County, California

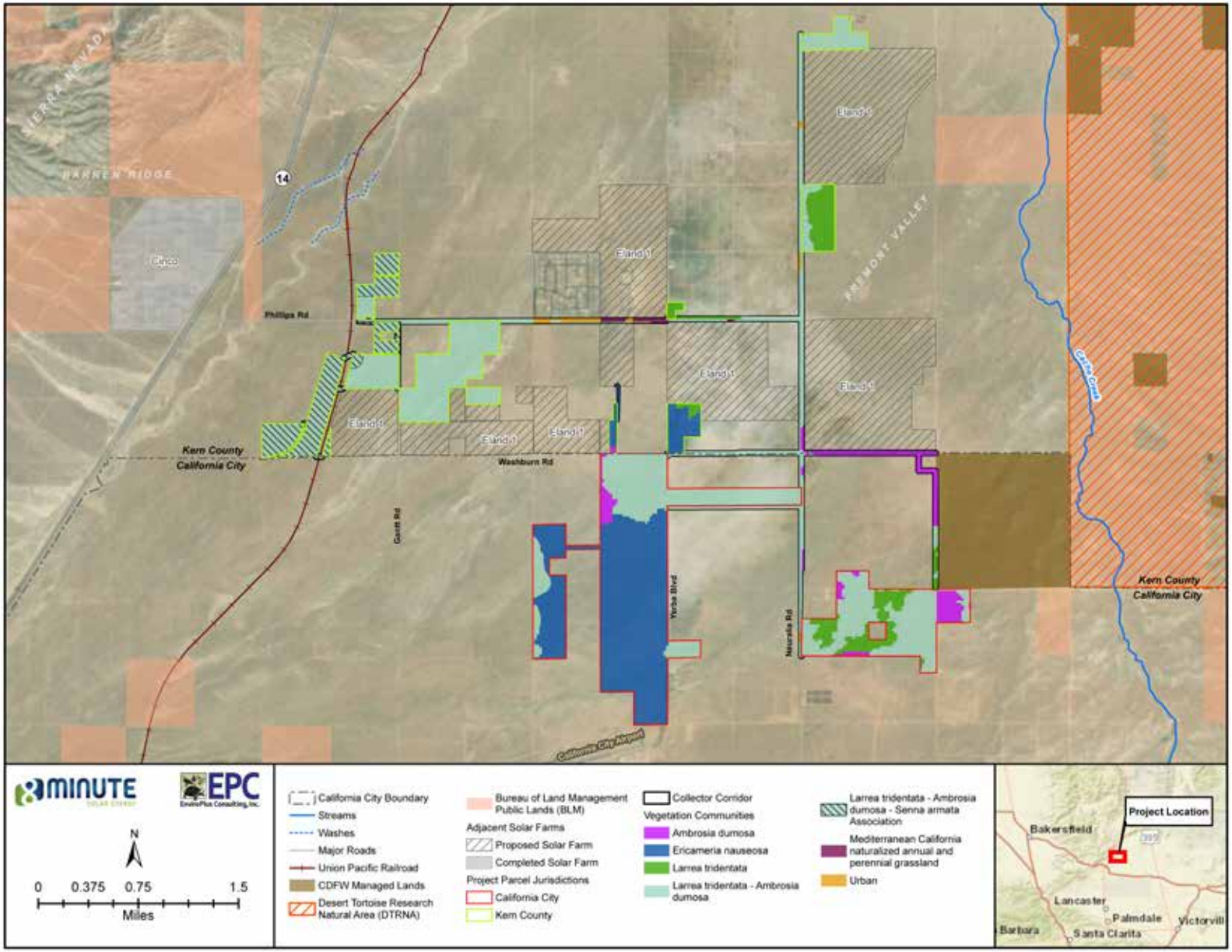


Figure 3. Kudu Solar Farm Vegetation Communities

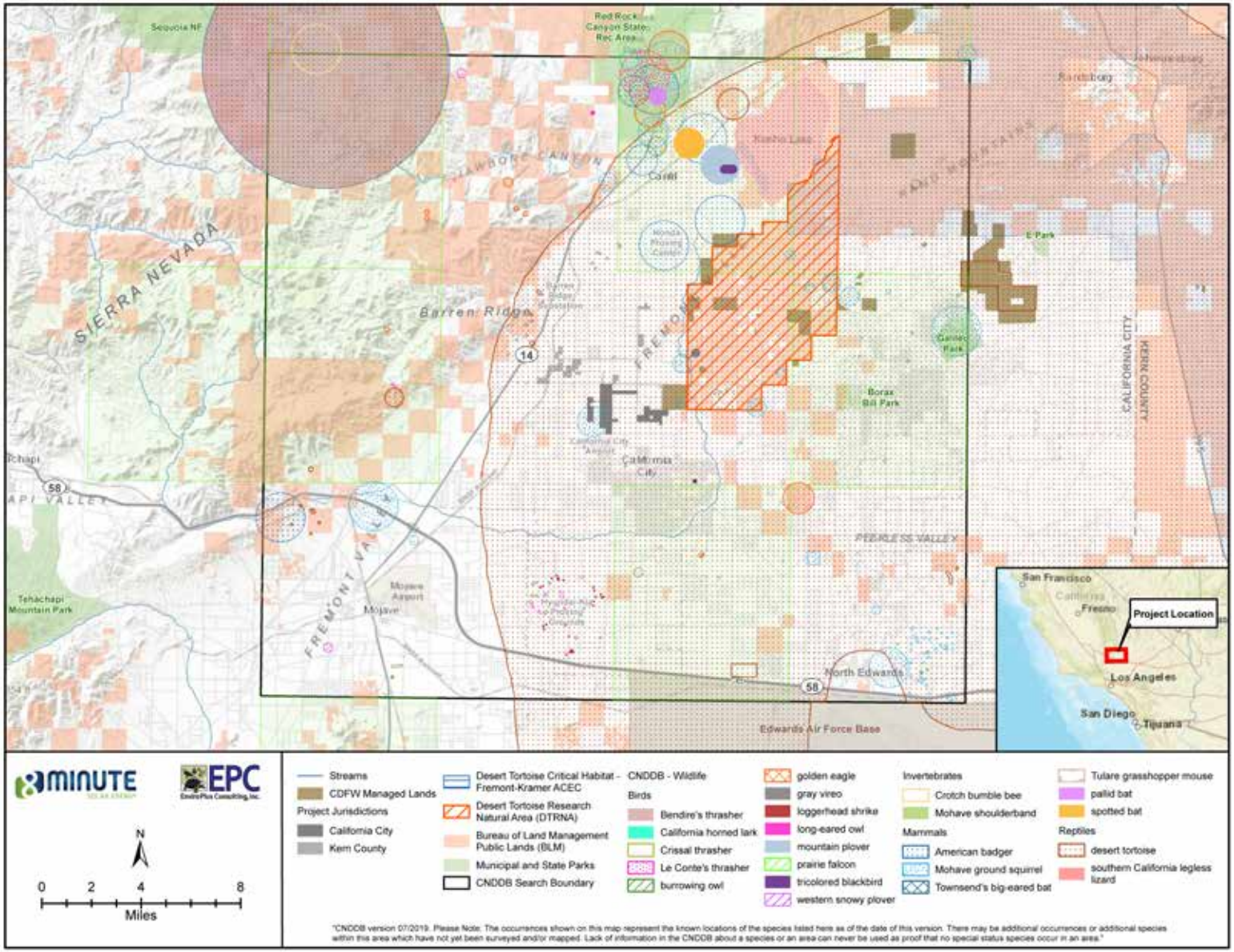


Figure 4. Kudu Solar Farm Results of the California Natural Diversity Database Search for Sensitive Wildlife Species

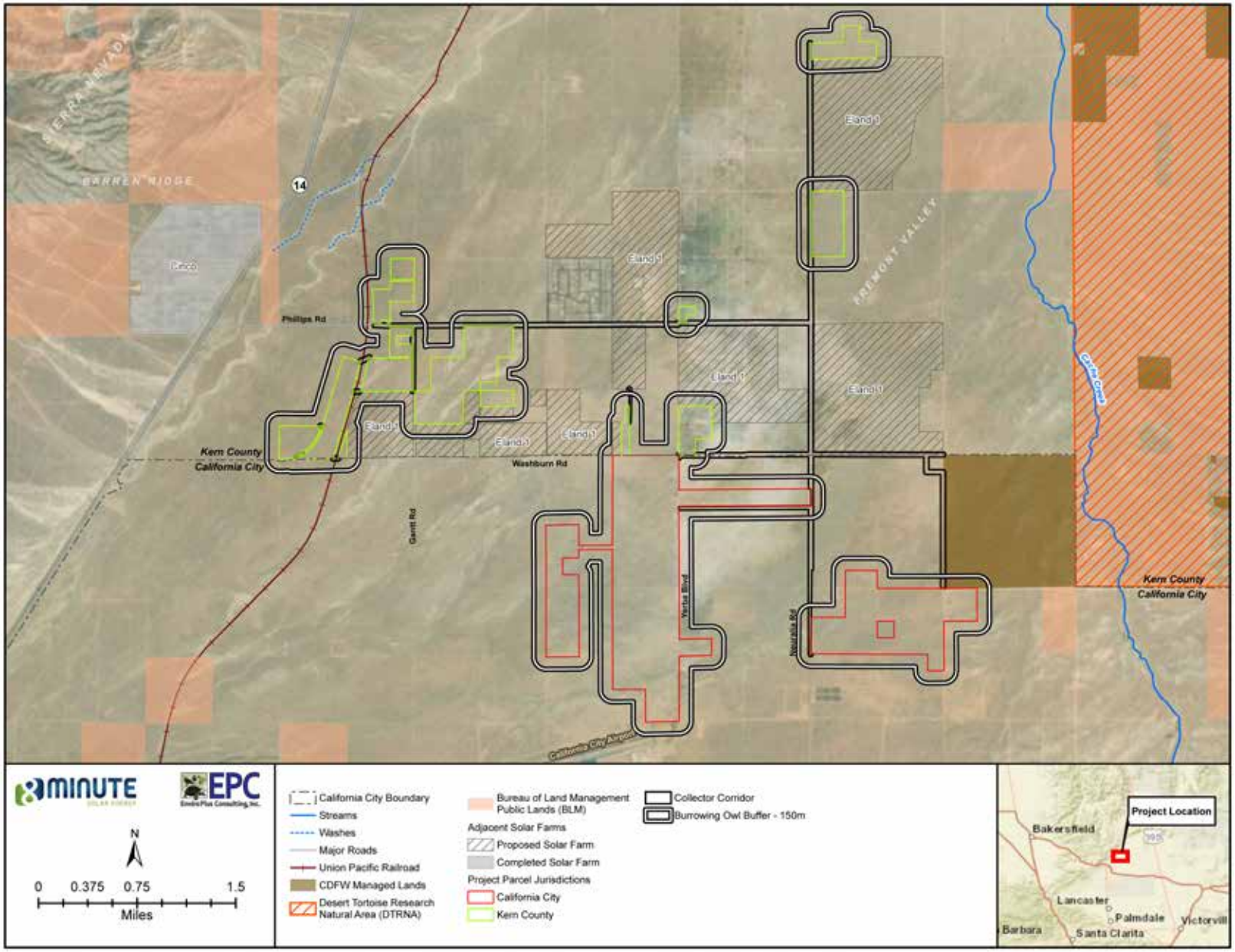


Figure 5. Kudu Solar Farm Burrowing Owl Buffer Survey Areas

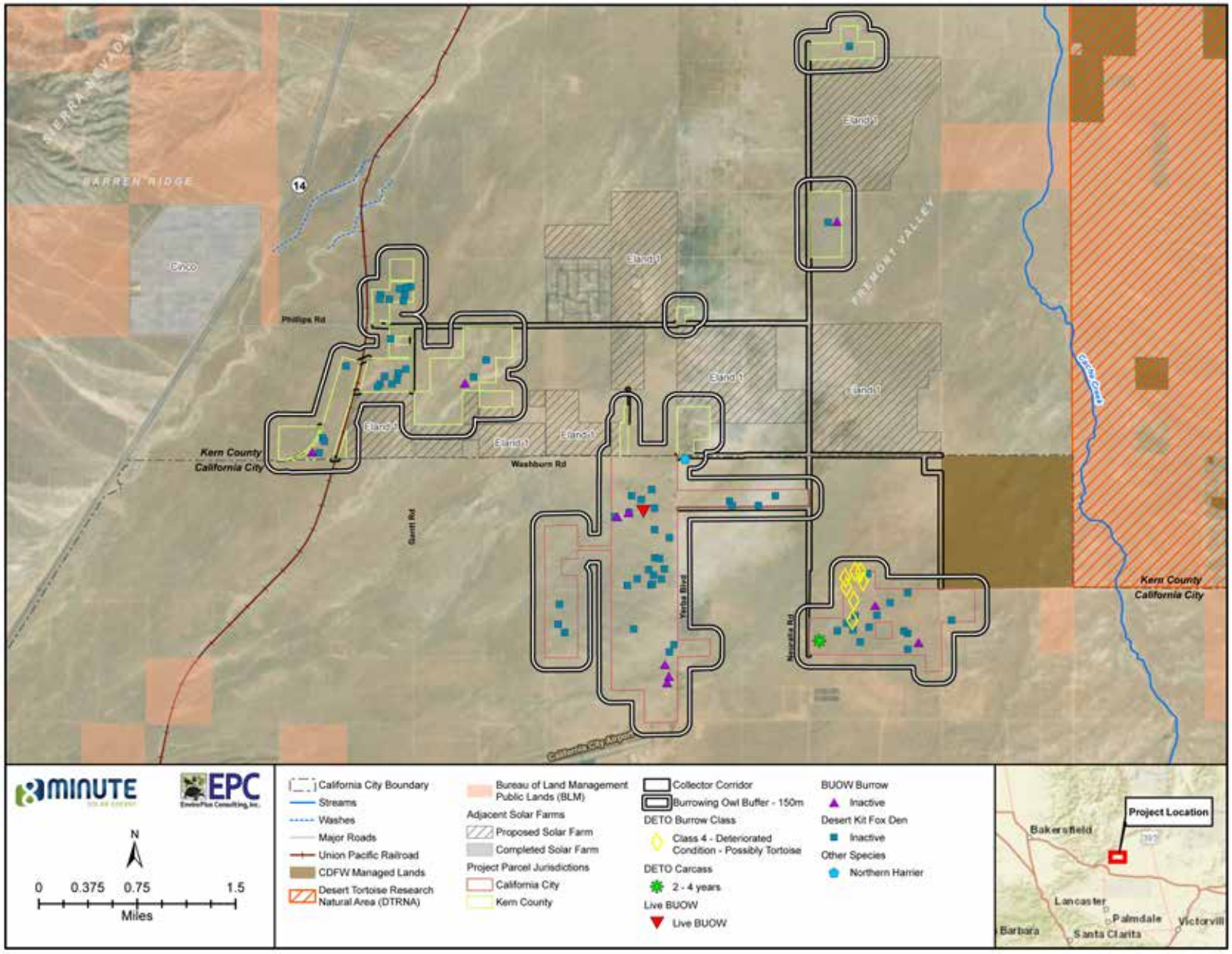


Figure 6. Kudu Solar Farm Sensitive Wildlife Species Sign Observed

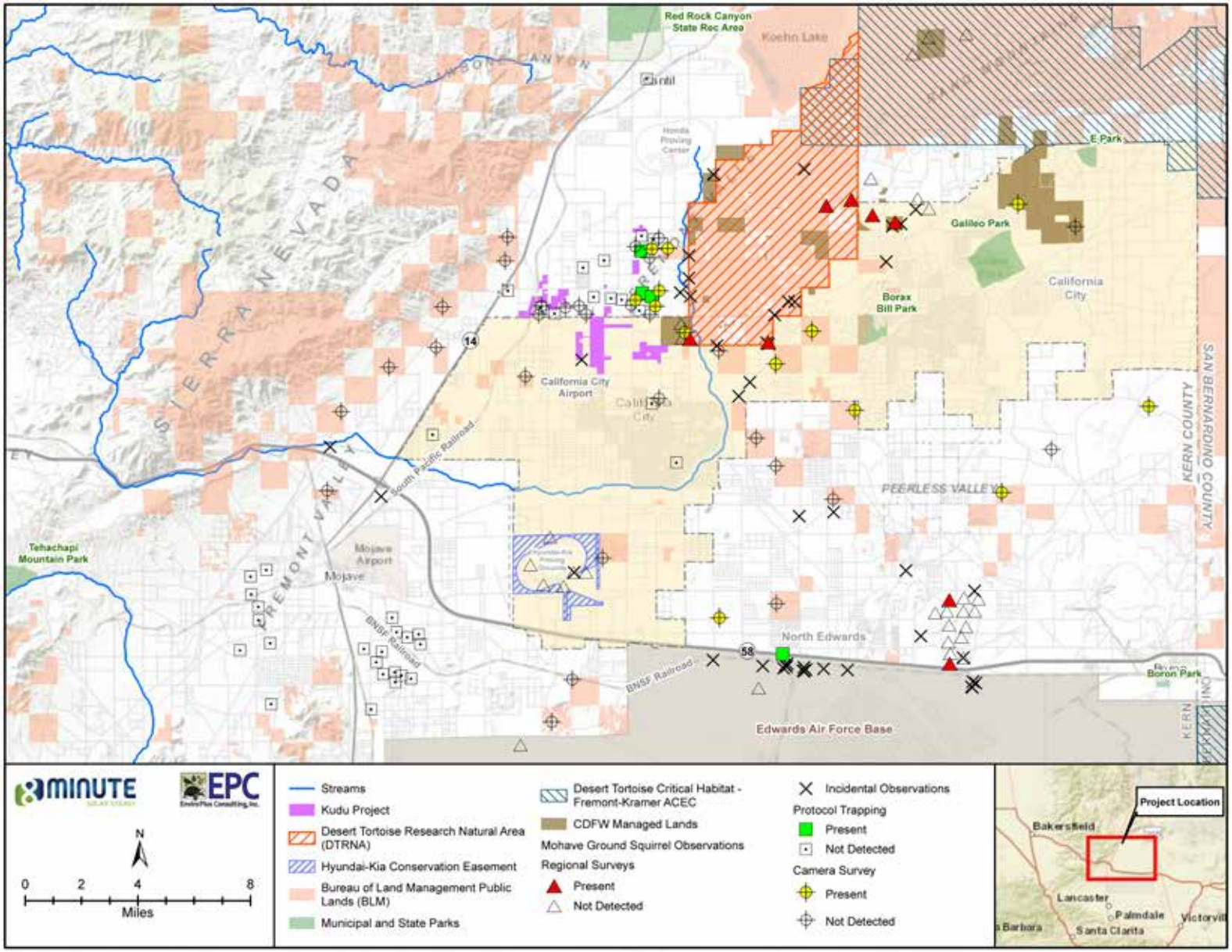
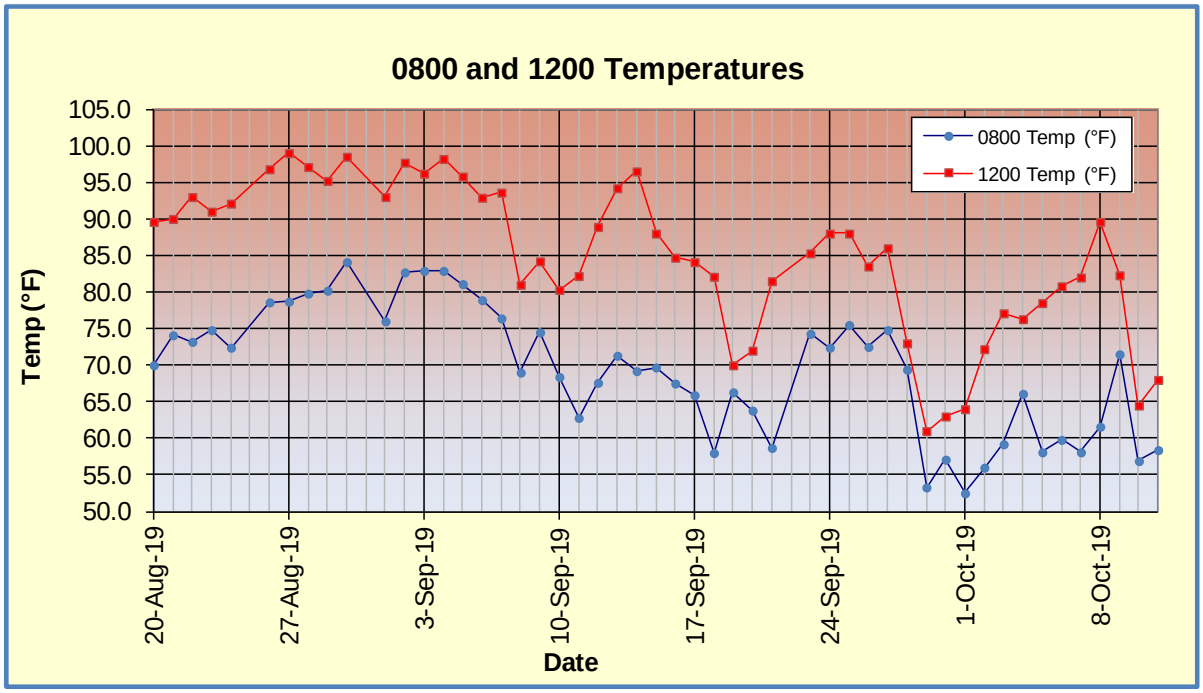


Figure 7. Kudu Solar Farm Project - Mohave Ground Squirrel Regional and Historical Trapping and Observational Records



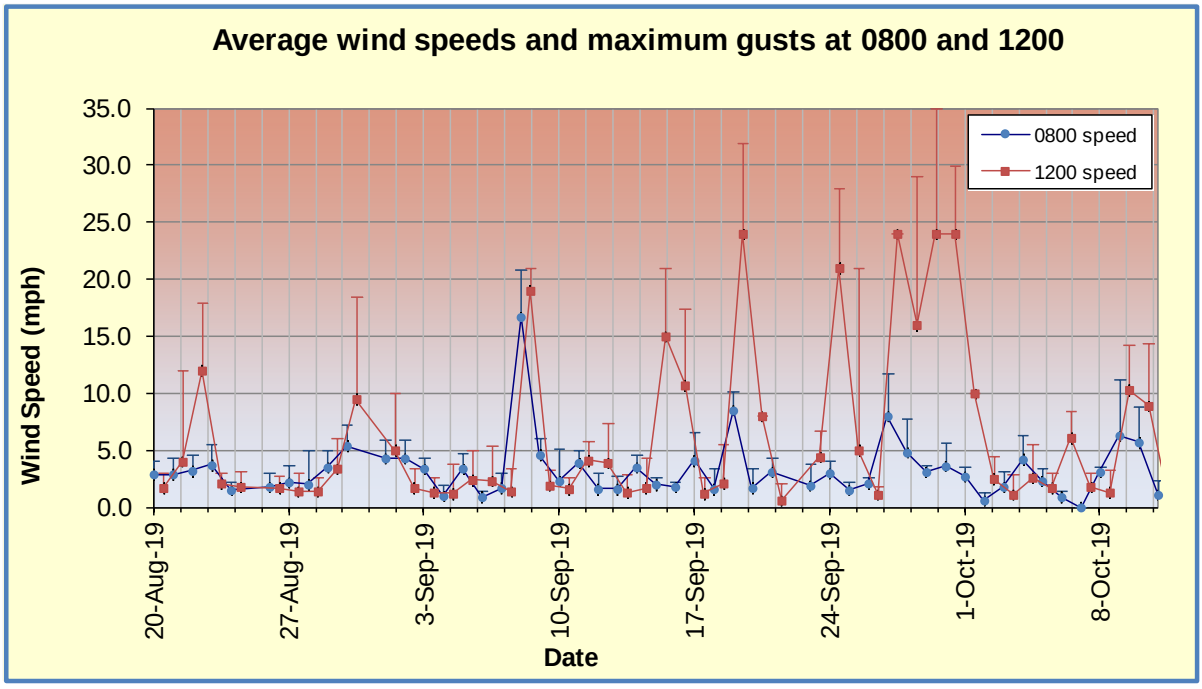


Figure 8. Kudu Solar Farm - Shaded Air Temperatures and Wind At 0800 And 1200 During Biological Survey

PHOTOGRAPHS

Photograph 1. Kudu Solar Farm Aerial View of Previously Farmed Area

Photograph 2. Kudu Solar Farm *Larrea tridentata – Ambrosia dumosa* Shrubland Alliance

Photograph 3. Kudu Solar Farm Previously Farmed Area with Sparse Invasive Rubber Rabbitbrush

Photograph 4. Desert Tortoise Carcass, 2-4 Years Deceased Prior to Observation, California City CUP

Photograph 5. Kudu Solar Farm Example Class 4 Desert Tortoise Burrow

Photograph 6. Kudu Solar Farm Example Inactive Burrowing Owl Burrow

Photograph 7. Kudu Solar Farm Example Inactive Desert Kit Fox Den Site with Numerous Den Entrances, California City CUP

Photograph 8. Kudu Solar Farm Example Inactive Desert Kit Fox Den, Kern County CUP

Appendices

Appendix 1. List of Federal, State, and Xerces Society Ranking Codes for the Kudu Solar Farm Project, California City and Kern County, California

USFWS / ESA Listing Codes:
FE Federally listed as Endangered
FT Federally listed as Threatened
FPE Federally proposed for listing as Endangered
FPT Federally proposed for listing as Threatened
FPD Federally proposed for delisting
FC Federal candidate species (former Category 1)
BCC Birds of Conservation Concern
BGEPA Bald and Golden Eagle Protection Act

CDFW / CESA Listing Codes:
SE State listed as Endangered
ST State listed as Threatened
SCE State candidate for listing as Endangered
SCT State candidate for listing as Threatened
SCD State candidate for delisting
R Rare
FP Fully Protected
SGCN Species of Greatest Conservation Need
SSC Species of Special Concern
WL Watch List

Birds of Conservation Concern are species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973 (ESA, USFWS 2008).

California Fully Protected Species are identified as those animals that are rare or face extinction and require additional protection. Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of bird species for the protection of livestock (CDFW 2019f).

Watch List of Species of Special Concern include species that are not on the current special concern list that 1) formerly were on the 1978 (Remsen 1978) or 1992 (CDFG 1992) special concern lists and are not currently listed as state threatened and endangered; 2) have been removed (delisted) from either the state or federal threatened and endangered lists (and remain on neither); or 3) are currently designated as Fully Protected in California (Shuford and Gardali 2008).

CALFIRE Sensitive Species are those species that warrant special protection during timber operations (CDFW 2019c).

Global Rank (G-Rank):
G1 = **Critically Imperiled**—At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
G2 = **Imperiled**—At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
G3 = **Vulnerable**—At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
G4 = **Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
G5 = **Secure**—Common; widespread and abundant.

> **Subspecies/variety level:**
> Subspecies/varieties receive a **T-rank** attached to the G-rank. With the subspecies/varieties, the G-rank reflects the condition of the entire species, whereas the T-rank reflects the global situation of just the subspecies or variety.

State CNDDB Rank (S-Rank):
S1 = **Critically Imperiled**—Critically imperiled in the state because of extreme rarity (often 5 or fewer populations) or because of factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.

S2 = **Imperiled**—Imperiled in the state 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.
S3 = **Vulnerable**—Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation from the state.
S4 = **Apparently Secure**—Uncommon but not rare in the state; some cause for long-term concern due to declines or other factors.
S5 = **Secure**—Common, widespread, and abundant in the state.

Uncertainty about the rank of an element is expressed in two major ways: 1) by expressing the rank as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3; and 2) by adding a "?" to the rank: e.g., S2? This represents more certainty than S2S3, but less than S2

Xerces Society Red List of Bees, Butterflies, and Moths (Xerces 2019a, 2019b)**:**
PE — Possibly Extinct: Missing; known from only historical occurrences, but still some hope of rediscovery.
CI — Critically Imperiled: At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
I — Imperiled: At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
V — Vulnerable: At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
DD — Data Deficient: Inadequate information to make an assessment of its risk category, either through lack of knowledge of population size, threats to it, or to taxonomic uncertainty of the validity of the taxon.

Appendix 2. Kudu Solar Farm Survey Weather Data, 20 August – 11 October 2019

Date	0800 Temp. (°F)	0800 Cloud Cover (%)	0800 Average Wind Speed (mph)	0800 Maximum Wind Speed (mph)	0800 Wind Direction	1200 Temp. (°F)	1200 Cloud Cover (%)	1200 Average Wind Speed (mph)	1200 Maximum Wind Speed (mph)	1200 Wind Direction
8/20/2019	70.0	0%	2.9	4.1	SE	89.6	0%	1.7	3.0	E
8/21/2019	74.1	0%	2.9	4.4	WSW	90.0	0%	4.0	12.0	S
8/22/2019	73.2	2%	3.2	4.6	SW	93.0	2%	12.0	18.0	SW
8/23/2019	74.8	2%	3.7	5.5	SE	91.0	2%	2.1	3.1	E
8/24/2019	72.4	0%	1.5	2.3	SE	92.1	0%	1.8	3.2	S
8/26/2019	78.6	30%	1.8	3.0	E	96.8	20%	1.7	2.8	S
8/27/2019	78.7	0%	2.2	3.7	E	99.0	0%	1.4	3.0	N
8/28/2019	79.8	0%	2.0	5.0	E	97.1	0%	1.4	2.6	E
8/29/2019	80.2	0%	3.5	5.0	E	95.2	0%	3.4	6.1	SW
8/30/2019	84.1	0%	5.4	7.3	NE	98.5	0%	9.5	18.5	SW
9/1/2019	76.0	0%	4.3	6.0	S	93.0	0%	5.0	10.0	S
9/2/2019	82.7	20%	4.3	5.9	N	97.7	30%	1.7	3.5	SW
9/3/2019	82.9	10%	3.4	4.3	W	96.2	20%	1.3	2.7	SE
9/4/2019	82.9	10%	1.0	2.0	SE	98.2	10%	1.2	3.8	E
9/5/2019	81.1	80%	3.4	4.8	E	95.8	70%	2.4	5.0	SE
9/6/2019	78.9	5%	0.9	1.5	S	92.9	10%	2.3	5.4	SE
9/7/2019	76.4	0%	1.7	3.1	SE	93.6	0%	1.4	3.5	SE
9/8/2019	69.0	0%	16.7	20.9	W	81.0	0%	19.0	21.0	W
9/9/2019	74.5	0%	4.6	6.1	SE	84.2	5%	1.9	3.3	SE
9/10/2019	68.4	0%	2.3	5.1	SE	80.3	0%	1.6	2.6	E
9/11/2019	62.8	0%	3.9	5.0	S	82.2	0%	4.1	5.8	SE
9/12/2019	67.6	0%	1.6	3.1	NW	88.9	0%	3.9	7.4	E
9/13/2019	71.3	0%	1.6	2.8	E	94.2	0%	1.3	2.9	W
9/14/2019	69.2	10%	3.5	4.6	S	96.5	20%	1.7	4.3	S
9/15/2019	69.7	80%	2.0	2.7	NE	88.0	0%	15.0	21.0	SSW
9/16/2019	67.5	30%	1.8	2.3	S	84.7	80%	10.7	17.5	SW
9/17/2019	65.9	10%	4.1	6.6	WNW	84.1	5%	1.2	2.6	N
9/18/2019	58.0	0%	1.6	3.4	SE	82.1	0%	2.1	5.6	SE
9/19/2019	66.3	2%	8.5	10.2	WSW	70.0	0%	24.0	32.0	WNW
9/20/2019	63.8	0%	1.7	3.5	SE	72.0	0%	8.0	8.0	ENE
9/21/2019	58.7	0%	3.1	4.3	S	81.5	0%	0.6	2.1	E
9/23/2019	74.3	5%	1.9	3.8	S	85.3	5%	4.4	6.8	S
9/24/2019	72.4	1%	3.0	4.1	SE	88.0	0%	21.0	28.0	ENE
9/25/2019	75.5	0%	1.5	2.3	NW	88.0	0%	5.0	21.0	ESE
9/26/2019	72.5	3%	2.1	2.7	SE	83.5	97%	1.1	1.8	E
9/27/2019	74.8	0%	8	11.8	NW	86.0	0%	24.0	24.0	W
9/28/2019	69.4	2%	4.8	7.8	SW	73.0	0%	16.0	29.0	W
9/29/2019	53.3	0%	3.1	3.7	W	61.0	0%	24.0	35.0	W
9/30/2019	57.1	0%	3.6	5.7	SW	63.0	0%	24.0	30.0	WNW
10/1/2019	52.5	0%	2.7	3.6	E	64.0	0%	10.0	10.0	WNW
10/2/2019	56.0	0%	0.6	1.3	E	72.2	0%	2.5	4.5	N
10/3/2019	59.2	0%	1.8	3.2	E	77.1	0%	1.1	2.9	SE
10/4/2019	66.1	0%	4.2	6.4	W	76.3	0%	2.6	5.5	NE
10/5/2019	58.1	0%	2.3	3.4	E	78.5	0%	1.7	3.1	SE
10/6/2019	59.8	5%	0.9	1.5	S	80.8	0%	6.1	8.4	N
10/7/2019	58.1	0%	0.0	0.0		82.0	0%	1.8	3.1	S
10/8/2019	61.6	0%	3.1	3.6	N	89.6	2%	1.3	3.3	SE
10/9/2019	71.5	0%	6.3	11.2	W	82.3	0%	10.3	14.3	W
10/10/2019	56.9	0%	5.7	8.9	E	64.5	0%	8.9	14.4	E
10/11/2019	58.4	5%	1.1	2.4	S	68.0	2%	1.2	3.4	SE

Appendix 3. List of Special Status and General Wildlife Species Detected During the Kudu Solar Farm Survey, 20 August – 11 October 2019

Scientific Name	Common Name
BIRDS	
ORDER: ANSERIFORMES	**DUCKS, GEESE, AND SWANS**
Anatidae	**Ducks**
Branta canadensis	Canada Goose
ORDER: ACCIPITRIFORMES	**HAWKS, KITES, EAGLES**
Cathartidae	**American Vultures**
athartes aura	Turkey Vulture
Accipitiridae	**Hawks, Kites, Eagles**
Buteo amaicensis	Red-tailed Hawk
ircus caneus	Northern Harrier*
ORDER: COLUMBIFORMES	**DOVES AND PIGEONS**
Columbidae	**Pigeons and Doves**
enaida macroura	Mourning Dove
ORDER: STRIGIFORMES	**OWLS**
Strigidae	**Typical Owls**
Athene cunicularia ssp. *hpuaea*	Western Burrowing Owl*
ORDER: CAPRIMULGIFORMES	**NIGHTJARS**
Caprimulgidae	**Goatsuckers**
hordeiles acutipennis	Lesser Nighthawk
ORDER: APODIFORMES	**HUMMINGBIRDS AND SWIFTS**
Trochidae	**Hummingbirds**
alypte anna	Anna's Hummingbird
ORDER: FALCONIFORMES	**FALCONS**
Falconidae	**Falcons**
aco sparerius	American Kestrel
ORDER: PASSERIIFORMES	**PASSERINES AND PERCHING BIRDS**
Tyrannidae	**Flycatchers**
iarchus cinerascens	Ash Throated Flycatcher
Corvidae	**Jays, Magpies, and Crows**
orus cora	Common Raven
Alaudidae	**Larks**
Eremophila apestris	Horned Lark
Mimidae	**Mimic Thrashers**
ostoma econtei	LeConte's Thrasher
Emberizidae	**Emberizids**
Artemisiospiza nevadensis	Sagebrush Sparrow
MAMMALS	
ORDER: CARNIVORA	**FLESH-EATERS**
Canidae	**Dogs, wolves, and foxes**
anis amiaris	Domestic Dog
anis atrans	Coyote
upes macrotis	Kit Fox*
Felidae	**Cats**
Lnrus	Bobcat
ORDER: RODENTIA	**GNAWING MAMMALS**
Sciuridae	**Squirrels**
Ammosphermophilus leucurus	Whitetail Antelope Squirrel

Scientific Name	Common Name
ORDER: LAGOMORPHA	**PIKAS, HARES, AND RABBITS**
Leporidae	**Hares and Rabbits**
Lepus ca□i□ornicus	Black-tailed Jackrabbit
ORDER: ARTIODACTYLA	**EVEN-TOED HOOFED MAMMALS**
Bovidae	**Bison, goats, muskox, and sheep**
□ □is sp.	Domestic Sheep
REPTILES	
ORDER: TESTUDINES	**TURTLES**
Testudinidae	**Land Tortoises**
□opherus a□assi□ii	Desert Tortoise*****
ORDER:SQUAMATA	**LIZARDS AND SNAKES**
Iguanidae	**Iguanids**
□ipsosaurus dorsa□is	Desert Iguana
Phrynosomitidae	**Phrynomsomitids**
□a□issaurus draconoides	Zebra-tailed Lizard
□hr□nosoma p□at□rhinos	Desert Horned Lizard
Sce□oporus ma□ister	Desert Spiny Lizard
□ta stansburiana	Side-blotched Lizard
Crotaphytidae	**Collared and Leopard Lizards**
□ambe□a □is□□enii	Long-nosed leopard lizard
Teiidae	**Whiptails**
Aspidosce□is ti□ris	Western Whiptail
Colubridae	**Colubrids**
□asticophis □a□e□um	Coachwhip
□ituophis me□ano□eucus	Gopher Snake
Viperidae	**Pit Vipers**
□rota□us cerastes	Sidewinder
□rota□us scutu□atus	Mojave rattlesnake

*****Special Status Species

Appendix 4. Desert Kit Fox Dens Recorded During the Kudu Solar Farm Wildlife Survey, California City and Kern County, California, 20 August – 11 October 2019

California City CUP*

Date (2019)	Northing	Easting	Observation
9/4	3892130	407167	Inactive Den
9/4	3891786	407229	Inactive Den
9/4	3891885	407147	Inactive Den
9/6	3891886	411974	Inactive Den
9/8	3891536	411436	Inactive Den
9/8	3892233	411440	Inactive Den
9/8	3891731	411434	Inactive Den
9/9	3891760	411389	Inactive Den
9/9	3892351	408002	Inactive Den
9/10	3891820	408073	Inactive Den
9/10	3892109	411224	Inactive Den
9/10	3891957	411058	Inactive Den
9/10	3891813	410964	Inactive Den
9/10	3892464	410951	Inactive Den
9/11	3891631	410851	Inactive Den
9/11	3892430	408125	Inactive Den
9/12	3891954	410791	Inactive Den
9/12	3891779	410766	Inactive Den
9/12	3891864	410687	Inactive Den
9/12	3892545	408266	Inactive Den
9/12	3892355	408295	Inactive Den
9/12	3892367	408309	Inactive Den
9/12	3892472	408325	Inactive Den
9/12	3892684	408342	Inactive Den
9/12	3893029	408343	Inactive Den
9/13	3891771	410573	Inactive Den
9/13	3892676	408401	Inactive Den
9/13	3892425	408423	Inactive Den
9/13	3892550	408457	Inactive Den

Date (2019)	Northing	Easting	Observation
9/13	3892931	408525	Inactive Den
9/13	3891533	408511	Inactive Den
9/14	3891622	408568	Inactive Den
9/21	3893430	409828	Inactive Den
9/21	3893371	409266	Inactive Den
9/23	3893318	409297	Inactive Den
9/23	3893313	409619	Inactive Den
10/6	3893195	407859	Inactive Den
10/7	3893246	408034	Inactive Den
10/7	3893448	408067	Inactive Den
10/8	3893401	408183	Inactive Den
10/9	3893521	408314	Inactive Den
10/9	3893292	408345	Inactive Den

*Coordinates (WGS 84, Grid 11)

Kern County CUP*

Date (2019)	Northing	Easting	Observation
9/1	3898915	410793	Inactive Den
9/3	3896766	410508	Inactive Den
9/21	3894919	406144	Inactive Den
9/21	3895127	406300	Inactive Den
9/23	3895023	405311	Inactive Den
9/24	3894974	405219	Inactive Den
9/24	3894888	405207	Inactive Den
9/24	3894842	405141	Inactive Den
9/24	3894936	405050	Inactive Den
9/24	3894845	404995	Inactive Den
9/24	3894808	404963	Inactive Den
9/25	3895398	405130	Inactive Den
9/25	3896031	405383	Inactive Den
9/26	3896018	405330	Inactive Den
9/26	3895930	405309	Inactive Den

Date (2019)	Northing	Easting	Observation
9/26	3895856	405291	Inactive Den
9/27	3896006	405245	Inactive Den
9/29	3895880	405121	Inactive Den
9/29	3895937	405010	Inactive Den
9/29	3895882	404999	Inactive Den
9/30	3895067	404580	Inactive Den
10/2	3894012	404239	Inactive Den
10/2	3894194	404285	Inactive Den
10/2	3894152	404303	Inactive Den

*Coordinates (WGS 84, Grid 11)

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Appendix D-3
Rare Plant Survey

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Rare Plant Survey at the Proposed Kudu Solar Farm, California City and Kern County, California Spring 2020

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June 2020

EXECUTIVE SUMMARY

A protocol-level rare plant survey was conducted in March-April 2020 by EREMICO Biological Services, LLC and Mark Bagley Consulting Biologist for the proposed Kudu Solar Farm Project (Project), partly within the city limits of California City and partly in an unincorporated area of Kern County, California. The purpose of the survey was to determine if special status plants and plants protected under the California Desert Native Plant Act (CDNPA) occur on the Project.

During the survey two special status plant species and two species protected under the CDNPA were observed. The special status plants were Barstow woolly sunflower (*Eriophyllum mohavense*) and Mojave spineflower (*Chorizanthe spinosa*). The former species is rare and endangered in California and elsewhere (California Native Plant Society [CNPS] Rank 1B); the latter species is on a watch list that includes plants with limited distribution and limited information (CNPS Rank 4). One additional special status plant, crowned muilla (*Muilla coronata*), potentially occurred on the Project but may have been overlooked during the survey. This species is known to occur in the vicinity of the Project and was observable at another location in the West Mojave prior to the survey.

The two CDNPA species present included Joshua tree (*Yucca brevifolia*) and silver cholla (*Cylindropuntia echinocarpa*). Joshua tree woodland, a sensitive natural community, did not occur on the Project. The only sensitive natural community within the Project was a creosote bush – white bursage – desert senna scrub (*Larrea tridentata – Ambrosia dumosa – Senna armata* Association), described in the Biological Evaluation for this project (EPC 2020a).

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APPENDICES

Appendix A. Plant List

1. INTRODUCTION

1.1 PROJECT DESCRIPTION

69SV 8me LLC (Applicant) proposes to develop up to a 500 megawatt-alternating current (MW-ac) utility-scale solar farm and 600 MW-hour (MWh) Energy Storage System (ESS) known as the Kudu Solar Farm Project (Project) in unincorporated Kern County and California City, California (Figure 1-1). Features that comprise the Project include, but are not limited to, the solar array, collector lines, ESS, substation, and ancillary facilities.

The Project is adjacent to the approved 68SF 8me LLC, Eland 1 Solar Farm, south of the existing Springbok Solar Farms, and southeast of the Los Angeles Department of Water and Power (LADWP) Beacon Solar Facility (Figure 1-2). The Project would utilize up to 230 kilovolt (kV) transmission lines (gen-tie lines) already approved for the adjacent Eland 1 Solar Farm to transfer generated power from the Project to the LADWP Barren Ridge Substation. Remote areas of the solar farm would be connected by underground and/or overhead collector lines.

The permanent disturbance acreage associated with development of the Project would be located within a subset of the Project, referred to as the Action Area. The Applicant will be applying for Conditional Use Permits (CUP) from Kern County and from California City for development and operation of this Project.

The Action Area includes 2,176.14 gross acres on 75 privately owned parcels in unincorporated Kern County and in California City. A total of 42 parcels are located within Kern County and comprise 673.52 gross acres. A total of 33 parcels are within California City and comprise 1,222.64 gross acres. In addition, the Action Area includes collector lines in Kern County (186.36 gross acres) and California City (93.62 gross acres) (EnviroPlus Consulting, Inc. [EPC] 2020a).

As part of the permitting process, the California Department of Fish and Wildlife (CDFW) requires a biological resources survey of the Action Area. The purpose of the biological resources survey is to determine if any threatened or endangered plant or wildlife species or other special status species occur in the Action Area and to evaluate the existing habitats for their potential in supporting any sensitive species that may not be present or observable during the time of the survey. This report describes the methods and results of a protocol-level rare plant survey of the Action Area that was conducted in Spring 2020. The wildlife portion of the biological resources survey was prepared by EPC (2020b).

1.2 PROJECT AREA DESCRIPTION

The Project is located in the Fremont Valley in the West Mojave Desert. It lies north of the California City Municipal Airport and is bisected by Washburn Boulevard, which is the California City and Kern County boundary, and Neuralia Road. State Route 14 (SR14) is located west of the Project, and a single line track of Union Pacific (UP) Railroad bisects the western portion of the Project in a north-south direction. Phillips Road bisects the northern portion of the Project in an east-west direction (Figure 1-2). The Project is located on the Mojave NE and California City North USGS 1:24000 topographic maps (7.5-minute quadrangles). The cadastral description of the Project is as follows:

- Township 31S, Range 37E – portions of Sections 14, 15, 22, 23, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35 and
- Township 32S, Range 37E – portions of Sections 1, 2, 3, 4, 9, 10, 11, 12.

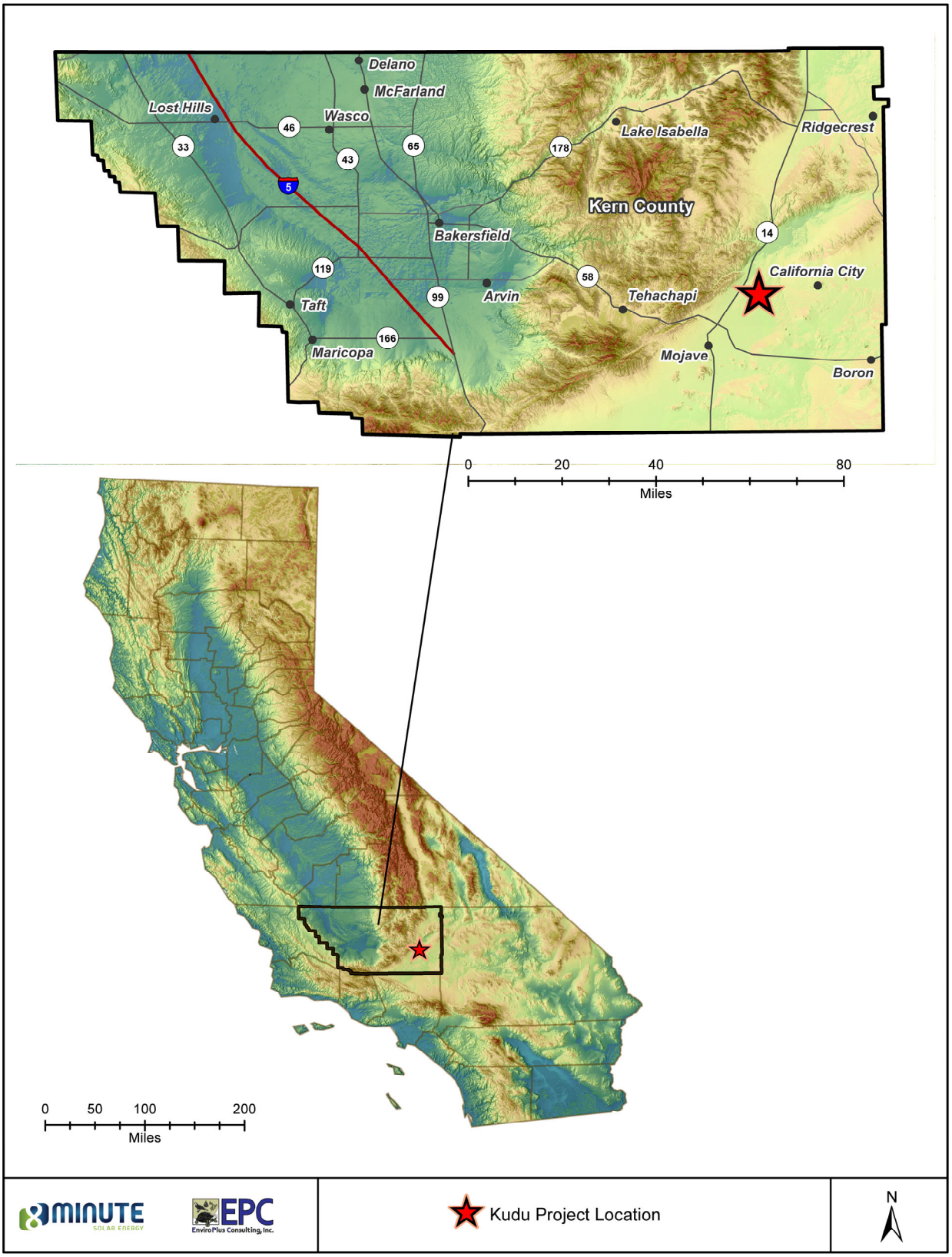

Figure 1-1. Kudu Solar Farm Project Vicinity Map, California City and Kern County, CA

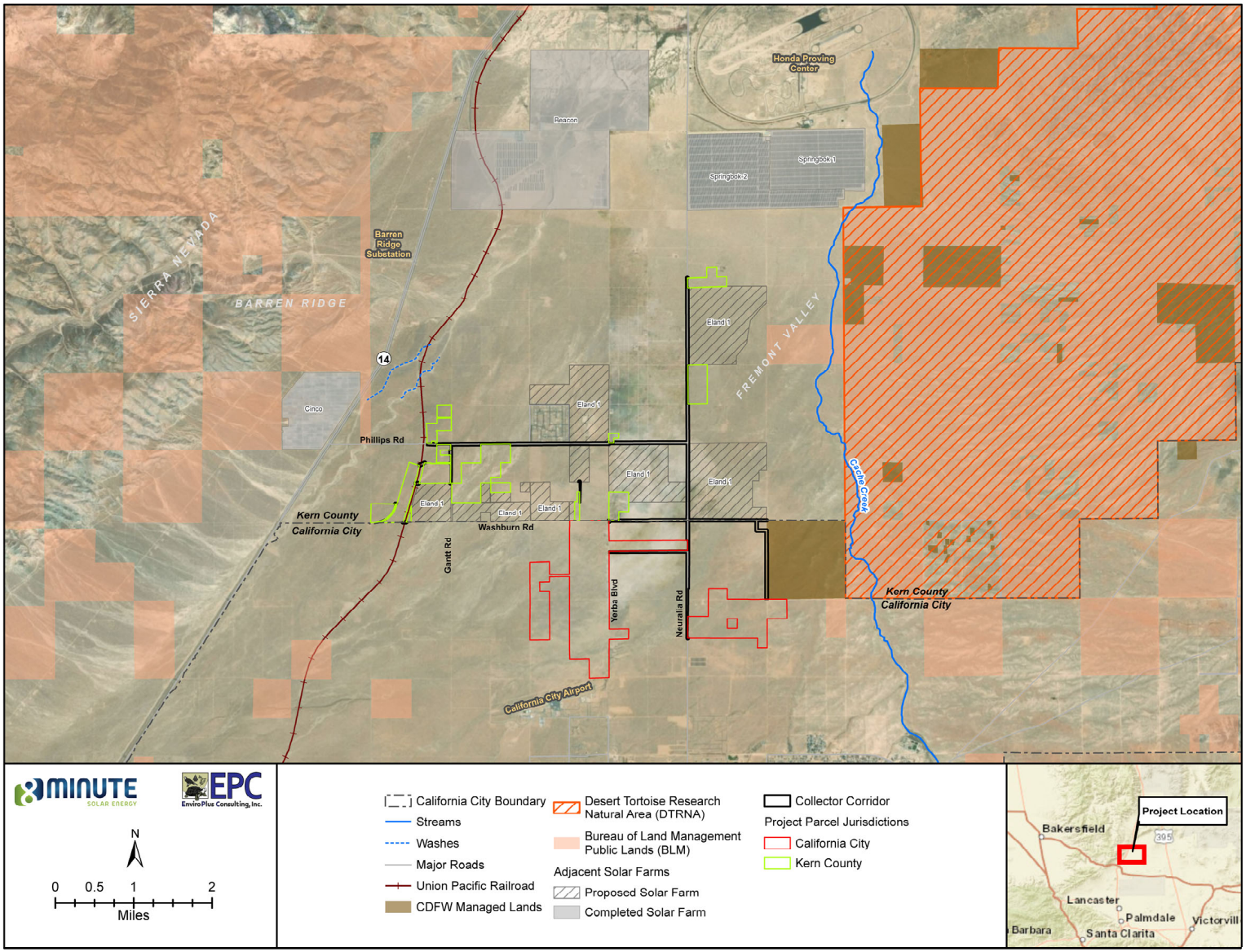

Figure 1-2. Kudu Solar Farm Action Area Location Map, California City and Kern County, CA

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The following features occur in areas surrounding the Project (Figure 1-2):

- North – Beacon Solar Farm, Springbok 1, 2 and 3 Solar Farms, and the Honda Proving Center of California a few miles to the north;
- West – State Route 14, the Cinco Solar Farm, and the Southern Sierra Nevada;
- South – California City Airport and the developed portions of California City; and
- East – similar vacant land and the fenced Desert Tortoise Research Natural Area (DTRNA) and CDFW managed lands.

Additional project descriptions can be found in EPC (2020a).

1.3 SUMMARY OF VEGETATION COMMUNITY ASSESSMENT AND DATABASE SEARCH

A vegetation community assessment was conducted within the Action Area in September of 2019 (EPC 2020a). Six vegetation communities, as defined by Sawyer et al. (2009) and Klein and Keeler-Wolf (2014), were identified and are listed below:

- *Larrea tridentata* - *Ambrosia dumosa* Shrubland Alliance (Creosote Bush - White Bursage Scrub);
- *Larrea tridentata* - *Ambrosia dumosa* - *Senna armata* Association (Creosote Bush - White Bursage - Desert Senna Scrub);
- *Larrea tridentata* Shrubland Alliance (Creosote Bush Scrub);
- *Ericameria nauseosa* Shrubland Alliance (Rubber Rabbitbrush Scrub);
- *Ambrosia dumosa* Shrubland Alliance (White Bursage Scrub);
- Mediterranean California Naturalized Annual and Perennial Grassland Group.

The *Larrea tridentata* - *Ambrosia dumosa* - *Senna armata* Association is considered a sensitive natural community in California (CDFW 2018a). A description of the vegetation communities in the Action Area are provided in EPC (2020a).

The database search conducted for special status plant species identified a total of 33 species within the USGS quadrangles in and around the Action Area (Figure 1-3; CNDDB 2019a, 2019b). Out of the 33 species identified, 14 species, listed below, had some potential to occur within the Action Area based on habitat, elevation, and proximity of known locations to the Project (EPC 2020a):

California Native Plant Society (CNPS) Rank 1B (rare and endangered in California and elsewhere)

- desert cymopterus (*Cymopterus deserticola*),
- Barstow woolly sunflower (*Eriophyllum mohavense*),
- Red Rock poppy (*Eschscholzia minutiflora* ssp. *twisselmannii*),
- pale-yellow layia (*Layia heterotrichia*),
- creamy blazing star (*Mentzelia tridentata*), and
- Charlotte's phacelia (*Phacelia nashiana*).

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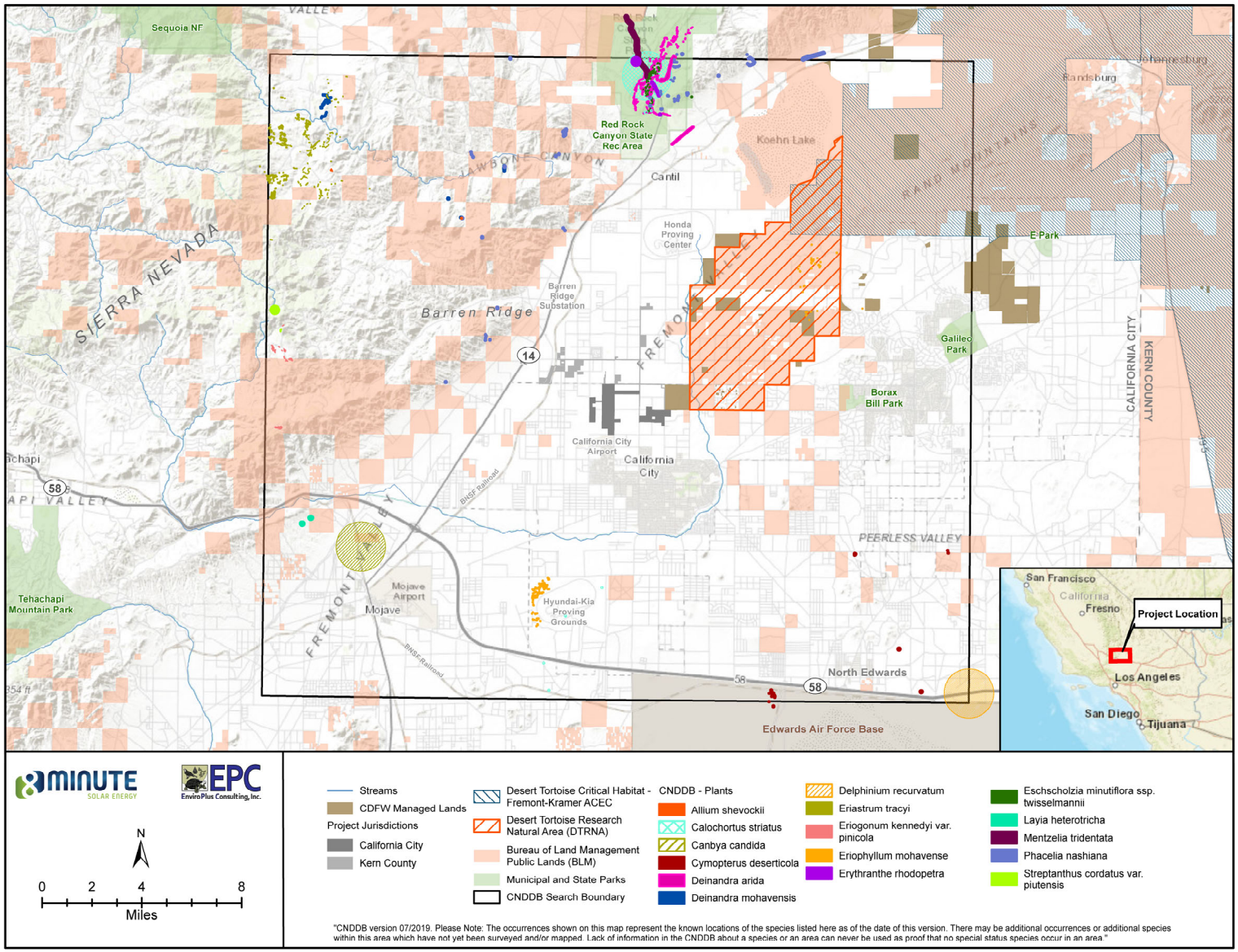

Figure 1-3. Kudu Solar Farm Project Special Status Plants, CNDDB Search Result, California City and Kern County, CA

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CNPS Rank 4 (watch list of plants with limited distribution)

- Kern County evening-primrose (*Camissonia kernensis* ssp. *kernensis*),
- white pygmy-poppy (*Canbya candida*),
- Mojave spineflower (*Chorizanthe spinosa*),
- Death Valley sandmat (*Euphorbia vallis-mortae*),
- golden goodmania (*Goodmania luteola*),
- solitary blazing star (*Mentzelia eremophila*),
- crowned muilla (*Muilla coronata*), and
- Mojave fish-hook cactus (*Sclerocactus polyancistrus*).

A description of each species and its potential for occurring in the Action Area is provided in EPC (2020a) and summarized in Table 1-1. No Federally-listed or State-listed threatened or endangered species was determined to have potential of occurring in the Action Area.

The assessment also identified taxa protected under the California Desert Native Plant Act (CDNPA), Division 23 of the California Food and Agricultural Code, Section 80071-80075 (California Food and Agricultural Code 2005) that may occur in the Action Area. These species are:

- golden cholla (*Cylindropuntia echinocarpa*),
- beavertail cactus (*Opuntia basilaris* var. *basilaris*), and
- Joshua tree (*Yucca brevifolia*).

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Table 1-1. Special status plant species known to occur in the region and their occurrence potential within the Kudu Solar Farm Action Area, California City and Kern County, California[1]

Scientific name Common Name Plant Family, Life Form	Rank or Status[2]					Flowering Period	Habitat and Distribution Notes	Occurrence Potential within the Action Area
	FWS	CDFW	G-RANK	CNDDB S-RANK	CNPS RANK			
CNPS Rank 1B								
Cymopterus deserticola desert cymopterus Apiaceae, perennial herb	–	–	G2	S2	1B.2 E	March-May	630-1500 m. Sandy. Joshua tree woodland, Mojavean desert scrub. Known to occur northwest (west of Red Rock Canyon State Park) and southeast (Edwards AFB and Aerial Acres) of Project.	**LOW** – may occur on the sandy hummocks east of Neuralia Road
Eriophyllum mohavense Barstow woolly sunflower Asteraceae, annual herb	–	–	G2	S2	1B.2 E	March-May	500-950 m. Gravelly, silty, sandy, or clay soils on level or sloping terrain, as well as in low-lying areas. Chenopod scrub, Mojavean scrub, playas. Known to occur east and south of Project at the Desert Tortoise Research Natural Area and at Hyundai Proving Grounds.	**LOW** – may occur in silty and gravely depressions east of Neuralia Road
Eschscholzia minutiflora ssp. *twisselmannii* Red Rock poppy Papaveraceae, annual herb	–	–	G5	S2	1B.2 E	March-May	680-1230 m. Rhyolite tuff, granitic. Mohavean desert scrub. Known to occur north and northeast of the Project in the El Paso Mountains.	**LOW** - may occur in gravelly areas on undisturbed parcels throughout the Action Area
Layia heterotricha Pale-yellow layia Asteraceae, annual herb	–	–	G2	S2	1B.1 E	March-June	300-1705 m. Alkaline or clay. Cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland. Known to occur southwest of the Project near Mojave.	**LOW** – may occur in silty or clayey areas on undisturbed parcels
Mentzelia tridentata creamy blazing star Loasaceae, annual herb	–	–	G3	S3	1B.3 E	March-May	700-1175 m. Rocky, gravelly, sandy. Mojavean desert scrub. Known to occur east and north of the Project in central Mojave Desert and upper Red Rock Canyon (old, vague record).	**LOW** – may occur on undisturbed parcels throughout the Action Area

Phacelia nashiana Charlotte's phacelia Hydrophyllaceae, annual	–	–	G3	S3.2	1B.2 E	March-June	600-2200 m. Usually granitic, sandy or rocky areas on steep slopes or flats. Joshua tree woodland, Mohavean desert scrub; pinyon-juniper woodland; Known to occur north and west of the Project in Red Rock Canyon, Jawbone Canyon, and Pine Tree Canyon.	**LOW** – may occur in the extreme western portion of the Action Area
CNPS Rank 4								
Camissonia kernensis ssp. *kernensis* Kern County evening-primrose Onagraceae, annual herb	–	–	G4	S3	4.3 E	March-May	790-2130 m. Sandy or gravelly, granitic. Chaparral, Joshua tree woodland, pinyon and juniper woodland. Known to occur northwest and southwest of the Project.	**LOW** – may occur in sandy and gravelly soils on undisturbed parcels throughout the Action Area
Canbya candida white pygmy-poppy Papaveraceae, annual herb	–	–	G3G4	S3S4	4.2 E	March-June	600-1460 m. Gravelly, sandy, granitic. Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland. Known from the West Mojave Desert.	**MODERATE** – may occur in sandy and gravelly soils on undisturbed parcels throughout the Action Area
Chorizanthe spinosa Mojave spineflower Polygonaceae, annual herb	–	–	G4	S4	4.2 E	March-July	6-1300 m. Sometimes alkaline. Chenopod scrub, Joshua tree woodland, Mojavean desert scrub, playas. Known to occur in surrounding areas.	**LOW** – may occur in silty, clayey, or gravelly open areas on undisturbed parcels
Euphorbia vallis-mortae Death Valley sandmat Euphorbiaceae, perennial herb	–	–	G3	S3	4.2 E	May-October	230-1460 m. Sandy, gravelly. Mojavean desert scrub. Known to occur north and northwest of the Project.	**LOW** – may occur in sandy and gravelly soils on undisturbed parcels in the Action Area
Goodmania luteola golden goodmania Polygonaceae, annual herb	–	–	G3	S3	4.2	April-August	20-2200 m. Alkaline or clay. Mojavean desert scrub, meadows and seeps, playas, valley and foothill grassland. Known from south and southeast of Project.	**LOW**– may occur in silty or clayey open areas on undisturbed parcels
Mentzelia eremophila solitary blazing star Loasaceae, annual herb	–	–	G4	S4	4.2	March-May	700-1220 m. Canyons, rocky slopes, washes. Mojavean desert scrub. Known to occur in surrounding areas.	**LOW** – may occur in washes in the Action Area

Muilla coronata crowned muilla Themidaceae, perennial bulbiferous herb	–	–	G3	S3	4.2	March-April	670-1960 m. Chenopod scrub, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland. Known to occur near the Project.	**HIGH** –potential habitat occurs on undisturbed parcels throughout the Action Area; known location nearby
Sclerocactus polyancistrus Mojave fish-hook cactus Cactaceae, perennial stem succulent	–	–	G3	S3	4.2	April-July	640-2320 m. Usually carbonate. Great Basin scrub, Joshua tree woodland, Mojavean desert scrub. Known to occur in surrounding areas.	**LOW** – may occur on undisturbed parcels throughout the Action Area

[1] Information taken from the California Natural Diversity Database (CNDDB) reports (CNNDB 2019a, 2019b); rank or status data checked in California Native Plant Society (CNPS 2019).

[2] Rank or status abbreviations:

FWS (U.S. Fish and Wildlife Service) listings under the Endangered Species: E=Endangered; T=Threatened; – = not listed or proposed for listing (FWS 2018).

CDFW (California Department of Fish and Wildlife) listings under California Endangered Species Act: E=Endangered; T=Threatened; R=Rare; – = not listed or proposed for listing (CDFW 2019b).

G-Ranks (Global Ranks): G1=critically imperiled; G2=imperiled; G3=vulnerable; G4=apparently secure; G5=secure. Uncertainty about the rank of an element is expressed in two major ways: 1) by expressing the rank as a range of values: e.g., G2G3 means the rank is somewhere between G2 and G3; and 2) by adding a "?" to the rank: e.g., G2? This represents more certainty than G2G3, but less than G2 (CDFW 2019, CNPS 2019).

CNDDB S-Ranks: S1= extremely endangered; S2= endangered; S3= restricted range, rare; S4= apparently secure; S5= demonstrably secure; SH= all Calif. Sites are historical. Uncertainty about the rank of an element is expressed in two major ways: 1) by expressing the rank as a range of values: e.g., S2S3 means the rank is somewhere between S2 and S3; and 2) by adding a "?" to the rank: e.g., S2? This represents more certainty than S2S3, but less than S2 (CDFW 2019a, CNPS 2019).

CNPS Ranks: 1A=plants presumed extinct in California; 1B=plants rare and endangered in California and elsewhere; 2A=plants presumed extirpated in California but common elsewhere; 2B=plants rare, threatened, or endangered in California but more common elsewhere; 3=plants about which more information is needed – a review list; and 4=plants of limited distribution – a watch list. The number following Rank is the Threat Code: .1=seriously endangered in CA; .2=fairly endangered in CA; .3=not very endangered in CA. Plants with an "E" are endemic to CA (CNPS 2019).

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2. METHODS

2.1 PRE-SURVEY INVESTIGATIONS

The field crew reviewed the physical description, habitat description, drawings, and photographs of each potentially occurring special status plant species. Sources for information on each species included floras (Abrams and Ferris 1923-1960, Baldwin et al. 2012, Munz 1974), field guides (Jaeger 1940, MacKay 2013), and other sources (Bagley 2006; California Native Plant Society [CNPS] 1978, 2019; Charlton 1992; Smithsonian Institution 1978; University of California 2020). The field crew also developed a list of known locations for rare plants in the general vicinity of the Project based on California Natural Diversity Data Base (CNDDB) records (CNDDB 2019b). Before initiating the protocol-level rare plant survey, the crew visited, at a minimum, one location for each of the CNPS Rank 1B plants to become familiar with its appearance and habitat and to determine if it would be identifiable at the time of the survey.

2.2 PROTOCOL-LEVEL RARE PLANT SURVEY

Denise LaBerteaux (EREMICO Biological Services, LLC) and Mark Bagley (Mark Bagley Consulting Biologist) conducted the protocol-level rare plant survey in the Action Area from March 18 to April 25, 2020. The field survey consisted of a full coverage survey following protocols recommended by the CDFW (2018b). The field crew systematically walked 15-m to 20-m wide, parallel line transects over the entire area to achieve full coverage. The width of each transect was determined by the density of shrubs in a particular area. Undisturbed parcels with native habitat were surveyed with 15-m wide transects. Parcels recovering from agricultural use were surveyed with 20-m wide transects. If any special status plant or CDNPA plant was encountered, its location was recorded on a form created specifically for this survey using the ESRI application Survey123 for ArcGIS, v3.9.148. Information collected for each special status plant were sent to the CNDDB.

The protocol-level rare plant survey was floristically based, that is, the field crew identified all plant species, whether fresh or dried, that were encountered in the Action Area to at least genus and to the level necessary to ensure that they were not plant species of concern. The crew collected and later identified plants that were not readily identifiable in the field. Nomenclature throughout this report follows *The Jepson Manual, 2nd Ed.* (Baldwin et al. 2012).

3. RESULTS

3.1 REFERENCE SITE VISITS

The field crew visited reference sites for the six potentially occurring CNPS Rank 1B plants. On March 7, 2020, the field crew searched for desert cymopterus near Aerial Acres (CNDDB Occurrence #9) and Barstow woolly sunflower east of Boron (CNDDB Occurrence #22). Six desert cymopterus plants, mostly in bud, were observed on a stabilized dune with loose sandy soil. The plant community was creosote bush – white bursage scrub. Cheesebush (*Ambrosia salsola*) and box-thorn (*Lycium cooperi*) were common associates. About 35 Barstow woolly sunflowers were found in an open area with silty sandy soil and on a low hill with gravel and rock pebbles. Both areas had creosote bush – white bursage scrub. Spinescale (*Atriplex spinifera*) was a common associate. Most plants were in leaf only, but some were in bud.

On March 15, 2020 the crew visited locations in Red Rock Canyon State Park for Red Rock poppy (Occurrence #1), creamy blazing star (CNDDB Occurrence #9), Charlotte's phacelia (CNDDB Occurrence #19), and Mojave spineflower (no occurrence number). Three Red Rock poppies, in leaf, were found below the Red Cliffs. Also occurring in this area were several Mojave spineflowers, in leaf. No creamy blazing stars were observed, but the record in the CNDDB (2019b) is old and vague. Charlotte's phacelia did not germinate near the Tamarisk Grove, so, on March 21, 2020, the crew visited sites along the Los Angeles Aqueduct at the base of the Southern Sierra Nevada, west of the Project (CNDDB Occurrences #47 and #48). No plants germinated at either location.

On March 21, 2020, the field crew searched for pale-yellow layia at two locations in the Horned Toad Hills near Mojave (Occurrences #76 and 77). This plant was not observed at these locations or in adjacent areas with similar habitat.

Most records for the CNPS Rank 4 plants have not been processed by CNDDB or are at nonspecific locations (CNDDB 2019a). However, the field crew was familiar with a few locations. On March 22, 2020, several individuals of white pygmy-poppy and Death Valley sandmat were observed in Kelso Canyon, approximately 74 km from the Project. The pygmy-poppy had a few buds, and the sandmat was in leaf. In addition, on February 26, 2020, Denise LaBerteaux incidentally encountered several blooming crowned muilla in Jawbone Butterbredt Area of Critical Environmental Concern, approximately 32 km north-northwest of the Project. This flowering date was 2-4 weeks earlier than in 2019 (personal observation).

3.2 FLORA

Plants identified in the Action Area totaled 113 taxa in 25 plant families (Appendix A). The field crew recorded 100 native species and 13 non-native weedy species. The annual flora of the Action Area was moderately well represented due to above normal precipitation during the previous fall and winter (National Oceanic and Atmospheric Administration [NOAA] 2020).

Non-native, weedy annual herbs and grasses were common in the Action Area, especially in previously disturbed areas. Arabian or Mediterranean grass (*Schismus arabicus* or *S. barbatus*) and red-stemmed filaree (*Erodium cicutarium*) were ubiquitous. Weedy mustards, primarily Mediterranean mustard (*Hirschfeldia incana*) and species in the genus *Sisymbrium*, were prominent along paved road shoulders and the railroad right-of-way. Approximately 10 Saharan mustards (*Brassica tournefortii*), a highly invasive, non-native weed, were observed on both road shoulders along Phillips Road.

3.3 RARE PLANTS

Two rare plant species were encountered in the Action Area during the survey. These species were Barstow woolly sunflower and Mojave spineflower. The former species is a CNPS Rank 1B plant and the latter one is a CNPS Rank 4 plant. Point data for these species are mapped in Figure 3-1.

3.3.1 BARSTOW WOOLLY SUNFLOWER

Photograph 3-2. Barstow Woolly Sunflower

Barstow woolly sunflowers (Photograph 3-1) were recorded at one location east of Neuralia Road in California City (APN 302-322-06; Figure 3-1). The number of individuals totaled 28 in an area measuring one square meter. They occurred on a small silt-clay pan in an open area with very few shrubs (Photograph 3-2). Soils consisted of silty-clay loam with a thin gravel surface of decomposed granite. The only other annual species at this site were red-stemmed filaree (*Erodium cicutarium*) and narrow-toothed pectocarya (*Pectocarya linearis* ssp. *ferocula*). The habitat in the surrounding area was creosote bush scrub with no other shrub species.

Photograph 3-1. Barstow Woolly Sunflower Habitat

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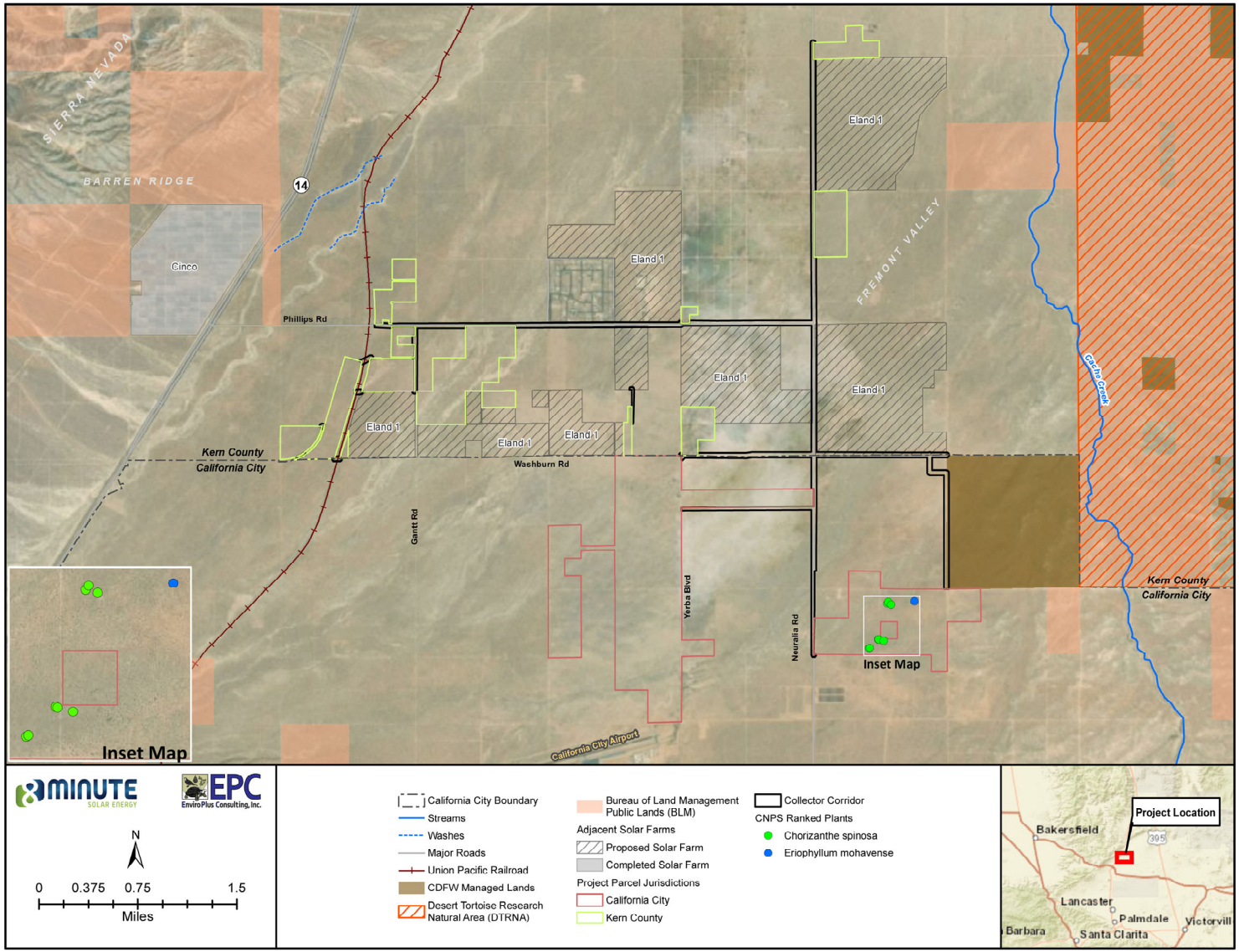

Figure 3-1. Special Status Plant Locations, Kudu Solar Farm

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3.3.2 MOJAVE SPINEFLOWER

Photograph 3-4. Mojave Spineflower

An estimated 900 Mojave spineflowers (Photograph 3-3) were recorded in the Action Area. They were observed at eight locations in the southeastern portion of the Project, east of Neuralia Road in California City (Figure 3-1). The population area totaled approximately 195 sq m. Mojave spineflowers were typically in open flats with silty loam or silty clay loam soil and gravel or scattered pebbles on the surface (Photographs 3-3, 3-4). The habitat at all locations was creosote bush scrub with no other shrubs. Common annuals in these areas included red-stemmed filaree, little desert trumpet (*Eriogonum trichopes*), narrow-toothed pectocarya and common goldfields (*Lasthenia gracilis*).

Photograph 3-3. Mojave Spineflower Habitat

3.3.3 OTHER POTENTIALLY OCCURRING SPECIES

No other special status plant species was observed in the Action Area during the Spring 2020 survey. The likelihood that any of the other rare plant listed in Table 1-1 to occur in the Action Area is described below.

Desert cymopterus, Red Rock poppy, white pygmy-poppy, and Death Valley sandmat were all observable in the region in March and April 2020. The field crew did not observe any of these species. Therefore, these species are not likely occur in the Action Area.

Charlotte's phacelia did not germinate at known locations in Spring 2020, and none were found in the Action Area. Major washes downstream of known locations along the base of the Southern Sierra Nevada could support habitat for Charlotte's phacelia. However, since no such wash bisects the Action Area, this phacelia is unlikely to occur.

Pale-yellow layia also did not germinate at known locations in the region. The two CNDDB occurrences of pale-yellow layia near Mojave are in non-desert habitats and outside the primary

range of the species (CNDDB 2019b). There are no records of this species in desert habitats (CNPS 2019). Therefore, pale-yellow layia is unlikely to occur in the Action Area.

The occurrence of creamy blazing star in Red Rock Canyon is old (1930) and vague (CNDDB 2019b). The CNDDB recommends the herbarium specimen be verified. Other populations are known from the Barstow region, 115 km east of the Project (CNPS 2019). The field crew identified only one species in the genus *Mentzelia*, the white stemmed stick-leaf (*M. albicaulis*). Other species should have germinated if seeds were, indeed, present in the soils.

Kern County evening-primrose records in the region are in foothills and mountainous terrain north, northwest, and southwest of the Project, occurring in Joshua tree woodland and pinyon and juniper woodland (CNDDB 2019b, CNPS 2019). Similar topography and plant communities did not occur in the Action Area. The similar-looking Mojave sun cup (*Camissonia campestris* ssp. *campestris*) was quite common in the Action Area. However, after examining many individuals, the field crew did not identify any Kern County evening-primroses.

Golden goodmania occupies alkali flats south of the Action Area in portions of the Antelope Valley (CNDDB 2019b, CNPS 2019). This soil type was not present in the Action Area to support a golden goodmania population, and no individuals were observed during the survey.

Solitary blazing star occurs in canyons, on rocky slopes, and in washes of mountainous areas north and northeast of the Action Area (CNPS 2019). These features were not present in the Action Area, and no solitary blazing stars were observed. Therefore, this species likely does not occur.

Crowned muilla was potentially detectable during the time of the survey as several were observed at another location in the West Mojave Desert in February 2020. However, none were observed in the Action Area during the survey. It was categorized as having a high potential for occurrence during the habitat assessment (EPC 2020a) because it was observed on the nearby Eland 1 Solar Farm project site in March 2019 (personal observation). Because it was in full bloom during the month of February 2020, it may have been in fruit and harder to detect in March and April. Therefore, crowned muilla may occur in the Action Area.

Mojave Fish-hook cactus, occurring on slopes in the foothills and mountains surrounding the Action Area (CNPS 2019), is a very noticeable plant on the terrain, especially when it is blooming. Similar terrain was not present in the Action Area, and the field crew did not observe any individuals.

3.4 CDNPA PLANTS

Two CDNPA species were recorded in the Action Area and included silver cholla and Joshua tree. The number in each CUP area is provided in Table 3-1. All CDNPA plants are mapped in Figures 3-2 and 3-3.

Table 3-1. CDNPA Plants and Number of Individuals in Action Area

CDNPA Plants		Kern County # Plants	California City # Plants
Silver Cholla		736	15
Joshua Tree	<2 ft tall	1	0
	2-8 ft tall	4	0
	>8 ft tall	0	0

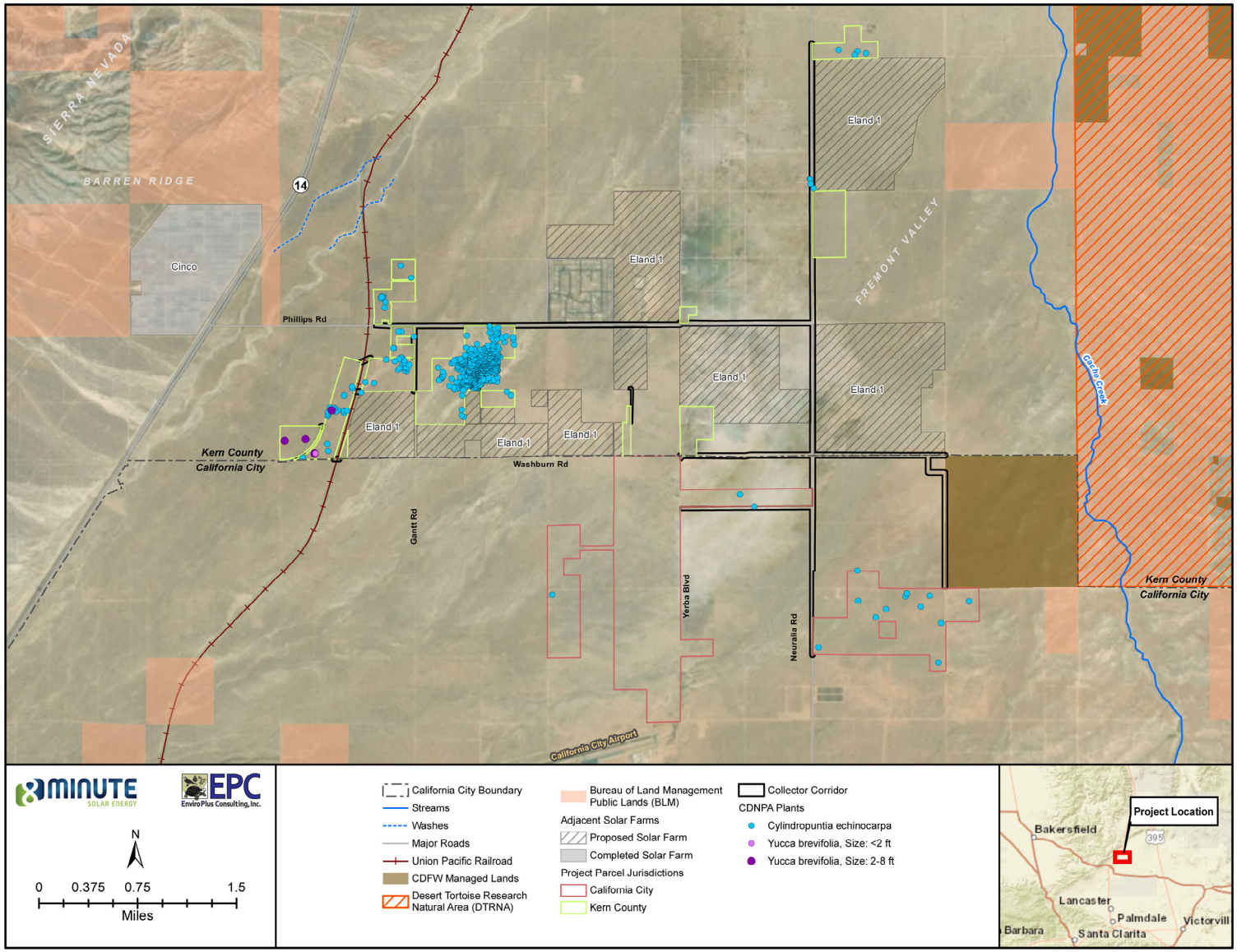

Figure 3-2. CDNPA Plants, Overview, Kudu Solar Farm

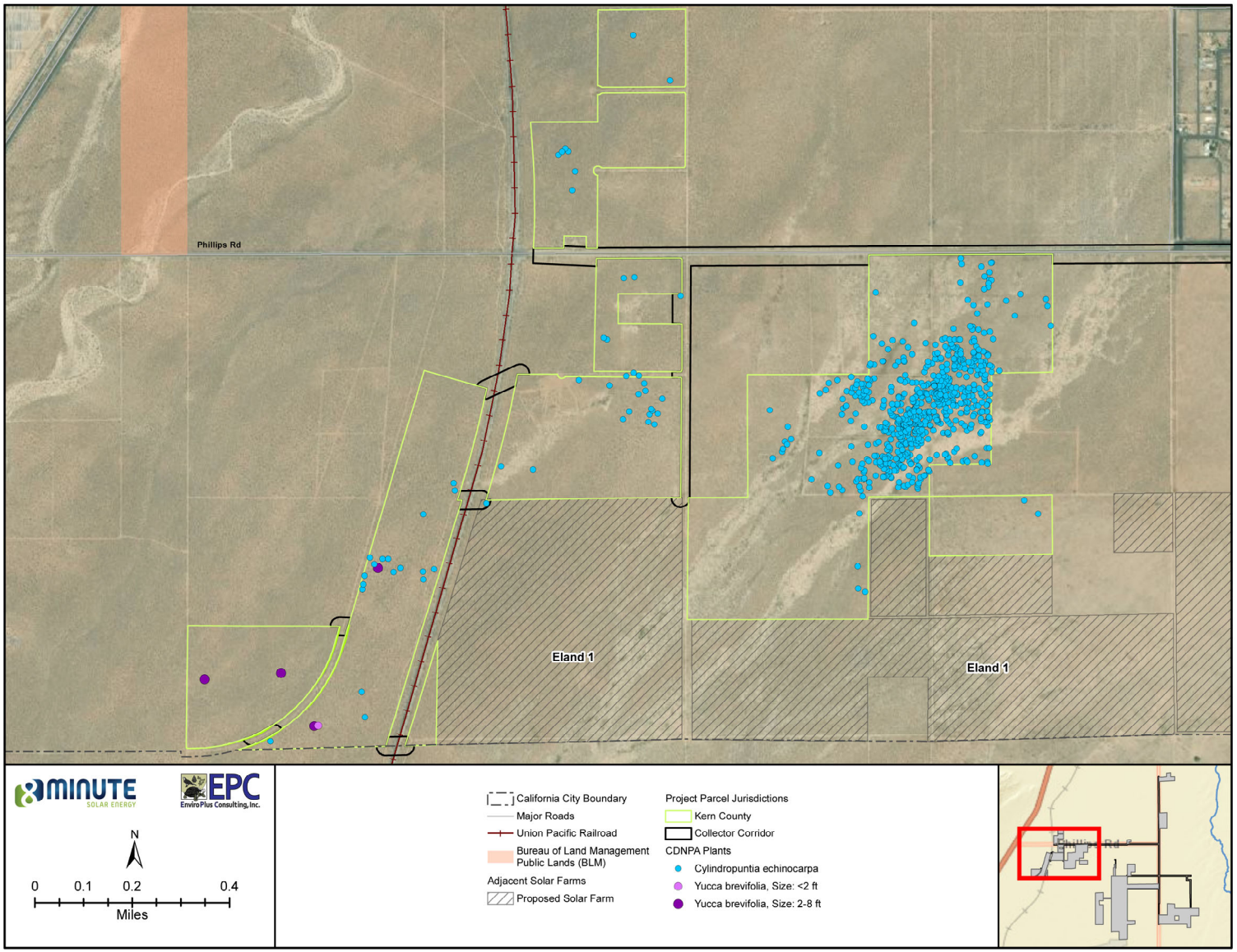

Figure 3-3. CDNPA Plants, Detailed View, Kudu Solar Farm

4. DISCUSSION

This protocol-level rare plant survey found two special status rare plant species in the proposed Kudu Solar Farm project area. The rare plants were Barstow woolly sunflower, which is rare and endangered in California and elsewhere (CNPS Rank 1B species); and Mojave spineflower, which is on a watch list of plants with limited distribution and limited information (CNPS Rank 4 species). Not only do these species have special status, they are endemic to the region (Table 1-1). Both species were rather unexpected since neither species was recorded in nearby areas during surveys for another solar project (EREMICO Biological Services 2018, EREMICO Biological Services, LLC 2020).

Crowned muilla, a CNPS Rank 4 species, had high probability of occurring in the Action Area, especially on Kern County parcels east of Neuralia Road (EPC 2020a). It may have been overlooked during the survey because of its diminutive stature and obscure appearance when only in fruit.

Two CDNPA plant species, silver cholla and Joshua tree, were present in the Action Area. They may not be harvested except under a permit issued by the Kern County agricultural commissioner or sheriff as per the California Food and Agricultural Code, Section 80071-80075. Avoidance of CDNPA plants may be possible along gen-tie routes. However, in the solar array areas and along collector lines, some of these plants could be relocated off-site or replanted on-site during project restoration.

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APPENDIX A
Plant List

FAMILY SCIENTIFIC NAME	COMMON NAME	HABIT	California City	Kern Co.
EUDICOT FLOWERING PLANTS				
APIACEAE	**SUNFLOWER FAMILY**			
Lomatium mohavense	Mojave parsley	perennial herb	X	X
ASTERACEAE	**SUNFLOWER FAMILY**			
Acamptopappus sphaerocephalus var. *hirtellus*	goldenhead	shrub	X	X
Ambrosia acanthicarpa	annual bur-sage	annual herb	X	X
Ambrosia dumosa	burro bush	shrub	X	X
Ambrosia salsola	cheesebush	shrub	X	X
Chaenactis fremontii	Fremont pincushion	annual herb	X	X
Encelia actoni	Acton encelia	shrub	X	
Ericameria cooperi var. *cooperi*	Cooper's goldenbush	shrub	X	
Ericameria nauseosa	rubber rabbitbrush	shrub	X	X
Ericameria paniculata	black-banded rabbitbrush	shrub	X	
Eriophyllum mohavense	Barstow woolly sunflower	annual herb	X	
Eriophyllum wallacei	Wallace's woolly daisy	annual herb	X	X
Lasthenia gracilis	common goldfields	annual herb	X	X
Layia glandulosa	white layia	annual herb	X	X
Lepidospartum squamatum	scale-broom	shrub	X	
Leptosyne bigelovii	Bigelow tickseed	annual herb	X	X
Lessingia glandulifera	vinegar-weed	annual herb	X	
Malacothrix coulteri	snake's-head	annual herb	X	X
Malacothrix glabrata	desert dandelion	annual herb	X	X
Rafinesquia neomexicana	desert chicory	annual herb	X	X
Stephanomeria exigua	annual mitra	annual herb	X	
Stephanomeria pauciflora	wire-lettuce	perennial herb/subshrub	X	X
Stylocline cf. *psilocarphoides*	Peck neststraw	annual herb		X
Tetradymia stenolepis	horsebrush	shrub	X	X
BORAGINACEAE	**BORAGE FAMILY**			
Amsinckia menziesii	common fiddleneck	annual herb	X	X
Amsinckia tessellata var. *tessellata*	desert fiddleneck	annual herb	X	X
Cryptantha angustifolia	narrow-leaved cryptantha	annual herb		X
Cryptantha circumscissa var. *circumscissa*	capped cryptantha	annual herb	X	X
Cryptantha dumetorum	scrambling cryptantha	annual herb	X	X
Cryptantha micrantha var. *micrantha*	red-root cryptantha	annual herb	X	X
Cryptantha nevadensis var. *nevadensis*	Nevada cryptantha	annual herb		X
Cryptantha pterocarya var. *pterocarya*	wing-nut cryptantha	annual herb	X	X
Pectocarya heterocarpa	mixed-nut pectocarya	annual herb	X	X
Pectocarya linearis ssp. *ferocula*	narrow-toothed pectocarya	annual herb	X	X
Pectocarya penicillata	northern pectocarya	annual herb	X	X
Pectocarya platycarpa	wide-toothed pectocarya	annual herb		X
Phacelia vallis-mortae	Death Valley phacelia	annual herb	X	X
Plagiobothrys arizonicus	Arizona popcornflower	annual herb	X	X
BRASSICACEAE	**MUSTARD FAMILY**			
**Brassica tournefortii*	Saharan mustard	annual herb		X
Caulanthus lasiophyllus	California mustard	annual herb	X	X
Descurainia pinnata	western tansy-mustard	annual herb	X	
**Descurainia sophia*	flixweed	annual herb	X	
**Hirschfeldia incana*	Mediterranean mustard	annual/perennial herb	X	X
Lepidium flavum	yellow peppergrass	annual herb	X	X

FAMILY SCIENTIFIC NAME	COMMON NAME	HABIT	California City	Kern Co.
Lepidium fremontii	bush peppergrass	shrub	X	
Lepidium lasiocarpum ssp. *lasiocarpum*	peppergrass	annual herb	X	X
**Sisymbrium altissimum*	tumble mustard	annual herb	X	X
**Sisymbrium orientale*	oriental hedge mustard	annual herb	X	X
Streptanthella longirostris	streptanthella	annual herb		X
Tropidocarpum gracile	slender keel-fruit	annual herb	X	X
CACTACEAE	**CACTUS FAMILY**			
Cylindropuntia echinocarpa	golden cholla	perennial stem succulent	X	X
CHENOPODIACEAE	**GOOSEFOOT FAMILY**			
Grayia spinosa	spiny hope-sage	shrub	X	X
Krascheninnikovia lanata	winter fat	shrub	X	X
**Salsola tragus*	Russian-thistle, tumbleweed	annual herb	X	
CUCURBITACEAE	**GOURD FAMILY**			
Cucurbita palmata	coyote melon	perennial herb		X
EUPHORBIACEAE	**SPURGE FAMILY**			
Croton setigerus	turkey-mullein	annual herb	X	X
Euphorbia albomarginata	rattlesnake weed	perennial herb	X	X
Stillingia paucidentata	stillingia	perennial herb	X	
FABACEAE	**LEGUME FAMILY**			
Acmispon brachycarpus	short-podded acmispon	annual herb	X	X
Astragalus acutirostris	keel beak	annual herb	X	X
Astragalus didymocarpus	two-seeded milkvetch	annual herb		X
Astragalus layneae	Layne milkvetch	annual herb	X	X
Astragalus lentiginosus var. *variabilis*	freckled milkvetch	perennial herb	X	X
Lupinus odoratus	Mojave lupine	annual herb	X	
Lupinus shockleyi	desert lupine	annual herb	X	X
Senna armata	desert senna	shrub	X	X
GERANIACEAE	**GERANIUM FAMILY**			
**Erodium cicutarium*	red-stemmed filaree	annual herb	X	X
LAMIACEAE	**MINT FAMILY**			
Salvia carduacea	thistle sage	annual herb	X	
Scutellaria mexicana	bladder-sage	shrub	X	X
LOASACEAE	**LOASA FAMILY**			
Mentzelia albicaulis	white-stemmed stick-leaf	annual herb	X	X
Petalonyx thurberi ssp. *thurberi*	sandpaper plant	shrub	X	X
MALVACEAE	**MYRTLE FAMILY**			
Eremalche exilis	white mallow	annual herb	X	X
Sphaeralcea ambigua var. *ambigua*	apricot mallow	subshrub	X	
MONTIACEAE	**MINER'S LETTUCE FAMILY**			
Calyptridium monandrum	sand cress	annual herb		X
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**			
Abronia sp.	sand-verbina	annual herb	X	
Mirabilis laevis	wishbone bush	perennial herb	X	
ONAGRACEAE	**EVENING PRIMROSE FAMILY**			
Camissonia campestris ssp. *campestris*	Mojave sun cup	annual herb	X	X
Chylismia claviformis	brown-eyed primrose	annual herb	X	
Tetrapteron palmeri	Palmer primrose	annual herb	X	X
OROBANCHACEAE	**BROOMRAPE FAMILY**			
Castilleja exserta ssp. *exserta*	purple owl's-clover	annual herb	X	

FAMILY SCIENTIFIC NAME	COMMON NAME	HABIT	California City	Kern Co.
PAPAVERACEAE	**POPPY FAMILY**			
Eschscholzia minutiflora	little gold-poppy	annual herb	X	X
POLEMONIACEAE	**PHLOX FAMILY**			
Eriastrum sp.	Eriastrum	annual herb	X	X
Gilia latiflora ssp. *davyi*	broad-flowered gilia	annual herb	X	X
Gilia minor	little gilia	annual herb	X	
Gilia sp.	gilia	annual herb	X	
Linanthus dichotomus ssp. *dichotomus*	evening snow	annual herb	X	X
Linanthus parryae	sand blossoms	annual herb	X	X
Loeseliastrum sp.		annual herb		X
POLYGONACEAE	**BUCKWHEAT FAMILY**			
Chorizanthe spinosa	Mojave spineflower	annual herb	X	
Chorizanthe rigida	devil's spineflower	annual herb	X	
Chorizanthe watsonii	Watson's spineflower	annual herb		X
Eriogonum fasciculatum var. *polifolium*	Mojave Desert wild buckwheat	shrub		
Eriogonum gracillimum	rose-and-white wild buckwheat	annual herb	X	X
Eriogonum pusillum	yellow turbans	annual herb	X	
Eriogonum trichopes	little desert trumpet	annual herb	X	
Eriogonum viridescens	two-toothed wild buckwheat	annual herb	X	
Rumex hymenosepalus	wild-rhubarb	perennial herb	X	
SOLANACEAE	**NIGHTSHADE FAMILY**			
Datura wrightii	jimson weed	annual/perennial herb	X	X
Lycium andersonii	desert tomato	shrub	X	X
Lycium cooperi	box-thorn	shrub	X	X
ZYGOPHYLLACEAE	**CALTROP FAMILY**			
Larrea tridentata	creosote bush	shrub	X	X
Tribulus terrestris	puncture vine	annual herb	X	
MONOCOT FLOWERING PLANTS				
AGAVACEAE	**CENTURY PLANT FAMILY**			
Yucca brevifolia	Joshua tree	perennial leaf succulent		X
POACEAE	**GRASS FAMILY**			
Bromus berteroanus	Chilean chess	annual grass		X
**Bromus diandrus*	ripgut grass	annual grass	X	X
**Bromus madritensis* ssp. *rubens*	red brome, foxtail chess	annual grass	X	X
**Bromus tectorum*	cheatgrass	annual grass	X	X
**Cynodon dactylon*	Bermuda grass	perennial grass		X
Elymus elymoides	squirreltail	perennial grass		X
**Hordeum murinum*	wall barley	annual grass	X	X
**Schismus* sp.	Mediterranean grass	annual grass	X	X
Stipa hymenoides	sand rice grass	perennial grass	X	X
Stipa speciosa	desert needlegrass	perennial grass	X	
THEMIDACEAE	**BRODIAEA FAMILY**			
Dichelostemma capitatum ssp. *pauciflorum*	blue dicks	cormous perennial herb	X	X

* = non-native weed

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Appendix D-4

Jurisdictional Aquatic Resources Delineation Report

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Kudu Solar Farm Preliminary Jurisdictional Aquatic Resources Delineation Report

Kudu Solar Farm

March 27, 2020

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Executive Summary

Stantec conducted an informational review and field survey to delineate potentially jurisdictional aquatic features for the 2,183-acre Kudu Solar Project Study Area (Study area) located in southeastern Kern County, California (See Figure 1 for Project location). This information will be used to support agency review of the proposed Project, and eventual review and permitting pursuant to the California Environmental Quality Act.

Stantec biologists delineated one aquatic resource feature within the Project area consisting of an intermittent stream. The intermittent stream was characterized by examining and documenting features of the ordinary high water mark (i.e., a line on the shore established by the fluctuations of water or indicated by characteristics of the soil or other features), bed and bank, and other hydrologic indicators to delineate the full extent of those watercourses. In addition, three ephemeral streams were mapped in the Project area by a previously conducted delineation for the Eland 1 Solar Farm Project that has overlap with the Project area.

Given the recognized geographic isolation of the Fremont Hydrologic Unit, within which the Project area occurs, and the subsequent lack of hydrologic connectivity to other traditionally navigable waters, the drainage feature within the Project area is not subject to federal jurisdiction by the U.S. Army Corps of Engineers (see Appendix A). However, following a detailed analysis of hydrologic conditions, the presence of an ordinary high water mark, and other indicators specific to aquatic resources, it has been determined that there are approximately 0.149 acres of aquatic resources occurring within the Project area that may be subject to regulation by the state. State agencies responsible for regulating these waters include the Regional Water Quality Control Board and the California Department of Fish and Wildlife.

Abbreviations

°F	degrees Fahrenheit
AC	alternating electrical current
Applicant	69SV 8me LLC
CDFW	California Department of Fish and Wildlife
CO_2e	carbon dioxide equivalent
CUP	conditional use permit
DC	direct electrical current
ESS	energy storage system
gen-tie	generation tie
ISO	International Organization for Standardization
kV	kilovolt
MESA	Mapping Episodic Stream Activity
MW	megawatt
MWh	megawatt hour
NRCS	National Resource Conservation Service
NWI	National Wetlands Inventory
OHWM	Ordinary high water mark
O&M	operations and maintenance
Project	Kudu Solar Farm Project
Project area	Kudu Solar Farm Project Area
PV	photovoltaic
RWQCB	Regional Water Quality Control Board

USACE	U.S. Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey

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1.0 PROJECT DESCRIPTION

1.1 PROJECT INFORMATION

69SV 8me LLC (applicant) is seeking approval of a conditional use permits (CUPs) for the construction and operation of an up to 500 megawatt (MW)-alternating electrical current (AC) utility-scale solar farm with energy storage, known as the Kudu Solar Project (Project) in unincorporated Kern County and California City, California (Figure 1). The applicant proposes to construct, own, and operate the Project and would secure CUPs from both Kern County and California City along with permits from other relevant agencies as required by law.

1.1.1 Project Site Information

The Project is comprised of 75 assessor's parcels (Project area) totaling approximately 1,896 gross acres (Table 1). In addition, a 100' buffer around project roads and collector lines was included to encompass the Study Area of approximately 2,183 acres. The permanent disturbance acreage associated with development of the solar facility and associated infrastructure (Project site) within the Project area would be less than the gross acreage of the Project area. The Project area is adjacent to the approved Eland 1 Solar Farm, south of the existing Springbok 1 & 2 Solar Farms, and southeast of the Los Angeles Department of Water and Power (LADWP) Beacon Solar facility. The topography of the Project area is relatively flat.

1.1.2 Location

The Project area is located in portions of unincorporated Kern County and California City, north of the California City Municipal Airport. The majority of the Project is bisected by Washburn Boulevard (which is also the California City boundary) and Neuralia Road (Figure 1).

Table 1: Kudu Parcels

No.	APN	Acres
California City		
1	302-020-08	40.17
2	302-020-09	80.09
3	302-020-11	163.68
4	302-020-14	40.99
5	302-020-15	10.52
6	302-020-16	10.15
7	302-020-17	9.59
8	302-020-18	9.98
9	302-290-03	83.58
11	302-321-01	124.49

12	302-322-01	10.10
13	302-322-02	10.09
14	302-322-04	10.24
15	302-322-05	10.28
16	302-322-06	40.04
17	302-322-08	10.33
18	302-322-09	40.50
19	302-322-10	10.27
20	302-322-11	10.29
21	302-325-49	9.74
22	302-330-33	20.21
23	302-330-37	20.38
24	302-341-29	168.79
25	302-342-01	40.23
26	302-342-11	2.67
27	302-342-12	2.66
28	302-342-19	29.69
29	302-342-25	40.77
30	302-342-26	39.89
31	302-342-27	40.29
32	302-342-28	40.68
33	302-470-14	20.20
	California City Total	**1,222.59**
Unincorporated Kern County		
34	469-170-10	10.02
35	469-170-18	39.49
36	470-020-08	2.31
37	470-020-19	4.38
38	470-030-01	79.22
39	470-080-15	20.27
40	470-080-16	10.07
41	470-080-17	10.10
42	470-080-32	10.07
43	470-151-09	19.62
44	470-151-15	20.23
45	470-151-16	20.40
46	470-151-17	19.98

47	470-152-01	39.32
48	470-152-18	10.32
49	470-152-19	4.93
50	470-302-24	2.59
51	470-302-25	2.62
52	470-302-26	2.52
53	470-322-13	2.39
54	470-322-15	9.96
55	470-330-01	5.06
56	470-330-02	4.77
57	470-330-03	19.86
58	470-330-04	20.15
59	470-330-06	9.95
60	470-330-07	10.02
61	470-330-14	4.89
62	470-330-15	5.23
63	470-350-04	18.65
64	470-350-05	18.91
65	470-350-06	18.89
66	470-350-07	18.57
67	470-350-08	19.93
68	470-360-01	18.43
69	470-360-02	17.85
70	470-360-05	21.15
71	470-380-01	19.92
72	470-380-04	21.35
73	470-380-05	17.34
74	470-380-06	19.88
75	470-380-07	21.95
	Unincorporated Kern County Total	**673.55**
	Total	**1,896.14**

Note:
APN = Assessor Parcel Number

1.2 DESCRIPTION OF PROPOSED PROJECT

The applicant proposes to develop a photovoltaic (PV) energy facility and energy storage system (ESS) that is capable of producing up to 500 MW of AC power, and 600 MW hours (MWh) of storage capacity. Power generated by the Project would be collected using up to 230 kilovolt (kV) collector lines which run underground and/or overhead

to a dedicated Project substation, or to the Eland 1 Substation. The Project may also share the Eland 1 generation tie- (gen-tie) line facilities, or gen-tie rights-of-way. The Eland 1 substation and gen-tie line have gone through environmental analysis and subsequent approval by Kern County and are not part of the Project.

Additionally, the Project may share an operations & maintenance (O&M) building, ESS, and/or transmission facilities, as necessary, with one or more nearby solar Projects, and/or may be remotely operated. Any unused O&M building, substation, and/or transmission facility areas onsite may be covered by solar panels under such scenarios.

The applicant has considered the following in its selection of the Project site for detailed evaluation:

- Land availability (approximately 1,896 gross acres)
- Land use zoning: primarily agriculture located away from high-density residential developments
- Proximity to interconnecting substation (approximately 7 miles away) and ability to share facilities with other solar Projects

Up to 20 full-time employees would operate the Project. Typically, most staff would work during the day shift (sunrise to sunset), and the remainder would work during the night shifts and weekends. If the Project shared O&M, substation, and/or transmission facilities with one or more nearby solar Projects, and/or became remotely, the Project's onsite staff could be reduced.

After the useful life of the Project, the panels would be disassembled from the mounting frames, and the Project site would be restored to its pre-development condition.

1.2.1 PV Module Configuration

The Project would use PV panels or modules[1] on mounting frameworks to convert sunlight into electricity. Individual panels would be installed on either fixed-tilt or tracker mount systems (single- or dual- axis, using galvanized steel or aluminum). If the panels are configured for fixed tilt, they would be oriented toward the south. For tracking systems, the panels would rotate to follow the sun over the course of the day. Although the panels could stand up to 20 feet high, depending on the mounting system used and county building codes, panels are expected to remain between 6 and 8 feet high.

The foundations for the mounting structures can extend up to 10 feet below ground, depending on the mounting structure, soil conditions, and wind loads, and may be encased in concrete or use small concrete footings. Final solar panel layout and spacing would be optimized for site characteristics and the desired energy production profile.

1.2.2 Inverter Stations

Direct Current (DC) energy is delivered from the panels via cables to inverter stations, generally located near the center of each block. Inverter stations convert the DC energy to AC energy, which can be dispatched to the

[1] Including but not limited to bi-facial or concentrated photovoltaic (CPV) technology

transmission system. Inverter stations are typically comprised of one or more inverter modules with a rated power of up to 2 MW each, a unit transformer, and voltage switch gear. The unit transformer and voltage switch gear are housed in steel enclosures, while the inverter module(s) are housed in cabinets. Depending on the supplier selected, the inverter station may lie within an enclosed or canopied metal structure, typically on a skid or concrete mounted pad.

1.2.3 Energy Storage System

The Project may include one or more ESS, located at or near a substation/switchyard (onsite or shared) and/or at the inverter stations, or elsewhere onsite. Such large-scale ESSs would be up to 600 MW AC in capacity and occupy up to 25 acres in total area. ESSs consist of modular and scalable battery packs and battery control systems that conform to U.S. national safety standards. The ESS modules, which could include commercially available lithium or flow batteries, typically consist of International Organization of Standardization (ISO) standard containers (40 feet long by 8 feet wide by 8 feet high) housed in pad- or post-mounted, stackable metal structures, but may also be housed in a dedicated building(s) in compliance with applicable regulations. The maximum height of the structure is not expected to exceed 25 feet. The actual dimensions and number of energy storage modules and structures would vary depending on the application, supplier, and configuration chosen, as well as on offtaker/power purchase agreement requirements and on county building standards. The Project may share an ESS with one or more nearby solar Projects or may operate one or more standalone ESS facilities within the Project site.

1.2.4 Substation

Output from the inverter stations would be transferred via electrical conduits and electrical conductor wires to one or more Project substations or switchyards (collectively referred to as substations herein), or the Eland 1 Substation. The Project and any associated ESS would have their own dedicated substation equipment located either within the Project site, or within the Eland 1 Substation footprint. Dedicated equipment may incorporate several components, including auxiliary power transformers, distribution cabinets, revenue metering systems, a microwave transmission tower, and voltage switch gear. Each substation would occupy an area of up to approximately 5 acres, secured separately by a chain-link fence. The final location(s) of each component would be determined before the issuance of building permits.

Substations typically include a small control building (roughly 500 square feet) standing 10 feet tall. The building would either be prefabricated concrete or steel housing, with rooms for the voltage switch gear and metering equipment, a room for the station supply transformer, and a separate control technology room within which the main computer, intrusion detection system, and main distribution equipment are housed. Components of this building (e.g., control technology room and intrusion detection system) may instead be located at an O&M building below.

1.2.5 Generation-tie Line

Power generated by the Project would be transmitted to the Los Angeles Department of Water and Power (LADWP) Barren Ridge Substation via a 230 kV overhead and/or underground gen-tie. The Project intends to share the Eland 1 gen-tie line and right-of-way, which may require stringing additional line on the Eland 1 transmission structures, or increasing the capacity of the Eland 1 gen-tie by reconductoring the line with thicker cable. If the Project cannot share

these facilities, a new gen-tie line would be developed within one of the routes previously analyzed in the Eland 1 Environmental Impact Report.

1.2.6 Water Usage

Water demand for panel washing and O&M use is not expected to exceed 50 acre-feet per year (afy). Water usage during construction, primarily for dust-suppression purposes, is not expected to exceed 400 acre-feet (af). It is anticipated that water would be obtained from existing onsite wells. Alternatively, water may be obtained from one or more offsite source(s) and delivered to the Project area via truck. If offsite water is used, it would likely be obtained from one of the nearby Springbok Projects, the Eland 1 Project, or from a commercial source. If the applicant determines that offsite water would be used, the applicant would submit a Will Serve Letter from the proposed offsite water purveyor(s). A small water treatment system may be installed to provide deionized water for panel washing.

1.2.7 Water Storage Tank(s)

One or more aboveground water storage tanks with a total capacity of up to 50,000 gallons may be placed onsite near the O&M building. The storage tank(s) near the O&M building would have the appropriate fire department connections to be used for fire suppression.

1.2.8 Operations and Maintenance Building

The Project may include an O&M building approximately 40 feet long by 80 feet wide, with associated onsite parking. The O&M building would be steel framed, with metal siding and roof panels. The O&M building may include the following:

1. Office
2. Repair building/parts storage
3. Control room
4. Restroom
5. Septic tank and leach field

Roads, driveways, and parking lot entrances would be constructed in accordance with Kern County and California City improvement standards. Parking spaces and walkways would be constructed in conformance with all California accessibility regulations.

.

1.2.9 Project Site Security and Fencing

The Project site would be enclosed within a chain link fence with barbed wire measuring up to 8 feet above finished grade. An intrusion alarm system would be integrated into the perimeter fence, with intrusion detection cabinets placed every 1,500 feet along the perimeter fence. An intrusions control unit or similar technology may include additional security measures including but not limited to barbed wire, low voltage fencing with warning reflective signage, controlled access points, security alarms, security camera systems, and security guard vehicle patrols to deter trespassing and/or unauthorized activities .

Gates would be maintained at the main entrances to the Project site to restrict access. Project site access would be provided to offsite emergency responders in the event of an after-hours emergency. Enclosure gates would be manually operated with a key provided in an identified key box location.

1.2.10 Project Lighting

Project lighting would be directed away from public rights-of-way and would be minimal. Site lighting may include motion sensor lights for added security purposes. Lighting would be of the lowest intensity, in compliance with any applicable regulations, measured at the property line after dark.

1.3 ANNUAL PRODUCTION

The Project would generate electrical power during daylight hours. Peak electricity demand in California corresponds with air conditioning use on summer afternoons when ambient temperatures are high. The Project's peak generating capacity corresponds to this time-period. There is no generating capacity between sunset and sunrise due to the lack of solar energy, though power may be released from the ESS at any time of day.

The Project would have a nominal output capacity of up to 500 MW AC and 600 MWh of storage capacity, sufficient to power roughly 240,000 homes and displacing 745,000 tons of carbon dioxide equivalent (CO_2e) per year when compared to a gas-fired power plant or 1,476,000 tons when compared to a coal-fired power plant.

1.4 CONSTRUCTION ACTIVITIES

Site preparation through construction, testing, and commercial operation, is expected to commence as early as Q4 2021 and would extend for 12 to 18 months.

Construction would include the following:

- site preparation
- grading and earthwork
- concrete foundations
- structural steel work
- electrical/instrumentation work
- collector line installation
- architecture and landscaping

No roads would be affected by the Project, except during construction. Construction traffic would access the site from Philips Road, Gantt Road, and Neuralia Road, or through the Eland 1 Project site. Up to 1,000 workers per day (during peak construction periods) would be required during the construction of the Project.

Heavy construction would occur between 6:00 AM and 5:00 PM, Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Some activities may continue 24 hours per day, seven days per week. Low-level noise activities may occur between 10:00 PM and 7:00 AM. Nighttime activities could include but are not limited to refueling equipment, staging materials, quality assurance and control, and commissioning.

Truck deliveries would normally occur during daylight. However, there would be offloading and/or transporting to the Project area on weekends and during evenings.

Earth-moving is expected to be limited to the construction of the access roads, O&M building, substation, ESS(s), and any stormwater protection or storage (detention) facilities. Final grading may include revegetation with low growing or applying earth-binding materials to disturbed areas.

1.5 WORK FORCE

Once the Project is constructed, maintenance would generally be limited to the following:

1. Cleaning of PV panels
2. Monitoring electricity generation
3. Providing site security
4. Facility maintenance: replacing or repairing inverters, wiring, and PV modules

The project would require up to 20 full-time O&M employees. If the project uses shared O&M, substation, ESS, and/or transmission facilities with any future projects share personnel would reduce O&M staff.

The facility would operate seven days a week, 24 hours a day, generating electricity during normal daylight hours when the solar energy is available. Maintenance activities may occur seven days a week, 24 hours a day to ensure PV panel output when solar energy is available.

1.6 PROJECT FEATURES AND BEST MANAGEMENT PRACTICES

The following sections describe standard Project features and best management practices that would be applied during construction and long-term operation of the Project to maintain safety and minimize or avoid environmental impact.

1.6.1 Waste and Hazardous Materials Management

The Project would have minimal levels of materials onsite that have been defined as hazardous under 40 Code of Federal Regulations (CFR), Part 261. The following materials are expected to be used during the construction, operation, and long-term maintenance of the Project:

- Insulating oil: used for electrical equipment
- Lubricating oil: used for maintenance vehicles
- Various solvents and detergents: equipment cleaning
- Gasoline: used for maintenance vehicles

Hazardous materials and wastes would be managed, used, handled, stored, and transported in accordance with applicable local and state regulations. All hazardous wastes would be maintained at quantities below the threshold requiring a Hazardous Material Management Program (HMMP): one 55-gallon drum. Though not expected, should any onsite storage of hazardous materials exceed one 55-gallon drum, an HMMP would be prepared and implemented.

1.6.2 Spill Prevention and Containment

Less than 55 gallons of hazardous materials would be stored onsite. Spill prevention and containment for construction and operation of the Project would adhere to the Environmental Protection Agency's guidance on Spill Prevention Control and Countermeasures.

1.6.3 Wastewater/Septic System

A standard onsite septic tank and leach field may be used at the O&M building to dispose sanitary wastewater and would be designed to meet O&M guidelines required by Kern County laws, ordinances, regulations, and standards.

1.6.4 Inert Solids

Inert solid wastes resulting from construction activities may include recyclable items such as paper, cardboard, solid concrete and block, metals, wire, glass, type 1-4 plastics, drywall, wood, and lubricating oils. Non-recyclable items include insulation, other plastics, food waste, vinyl flooring and base, carpeting, paint containers, packing materials, and other construction wastes. A construction waste management plan would be prepared for review by the county and California City. Consistent with local regulations and the California Green Building Code, the plan would provide for diversion of a minimum of 50 percent of construction waste from landfill.

Chemical storage tanks (if any) would be designed and installed to meet applicable local and state regulations. Any wastes classified as hazardous, such as solvents, degreasing agents, concrete curing compounds, paints, adhesives, chemicals, or chemical containers, would be stored in an approved storage facility/shed/structure and disposed of as required by local and state regulations. Material quantities of hazardous wastes are not expected.

1.6.5 Health and Safety

Safety precautions and emergency systems would be implemented as part of the design and construction of the Project to ensure safe and reliable operation. Administrative controls would include classroom and hands-on training in O&M procedures, general safety items, and a planned maintenance program. These would work with the system design and monitoring features to enhance safety and reliability.

The Project would have an emergency response plan (ERP). The ERP would address potential emergencies including chemical releases, fires, and injuries. All employees would be provided with communication devices, cell phones, or walkie-talkies to provide aid in the event of an emergency.

2.0 ENVIRONMENTAL SETTING

2.1 TOPOGRAPHY AND SURROUNDING LAND USE

The 2,183 acre Study area is located in portions of unincorporated Kern County and California City, north of the California City Municipal Airport at the base of the eastern foothills of the southernmost portion of the Sierra Nevada Mountains, in Fremont Valley (Figure 1), located within the U.S. Geological Survey (USGS) 7.5-minute Mojave Northeast and California City North topographic quadrangles (USGS 1973, 1994).

Land within and surrounding the Project area is primarily undeveloped, previously disturbed, open space. Undeveloped areas in the Project area have largely been used for agricultural production activities, principally in the form of sheep and cattle grazing. There is no observed or documented interstate or foreign commerce associated with aquatic resources found within the Project area.

The topography of the Project area is relatively flat. However, moderate topographic irregularities and folds are also present. Several previously mapped ephemeral streams occur within the Project area, generally flowing to the northeast and ultimately draining into Koehn Dry Lake, approximately 7 miles northeast of the Project area. Elevations in the Project area range from roughly 2,460 feet above mean sea level at the southwest corner of the Project area to approximately 2,180 feet above mean sea level at the northeast corner of the Project area. As indicated by the topographic contours on the Mojave Northeast and California City North USGS 7.5-minute quadrangles (Figure 2), the terrain within the Project area is oriented from the southwest to the northeast.

2.2 HYDROLOGY

The Project area is situated in the central portion of the roughly 3,366-square mile Antelope-Fremont Valleys Watershed (Hydrologic Unit Code: 18090206), within the 909-square mile Fremont Hydrologic Unit (625.00), and the 719-square mile Koehn Hydrologic Area (625.40), as seen in Figure 2. The Fremont Valley is located along the eastern base of Barren Ridge, which is part of the Tehachapi Mountain range. There is an abrupt change in topography that occurs approximately along the course of the Los Angeles Aqueduct. Over time, erosion has built an alluvial fan from the local drainage sources onto the desert floor. There is a shallow surface water divide between the town of Mojave and the Fremont Valley. Surface drainage south of the divide flows south toward the town of Rosamond, while north of the divide surface, where the Project area is located, drainage flows generally northeast through the relatively flat Fremont Valley to the dry Koehn Lake as part of the Koehn Lake/Cache Creek Watershed. Given the recognized geographic isolation of the Fremont Hydrologic Unit and subsequent lack of hydrologic connectivity to other traditionally navigable waters, the wetland and stream features within the Project area are not subject to federal jurisdiction by the U.S. Army Corps of Engineers (USACE, see Appendix A). Two unnamed “blue-line” waterways occur in the Project area as seen in Figure 2.

The main drainage feature in the watershed is the Cache Creek channel, which is typically dry except during intense precipitation events. Cache Creek is an intermittent stream that flows out of the Tehachapi Mountains southwest of the Project area and turns north to flow approximately 1 mile east of the Project area, eventually draining into Koehn Lake.

There is one unnamed watercourse within the Project area, characterized herein as an intermittent stream, that occurs within the southeast corner of the Project area, flowing north and away from the California City Municipal Airport before eventually draining into Cache Creek.

2.3 CLIMATE

The northern Antelope Valley region is considered a "high desert" environment, with an arid climate that is characterized by hot summer daytime temperatures and cool winter temperatures, with very little precipitation. The weather consists of hot, dry summers and cooler, relatively humid winters. Most of the annual precipitation occurs during the period from November through April in the form of rain and snow. Air temperatures in the Project area range between an average of 45.0 degrees Fahrenheit (ºF) in December and January, and an average of 83.5ºF in July. The annual average temperature is approximately 62.8ºF.

The Western Regional Climate Center indicated that the average annual precipitation in the Mojave Desert is slightly less than 6 inches, with measurable annual rainfall in each of the twelve months (Western Regional Climate Center 2019). On average, January and February have the most precipitation with 1.14 and 1.23 inches, respectively, with only a minimal amount falling as snow.

2.4 VEGETATION

Vegetation communities in the Project area were classified based on descriptions provided in A Manual of California Vegetation, 2nd Edition (Sawyer et al., 2009), including updates from the online version (CNPS 2019), as well as the California Natural Community List (CDFW 2018). Vegetation communities in the Project area consist of creosote bush scrub, creosote bush–white bursage scrub, white bursage scrub, and scale broom scrub. Plant species observed during field surveys were recorded using botanical nomenclature following The Jepson Manual: Vascular Plants of California, Second Edition (Baldwin et al. 2012). Nomenclatural changes made after the publication date of The Jepson Manual follow the Jepson eFlora (Jepson Flora Project 2019). For a full list of plant species observed during the aquatic resource delineation surveys see Appendix B. Representative photos of these communities can be seen in Appendix C.

2.5 VEGETATION ALLIANCES

2.5.1 Creosote Bush Scrub

Creosote bush scrub was the dominant perennial woody plant community in and around the Project area. Creosote bush (*Larrea tridentata*) is the primary component of this open shrub community. Other shrub plant species within the creosote bush scrub vegetation community within the Project area include white bursage (*Ambrosia dumosa*), Mexican bladder sage (*Scutellaria mexicana*), desert senna (*Senna armata*), and saltbush (*Atriplex* spp.). The generally sparse understory within the Project area largely consists of common, non-native annual grasses such as red brome (*Bromus madritensis* ssp. *rubens*), cheat grass (*Bromus tectorum*), Mediterranean grass (*Schismus arabicus*) and wild oats (*Avena* sp.), as well as common native and non-native forbs including devil's lettuce (*Amsinckia tessellata*), redstem filaree (*Erodium cicutarium*), and common phacelia (*Phacelia distans*). Occasional Joshua trees (*Yucca brevifolia*) occur infrequently within the western portion of the Project area. Much of the native vegetation within the Project area has been impacted by various agricultural production processes, particularly sheep,

but there are were no agricultural production processes or activities occurring within the Project area at the time of surveys.

2.5.2 Creosote Bush–White Bursage Scrub

Creosote bush–white bursage scrub also commonly occurs within the Project area. This community is similar to creosote bush scrub above but is comprised of higher amounts of white bursage and more open space between small to medium sized creosote shrubs. Non-native grasses, including cheat grass and red brome, as well the herbaceous annual plant species mentioned above, were also commonly observed. This vegetation community occurs in the southern portion of the Project area.

2.5.3 White Bursage Scrub

This vegetation community occurs in portions of the Project area that were previously used for grazing or other various agricultural production processes, and is comprised of generally smaller shrub species, specifically the dominant plant species within this vegetation community: white bursage. White bursage is somewhat more resilient than creosote bush regarding disturbance-related activities. As a result, in portions of the Project area where this vegetation type was previously disturbed, a distinct pattern of nearly recovered white bursage occurs with little to no creosote bush. Additional associate plant species commonly observed within this vegetation community include rubber rabbitbrush (*Ericameria nauesosa*) and non-native grasses such as cheat grass, Mediterranean grass, and redstem filaree.

2.5.4 Scale Broom Scrub

The dominant, nearly exclusive plant species within this vegetation type is scale broom (*Lepidospartum squamatum*). Scale broom scrub is the dominant vegetation community within the intermittent stream occurring within the southern portion of the Project area. The density within this vegetation community is generally greater than that in the surrounding dryland areas, presumably due to its association with aquatic resources, though this vegetation community is still relatively open and consists of a sparse understory of grasses and forbs concentrated around the bases of shrubs.

2.6 OTHER COVER TYPES

2.6.1 Disturbed/Developed

This classification was used to indicate roadways and other developed areas such as residences and solar energy generation facilities. Where vegetated, these areas are composed of ruderal pioneer plant species that readily colonize disturbed soils and thrive as a result of anthropogenic impacts. Plant species commonly observed within disturbed/developed portions of the Project area include non-native invasive plant species such as Mediterranean grass, red brome, cheat grass, Russian thistle (*Salsola tragus*), and Sahara mustard (*Brassica tournefortii*).

2.7 SOIL

The Project area is located within the Mojave Desert Geomorphic Province, a region of isolated interior mountain ranges separated by desert plains. Four soil map units within the Project area have been mapped by the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS 2019) (see Table 2 and Figure 3). None of the soils in these map units are rated as hydric or contain hydric components.

Table 2: Soil Map Units Within the Project area

Map Unit Name	Map Unit Symbol	Hydric Rating Status
Cajon loamy sand, 0 to 5 percent slopes	114	N
Cajon gravelly loamy sand, 0 to 9 percent slopes	116	N
Garlock loamy sand, 2 to 9 percent slopes	137	N
Neuralia sandy loam, 2 to 5 percent slopes	154	N

Source: NRCS 2019

3.0 METHODS

3.1 DESKTOP REVIEW

Prior to conducting fieldwork, the following resources were reviewed:

- U.S. Fish and Wildlife Service National Wetland Inventory (USFWS 2019);
- Google Earth color aerial imagery dating back to 1985;
- USGS 7.5-minute topographic maps (USGS 1973, 1994);
- USGS National Hydrography Dataset (2017); and
- Eland 1 Solar Farm Preliminary Jurisdictional Waters/Wetlands Delineation Report (Stantec 2018).

These resources were used to identify potential aquatic resource features based on changes in vegetation, topographic changes, or visible drainage patterns. Prior to conducting field surveys, potential aquatic resource features were digitized into a working field map that was then used as a reference during field surveys.

3.2 FIELD ASSESSMENT METHODOLOGY

Prior to conducting the field assessment, Stantec reviewed current and historic aerial photographs, detailed topographic maps, the National Wetlands Inventory (USFWS 2019), the National Hydrography Dataset (USGS 2017), and soil maps of the Project Area (NRCS 2019) in order to evaluate the potentially active channels and wetland features that occur within the Project area. In addition, three aquatic resource features delineated within the adjacent Eland 1 Solar Farm Preliminary Jurisdictional Waters/Wetlands Delineation Report (Stantec 2018) were also evaluated, as a result of overlap between the two solar farm Project areas.

Stantec biologists John Holson and Sheryl Creer conducted the routine delineation of potential jurisdictional wetlands, other “waters of the U.S.,” waters of the state, and riparian habitat on September 9, 10, and 11, 2019. The entire Project area was systematically surveyed on foot in the form of walking intuitively controlled transects, ensuring total search coverage. The routine delineation of wetlands and “other waters” of the United States is based on field observations of positive indicators for wetland vegetation, hydrology, and soils; and indicators of an ordinary high water mark (OHWM). The methodology employed during the delineation was consistent with the guidelines outlined in the Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987), Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008a), and A Field Guide to the Identification of the OHWM in the Arid West Region of the Western United States (USACE 2008b).

Taxonomic nomenclature for plant species was applied in accordance with The Jepson Manual: Vascular Plants of California (Baldwin et al. 2012). The wetland indicator status for plant species was determined by using The National Wetland Plant List (Lichvar et al. 2016). The “50/20 Rule” or “Prevalence Index” was utilized to determine plant dominance (USACE 2008a). The presence of wetland hydrology was assessed by evaluating the presence of primary and secondary hydrology indicators (USACE 2008a). Aquatic resource feature types were classified based on the Cowardin classification system (Cowardin et al. 1979), a system in use by the existing National Wetlands Inventory mapping database. When aquatic resource feature types were delineated within the Project area that were not included in the existing National Wetlands Inventory database, a Cowardin classification type was assigned.

Biologists dug soil pits in each potential wetland feature and representative upland features to a depth sufficient to document the presence or absence of hydric soil indicators or indicators of wetland hydrology. The hydric status of each soil map unit occurring in the Project area was reviewed using the Web Soil Survey (NRCS 2019). Soil colors were determined using a Munsell® soil color chart. Biologists selected at least one set of sample points to best represent the wetland feature type as well as the adjacent uplands. In addition, biologists also sampled potential wetland areas to confirm wetland or upland conditions. Wetlands and other waters exhibiting atypical conditions were delineated in accordance with the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008b) for situations involving atypical hydric soils. Using this methodology, biologists undertook one upland sample, SP-1, as depicted in Figure 4 and as detailed within Appendix D.

For the linear drainage features (i.e., streams), biologists did not collect paired data points or excavate soil test pits within the ephemeral or intermittent drainages in the Project area as these aquatic resource features are contained wholly within the bed and bank of a dry wash or stream, thus conforming to the definition of “riverine” and “other waters”; these features were delineated using methodologies as outlined by the USACE and the California Department of Fish and Wildlife (CDFW), described in detail below.

The USACE methodology was conducted using A Field Guide to the Identification of the OHWM in the Arid West Region of the Western United States (USACE 2008b), in which one OHWM data point was recorded for each drainage type to document contemporary physical characteristics. Physical characteristics of an OHWM include but are not limited to a natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, presence of litter and debris, leaf litter disturbed or washed away, scour, deposition, presence of bed and bank, and water staining. Biologists selected one OHWM data point (OHWM-1) to characterize and describe the intermittent drainage observed within the Project area, as depicted in Figure 4 and Appendix E.

CDFW asserts jurisdiction over any river, stream, or lake within the State of California, including both episodic and perennial waterways. These may include ephemeral streams, ephemeral washes, playas, and other watercourses with subsurface flow and episodic water regimes. The sampling methodology for these areas was determined via Mapping Episodic Stream Activity Field Guide (MESA) (Vyverberg and Brady 2013). This protocol outlines mapping methodologies specifically for desert watercourses and playas, as these areas are prone to intense, episodic precipitation events (i.e., flash floods). This methodology utilizes a transect sampling method and collects similar information as described above in the USACE methodology for mapping OHWM (USACE 2008b) but in more detail and with more attention to indicators unique to aquatic resource features occurring within desert environs. Based on this approach, eight transects were sampled across areas that were previously mapped by National Wetlands Inventory (NWI) or contained aerial signatures consistent with aquatic resource features, as depicted in Appendix C, Figure 4, and Appendix F.

Waters of the state administered by the Regional Water Quality Control Board, include all waters of the U.S., all surface waters that are not waters of the U.S. (i.e., non-jurisdictional wetlands), groundwater, and territorial seas. Within the Project area, biologists determined the boundaries of waters of the state using the same method used to delineate non-wetland waters of the U.S. as described above. This included delineating all potentially jurisdictional features based on the limits of the top of banks as determined by changes in physical and biological features, such as bank erosion, deposited vegetation or debris, and riparian vegetative characteristics. CDFW jurisdiction was delineated as the top of the banks of the channels, and no riparian habitat was observed within the Project area.

Biologists mapped the boundaries and linear extents of aquatic resource features and the associated data points and/or transects using a Trimble Mapping Grade Global Positioning System, capable of sub-meter accuracy. Aquatic resource features that were evident on publicly available aerial imagery were digitized and subsequently field verified by biologists for accuracy. The Global Positioning System data and digitized data were overlaid onto an aerial photograph of the Project area to develop the Aquatic Resources Map.

4.0 RESULTS

The Project area was deemed to have no surface connectivity to a traditionally navigable water, and therefore, no features mentioned in this report would be subject to the jurisdiction of USACE (see Appendix A); however, this determination still requires formal verification from USACE.

One type of featurs that may be subject to the jurisdiction of the Regional Water Quality Control Board and CDFW was delineated during the most recent surveys: one intermittent stream (See Figure 4 for feature locations and Appendix C for representative photos), described below.

Table 3: Summary of Wetlands and Other Waters in the Project Area

Feature Name	Potential Waters Type	Cowardin Type[1]	Vegetation Type	Total Acreage in Project Area
Previously Mapped Jurisdictional Features in Eland 1 Aquatic Resources Delineation (Stantec 2018)				
ES-39	Ephemeral Stream	R4SB	Unvegetated	0.008
ES-40	Ephemeral Stream	R4SB	Unvegetated	0.005
ES-41	Ephemeral Stream	R4SB	Unvegetated	0.002
Jurisdictional Features Mapped in Kudu Aquatic Resources Surveys				
CDFW-01	Intermittent Stream	R4SB	Scale Broom Scrub	0.131
			Total	**0.149**

1. Cowardin et al. 1979

4.1 PREVIOUSLY MAPPED JURISDICTIONAL FEATURES

4.1.1 Ephemeral Streams from the Eland 1 Preliminary Jurisdictional Waters/Wetlands Delineation Report

Three ephemeral streams were delineated as a result of efforts resulting in the Eland 1 Solar Farm Preliminary Jurisdictional Waters/Wetlands Delineation Report (Stantec 2018), as depicted in Figure 4. These ephemeral streams were verified and confirmed by biologists, the details being provided within the report and in Table 3 above, for a total of 0.018 acre within the Project area.

4.2 JURISDICTIONAL FEATURES

4.2.1 Intermittent Stream

One intermittent stream (CDFW-01) was observed and documented within the southern portion of the Project area just north of the California City Municipal Airport, with 0.131 acre occurring in the Project area (Figure 4). During the delineation, water was observed occurring within the stream (see Appendix C, Photos 16 and 17), originating from an underground source that intersects the ground surface approximately 25 feet south of the Project area. Water was observed occurring in approximately 140 feet of the stream channel, flowing north from the southern boundary of the Project area before flowing underground. This stream appears to dissipate in the open space east of the Project area; however, the water does eventually drain into Cache Creek to the northeast, the main drainage that flows into Koehn Lake. The vegetation within this feature consists of scale broom scrub, as described above and seen in Appendix C, Photos 19 and 20. This stream was delineated using the presence of geomorphic and vegetative OHWM and MESA indicators, as observed in Appendix E, OHWM-1, and Appendix F, Transect 4. Indicators observed within this aquatic resource feature included the presence of a defined bed and bank, crested ripples, organic drift, wracking, cut banks, exposed roots, crested ripples, changes in vegetation communities, and the presence of water.

4.3 NON-JURISDICTIONAL FEATURES

4.3.1 Calciferous Alkali Sink

As a result of a detailed analysis of aerial imagery, several defined aerial signatures were identified occurring within the southwestern portion of the Project area. These signatures coincide with features currently documented within the NWI database and are classified as blue-line streams in the USGS NE Mojave topographic quadrangle. To determine if the aerial signatures occur in conjunction with aquatic resource features, biologists documented one sample point (SP-1) and two transects (Transects 2 and 3) within these aerial signatures. No wetland hydrology indicators, hydrophytic vegetation, or hydric soil indicators were observed, and there was no evidence of an OHWM. Slight surface soil cracking was observed in this area, albeit sporadically and inconsistently, and according to guidance provided by the USACE (2008a), while surface soils cracks are often seen in areas where water has ponded long enough to destroy surface soil structure, they may also be observed in non-wetland settings.

4.3.2 Swales

There are numerous low-grade swales in the Project area, which appear in aerial imagery and in the NWI database. Swales are generally subtle topographic features, typically occurring on nearly flat surfaces that may convey water across upland areas during and shortly following precipitation events, (USACE 2008a, Vyverberg and Brady 2013). The swales within the Project area do not contain any OHWM indicators, nor do they exhibit any evidence of wetland hydrology, hydrophytic vegetation, or hydric soil indicators.

4.3.3 Culverts

Two culverts were observed and mapped on Neuralia Road on the east side of the Project area; however, these culverts lacked an OHWM or a defined bed and bank. Indicators of hydrophytic vegetation, hydric soil indicators, and wetland hydrology indicators were also absent.

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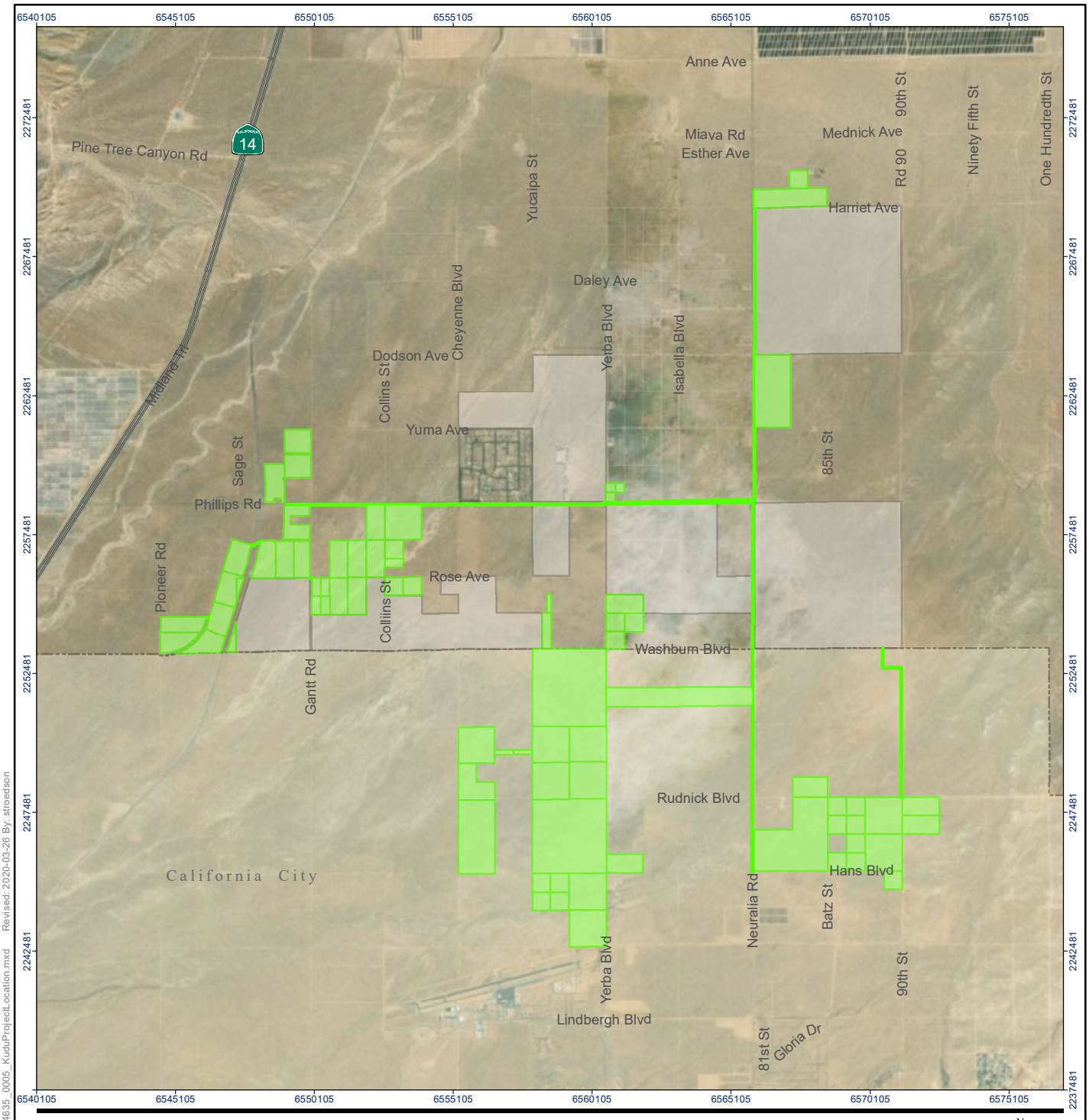

Kudu Collector Route
Kudu Solar Project
Eland 1 Solar Project

0 0.5 1 Miles

(At original document size of 8.5x11)
1:63,360

N

Stantec

8MINUTE SOLAR ENERGY

Project Location	Prepared by SET on 2020-03-26
North of California City	TR by CS on 2020-03-27
Kern County, CA	IR by CB on 2020-03-27
Client/Project	185704635_0005
8 Minute Solar Energy	
Kudu Solar Project	

Figure No.
1

Title
Kudu Solar Project Location

Notes
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Project Data Sources: 8 Minute Solar Energy and Stantec
3. Basemap Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

V:\18577\Active\185704635_Kudu_Bellefield\03_data\gis_cad\gis\185704635_0005_KuduProjectLocation.mxd Revised: 2020-03-26 By: stroedson

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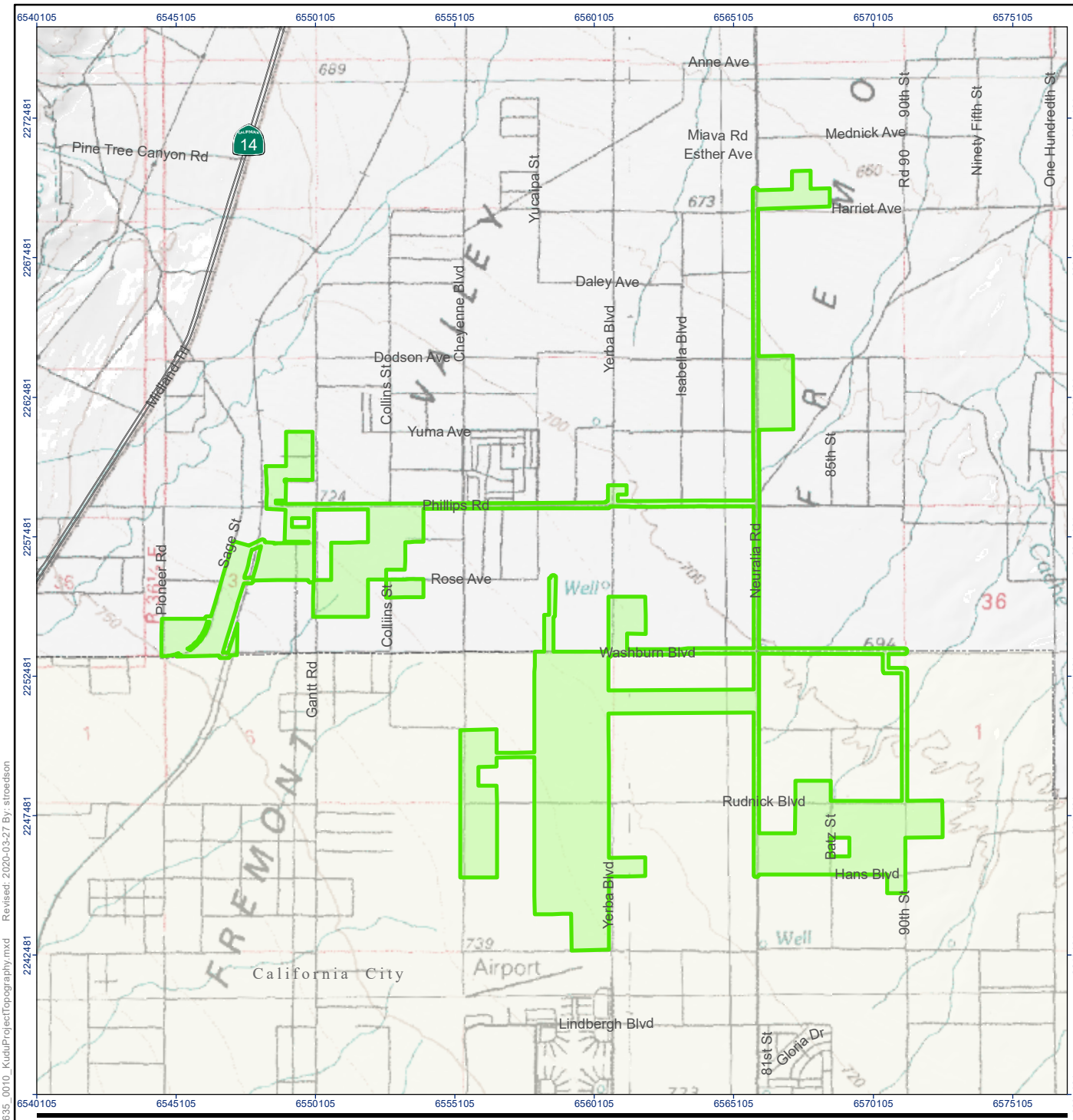

Kudu Solar Project Survey Area

0 0.5 1 Miles

(At original document size of 8.5x11)
1:63,360

N

Notes

1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Project Data Sources: 8 Minute Solar Energy and Stantec
3. Basemap USGS Topographic Quadrangle

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8MINUTE SOLAR ENERGY

Project Location
North of Calfiornia City
Kern County, CA

Prepared by SET on 2020-03-27
TR by JH on 2020-03-27
IR by CB on 2020-03-27

Client/Project
185704635_0010
8 Minute Solar Energy
Kudu Solar Project

Figure No.
2

Title
Kudu Solar Project Area Topography

V:\18577\Active\185704635_Kudu_Bellefield\03_data\gis_cad\gis\185704635_0010_KuduProjectTopography.mxd Revised: 2020-03-27 By: stroedson

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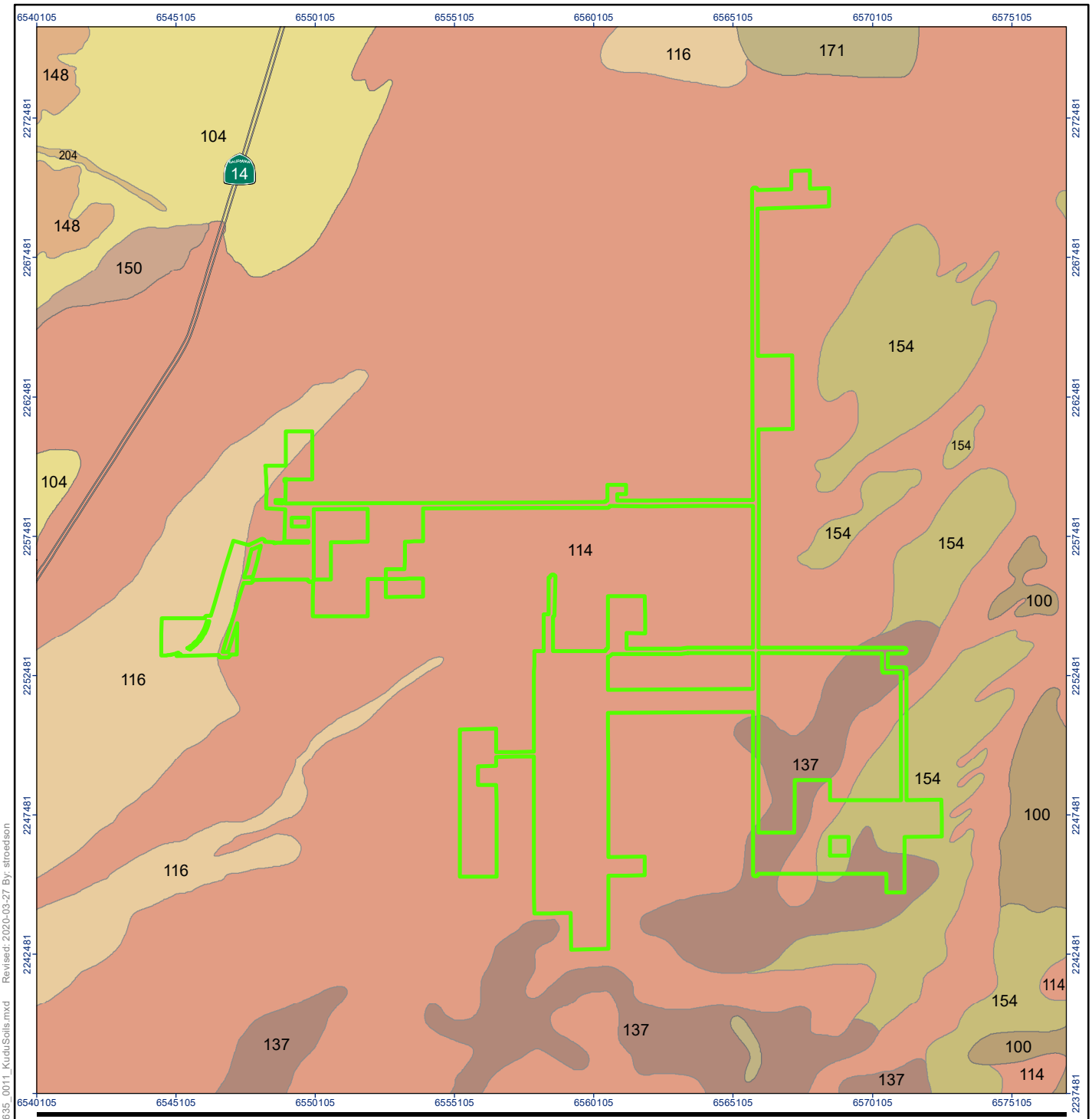

Notes

1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet

2. Project Data Sources: Soils from NRCS SSURGO, 2019. Project area from 8 Minute Solar Energy and Stantec, 2019.

Kudu Solar Project Survey Area

Soils in the Survey Area

- 114: Cajon loamy sand, 0 to 5 percent slopes
- 116: Cajon gravelly loamy sand, 0 to 9 percent slopes
- 137: Garlock loamy sand, 2 to 9 percent slopes
- 154: Neuralia sandy loam, 2 to 5 percent slopes

Other Nearby Soils

- 100: Alko-Neuralia sandy loams, 0 to 9 percent slopes
- 104: Arizo gravelly loamy sand, 2 to 9 percent slopes
- 148: Jawbone gravelly loamy sand, 15 to 75 percent slopes
- 150: Muroc sandy loam, 2 to 9 percent slopes
- 171: Rosamond clay loam
- 204: Whitewolf loamy sand, cool, 2 to 5 percent slopes

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8MINUTE SOLAR ENERGY

Project Location
North of California City
Kern County, CA

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Client/Project
8 Minute Solar Energy
Kudu Solar Farm

185704635_0011

Figure No.
3

Title
Kudu Solar Project Area Soils

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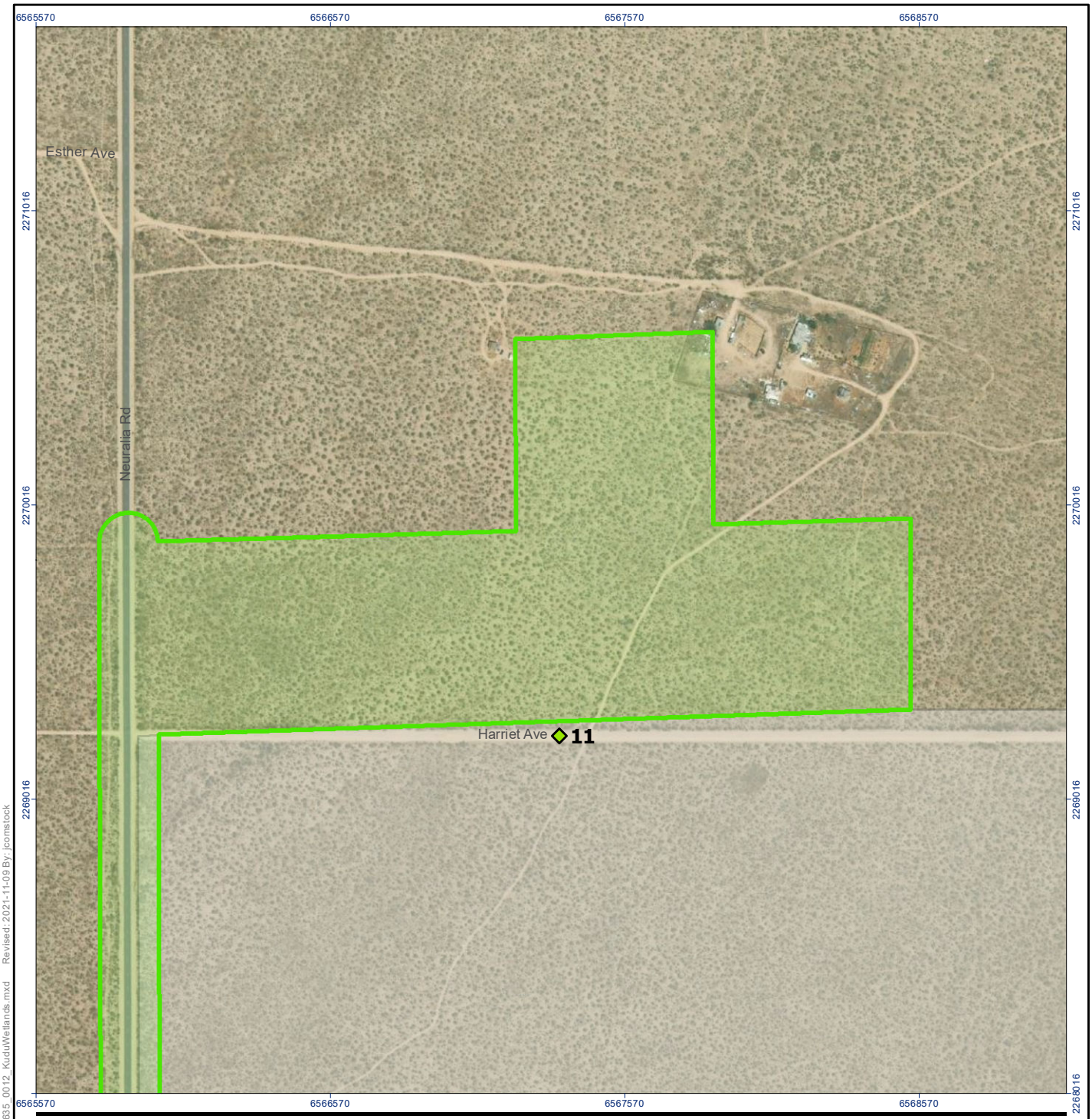

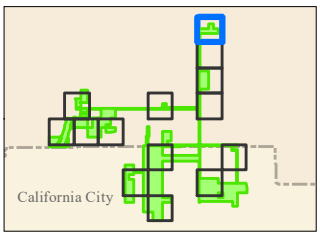

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- Ordinary High Water Mark (OHWM)
- Sample Point
- Upland Transect
- Watercourse Transect
- Ephemeral Stream (Eland 1)
- Intermittent Stream
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8MINUTE SOLAR ENERGY

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Client/Project
8 Minute Solar Energy
Kudu Solar Farm

185704635_0012

Figure No.
4

Title
Kudu Solar Project Aquatic Resource Survey Results

V:\18571\Active\185704635_Kudu_Bellefield\03_data\gis_cad\gis\185704635_0012_KuduWetlands.mxd Revised: 2021-11-09 By: jcomstock

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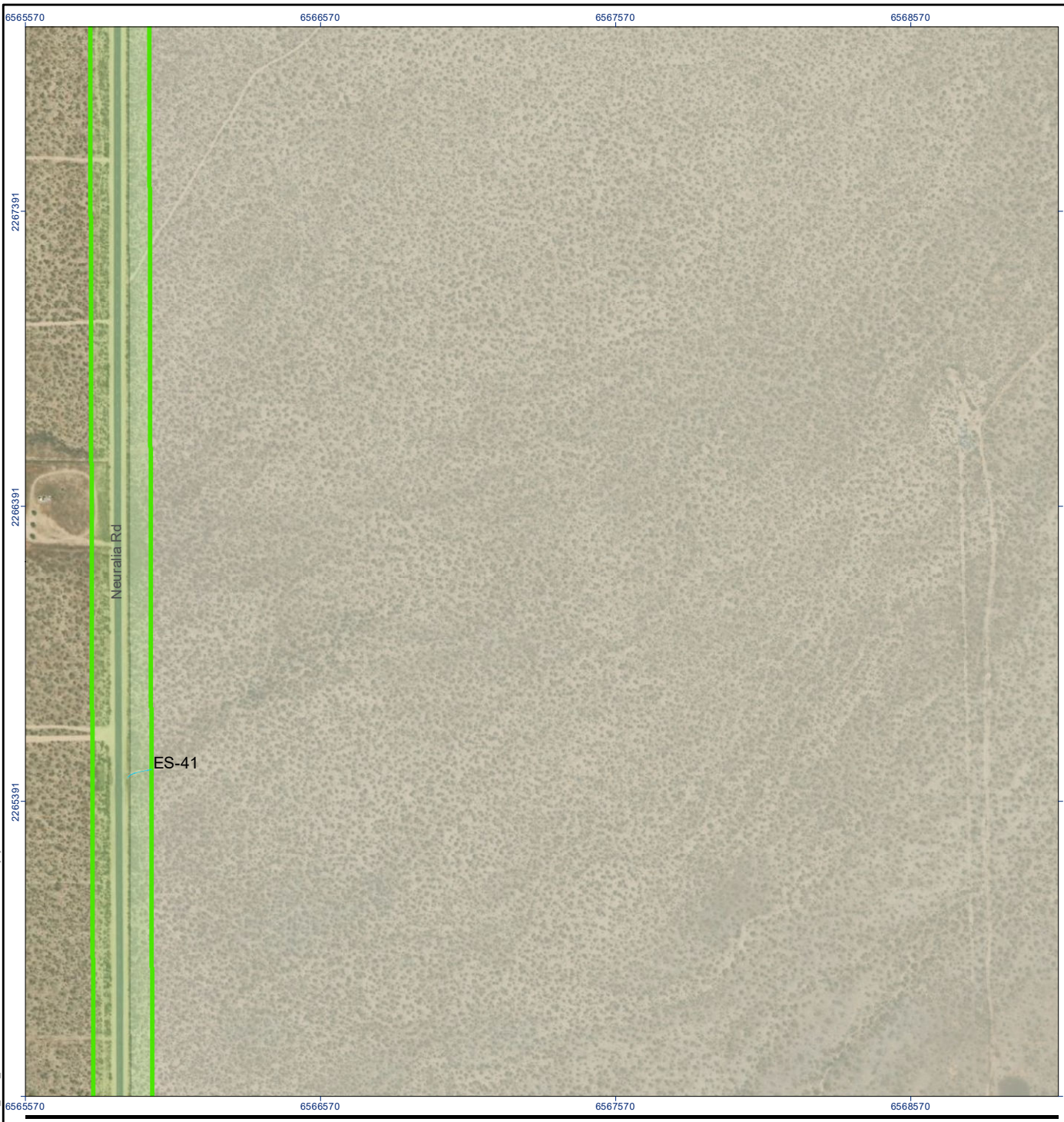

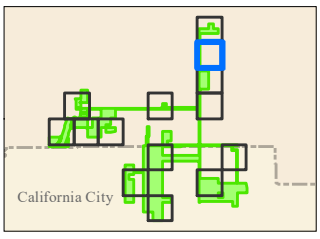

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Ephemeral Stream (Eland 1)
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Client/Project
8 Minute Solar Energy
Kudu Solar Farm

185704635_0012

Figure No.
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Kudu Solar Project Aquatic Resource Survey Results

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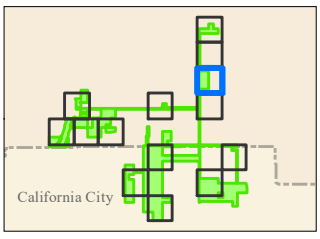

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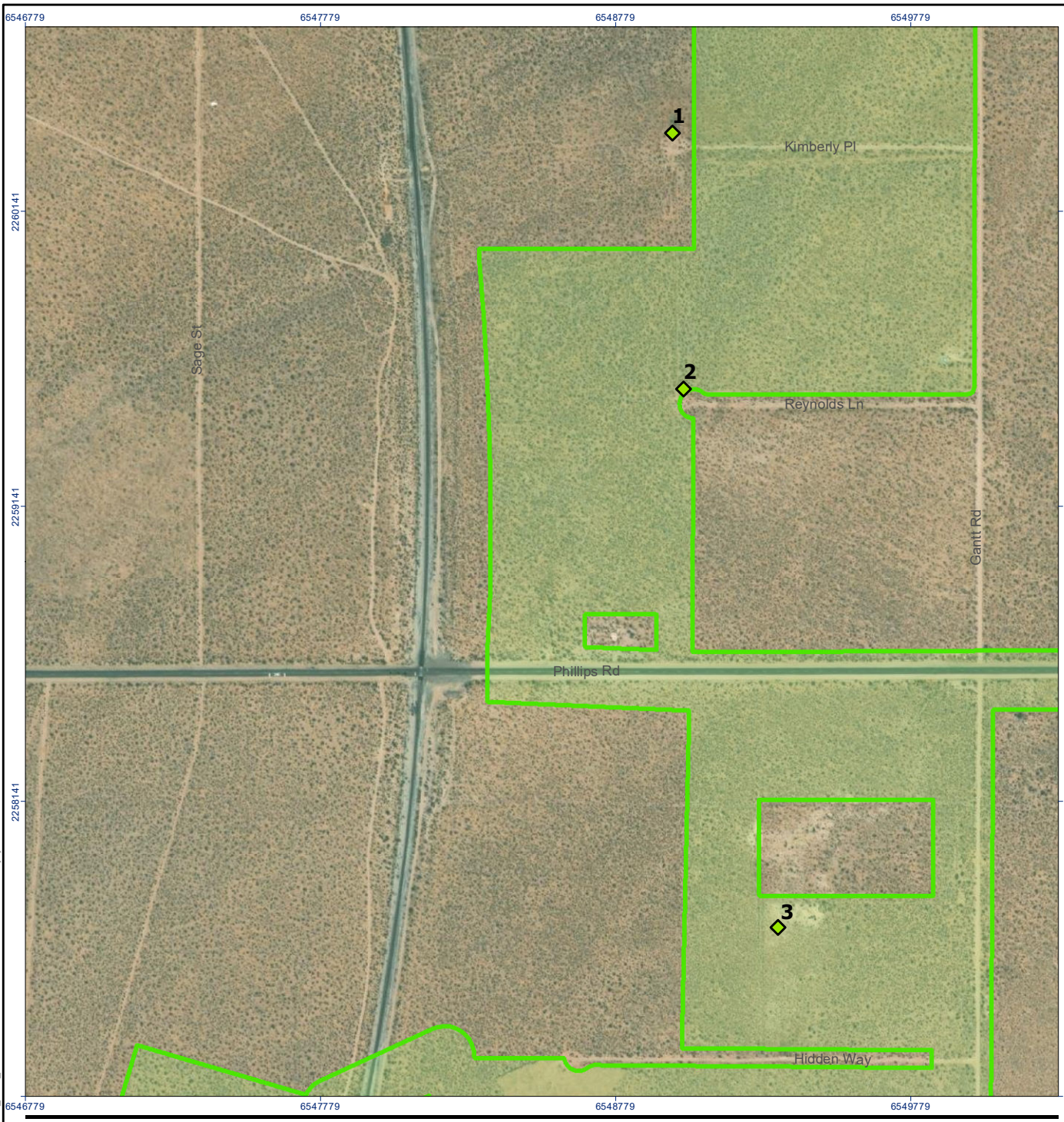

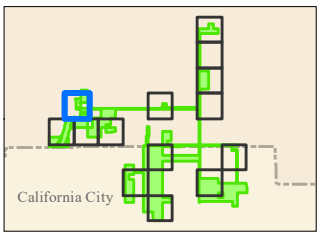

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8 Minute Solar Energy
Kudu Solar Farm

185704635_0012

Figure No.
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Kudu Solar Project Aquatic Resource Survey Results

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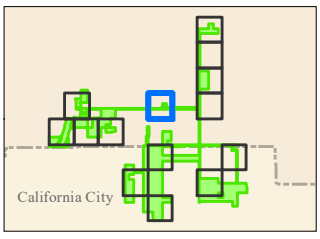

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Kudu Solar Farm

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Figure No.
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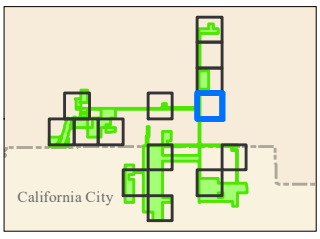

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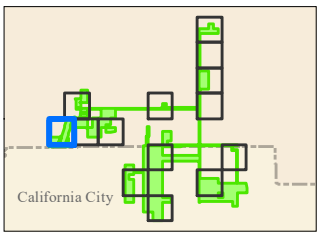

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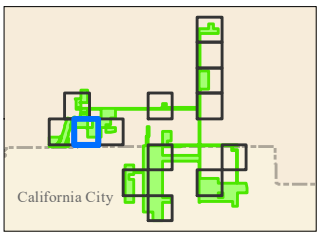

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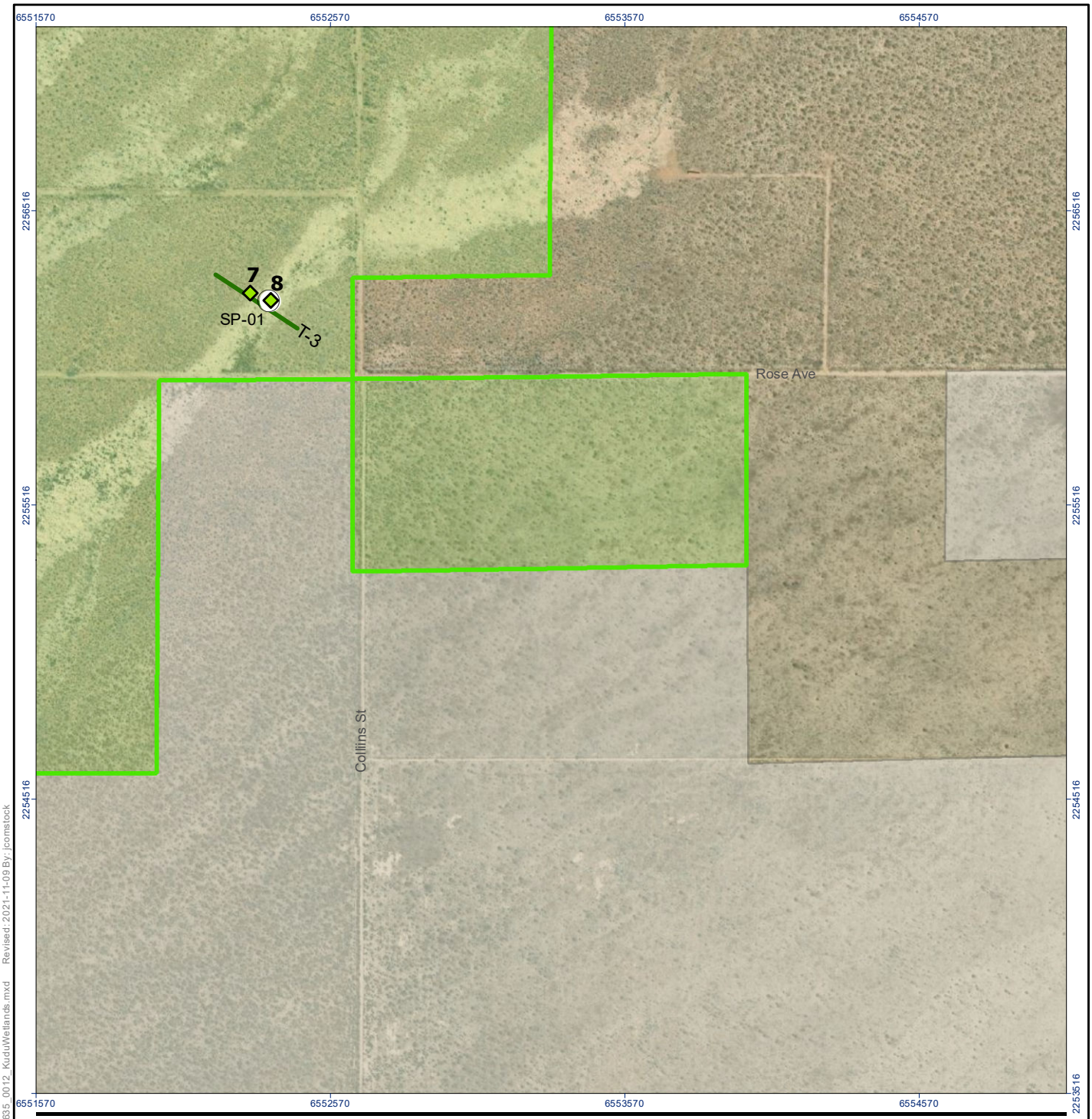

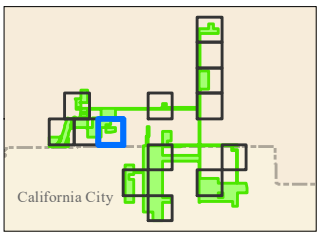

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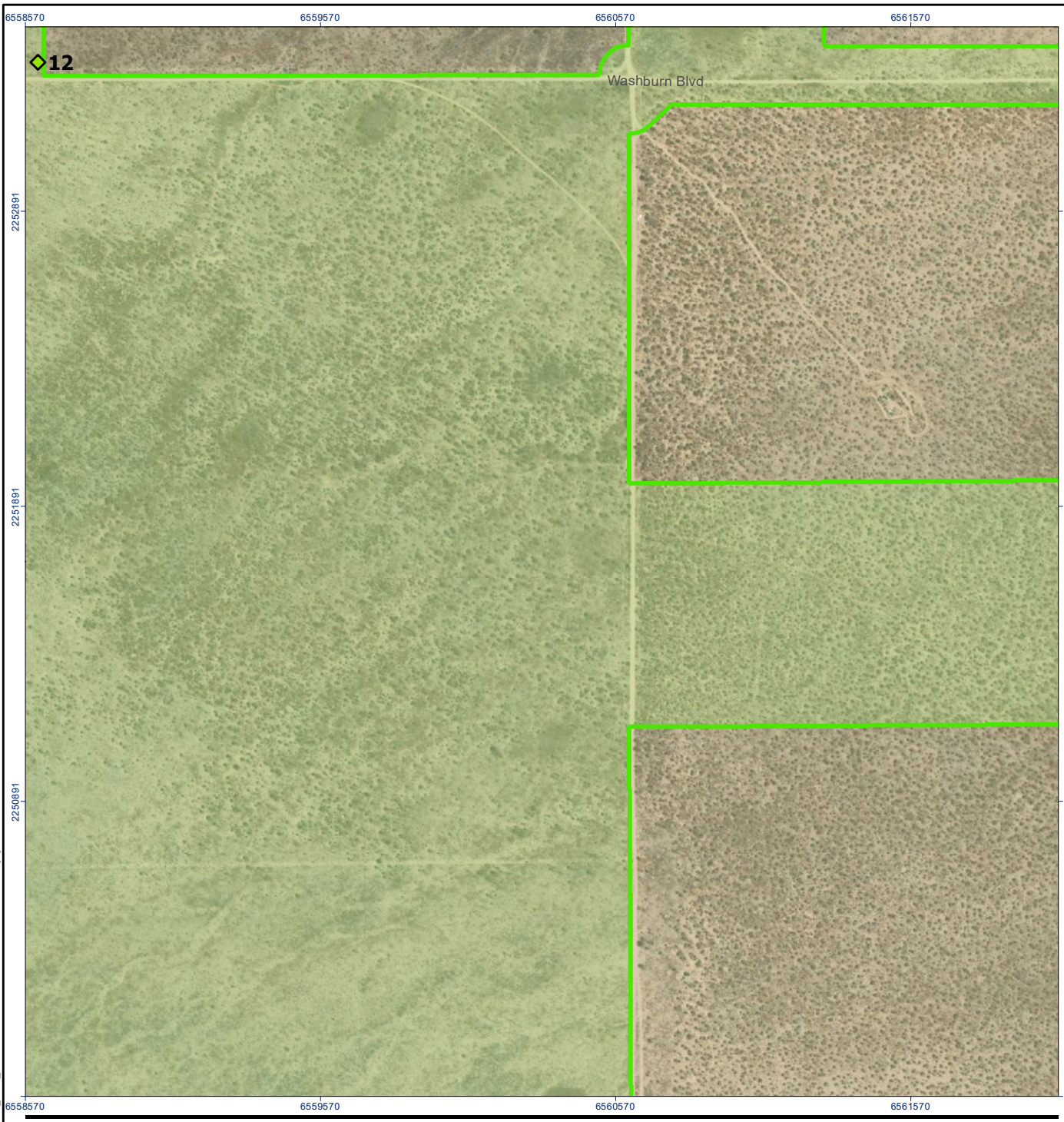

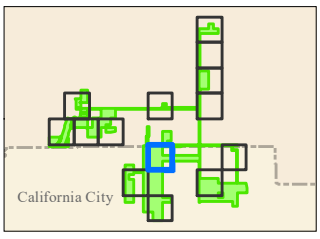

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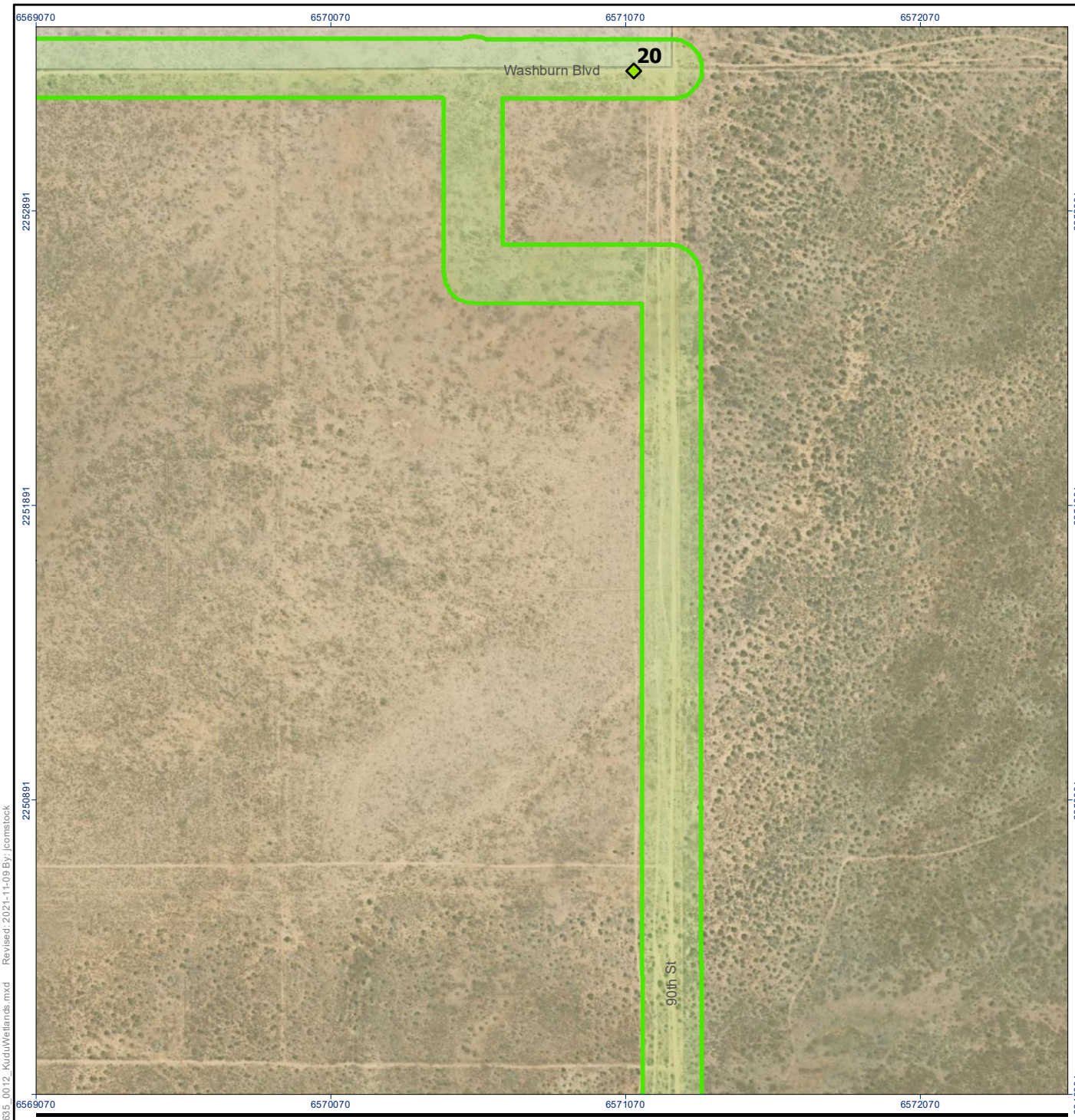

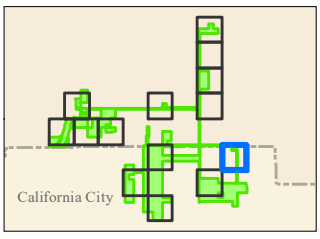

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Kern County, CA

Prepared by SET on 2020-03-27
TR by JH on 2020-03-27
IR by CB on 2020-03-27

Client/Project
8 Minute Solar Energy
Kudu Solar Farm

185704635_0012

Figure No.
4

Title
Kudu Solar Project Aquatic Resource Survey Results

V:\18571\Active\185704635_Kudu_Bellefield\03_data\gis_cad\gis\185704635_0012_KuduWetlands.mxd Revised: 2021-11-09 By: jcomstock

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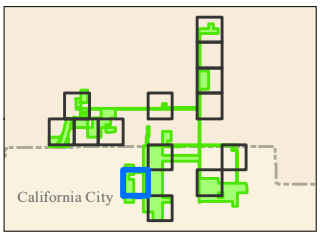

- Photo Location
- Ordinary High Water Mark (OHWM)
- Sample Point
- Upland Transect
- Watercourse Transect
- Ephemeral Stream (Eland 1)
- Intermittent Stream
- Kudu Solar Project Survey Area
- Eland 1 Solar Project

0 250 500 Feet

(At original document size of 8.5x11)
1:6,000

N

Notes

1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Project Data Sources: 8 Minute Solar Energy and Stantec
3. Basemap Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Stantec

8MINUTE SOLAR ENERGY

Project Location
North of California City
Kern County, CA

Prepared by SET on 2020-03-27
TR by JH on 2020-03-27
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Client/Project
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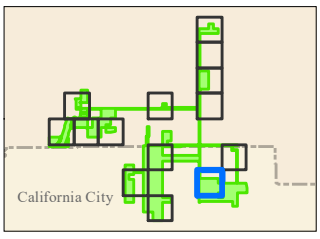

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8MINUTE SOLAR ENERGY

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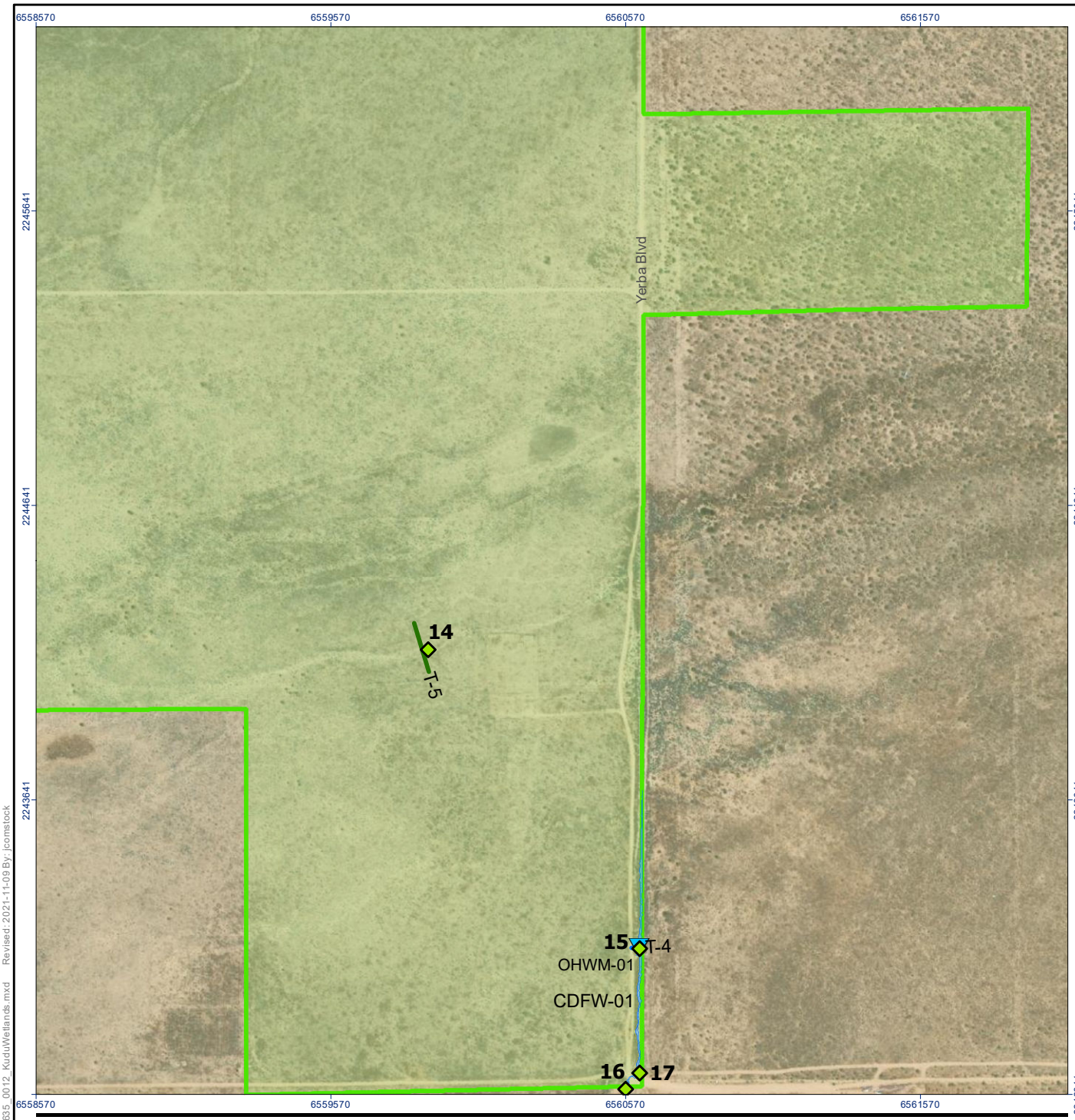

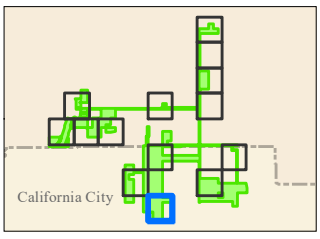

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Appendix A APPROVED JURISDICTIONAL DELINATION FOR KOEHN LAKE

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
VENTURA FIELD OFFICE
2151 ALESSANDRO DRIVE, SUITE 110
VENTURA, CALIFORNIA 93001

REPLY TO
ATTENTION OF:

February 5, 2008

Office of the Chief
Regulatory Division

Kenneth Stein
Beacon Solar, LLC
700 Universe Boulevard
Juno Beach, Florida 33408

Dear Mr. Stein:

Reference is made to your letter (Corps File No. 2007-1414-CLM), dated November 5, 2007 for a Department of the Army Jurisdictional Determination to construct a wind power generation project in unnamed tributaries to Koehn Dry Lake within an unincorporated area of Kern County, California.

Based on the information furnished in your letter, we have determined that Kohn Dry Lake does not exhibit any evidence of navigation. Using the criteria at 33 CFR Part 328.3, the Corps has determined that Koehn Dry Lake exhibits insufficient evidence of interstate commerce to meet the requirements of 33 CFR Part 328.3(a)(3)(iii) and does not meet the requirements for navigability at 33 CFR Part 328.3 (a)(1). Based on the above information and the Solid Waste Agency of Northern County Supreme Court Decision, your project does not discharge dredged or fill material into a water of the United States or an adjacent wetland. Therefore, the project is not subject to our jurisdiction under Section 404 of the Clean Water Act and a Section 404 permit is not required from our office.

Please be aware that our determination does not preclude the need to comply with Section 13260 of the California Water Code (Porter/Cologne) and we recommend that you contact the California Regional Water Quality Control Board to insure compliance with the above regulations. Furthermore, our determination does not obviate the need to obtain other Federal, state, or local authorizations required by law.

This letter contains an approved jurisdictional determination for the Beacon Street Solar Energy Project. If you object to this decision, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet (Appendix C) and Request for Appeal (RFA) form. If you request to appeal this decision you must submit a completed RFA form to the Corps South Pacific Division Office at the following address:

Tom Cavanaugh
Administrative Appeal Review Officer,
U.S. Army Corps of Engineers
South Pacific Division, CESPD-PDS-O, 2042B
1455 Market Street, San Francisco, California 94103-1399

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 C.F.R. Part 331.5, and that it has been received by the Division Office within 60 days of the date on the NAP. Should you decide to submit an RFA form, it must be received at the above address by April 6, 2008. It is not necessary to submit an RFA form to the Division Office if you do not object to the decision in this letter.

This verification is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. If you wish to submit new information regarding the approved jurisdictional determination for this site, please submit this information to Crystal L. Marquez at the letterhead address by April 6, 2008. The Corps will consider any new information so submitted and respond within 60 days by either revising the prior determination, if appropriate, or reissuing the prior determination. A revised or reissued jurisdictional determination can be appealed as described above.

A courtesy copy of this letter has been sent to Mr. Joshua Zinn, EDAW Inc., 1420 Kettner Boulevard, Suite 500, San Diego, CA 92101. If you have any questions regarding this matter, please contact Crystal L. Marquez at (805) 585-2143. Please be advised that you can now comment on your experience with Regulatory Division by accessing the Corps web-based customer survey form at: http://per2.nwp.usace.army.mil/survey.html.

Sincerely,

Antal Szijj
Senior Project Manager
North Coast Branch

Enclosures

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Appendix B PLANT SPECIES OBSERVED

Appendix B. Plant Species Observed

Scientific Name	Common Name	Wetland Indicator Status[1]	Origin
Agavaceae (Agave Family)			
Yucca brevifolia	Joshua tree	UPL	native
Asteraceae (Compositae) (Sunflower Family)			
Ambrosia acanthicarpa	annual burrweed	UPL	native
Ambrosia dumosa	white bursage	UPL	native
Encelia actoni	acton encelia	UPL	native
Ericameria nauseosa	rubber rabbitbrush	UPL	native
Lepidospartum squamatum	scale broom	FACU	native
Lessingia glandulifera	valley vinegar weed	UPL	native
Boraginaceae (Borage Family)			
Amsinckia tessellata.	devil's lettuce	UPL	native
Phacelia distans	distant phacelia	UPL	native
Brassicaceae (Cruciferae) (Mustard Family)			
Brassica tournefortii	Sahara mustard	UPL	non-native (invasive)
Cactaceae (Cactus Family)			
Cylindropuntia echinocarpa	silver cholla	UPL	native
Chenopodiaceae (Goosefoot Family)			
Atriplex spp.	saltbush species	UPL	native
Grayia spinosa	hop sage	UPL	native
Krascheninnikovia lanata	winter fat	UPL	native
Salsola tragus	Russian thistle	FACU	non-native (invasive)
Cleomaceae (Spiderflower Family)			
Peritoma arborea	bladderpod	UPL	native
Euphorbiaceae (Spurge Family)			
Croton californicus	desert croton	UPL	native
Croton setiger	turkey-mullein	UPL	native
Euphorbia sp.	spurge	UPL	native
Stillingia linearifolia	narrow leaved stillingia	UPL	native
Fabaceae (Leguminosae) (Legume Family)			
Senna armata	desert senna	UPL	native
Geraniaceae (Geranium Family)			
Erodium cicutarium	redstem filaree	UPL	non-native (invasive)
Lamiaceae (Labiateae) (Mint Family)			
Scutellaria mexicana	Mexican bladder sage	UPL	native
Loasaceae (Loasa Family)			
Petalonyx nitidus	shiny leaf sandpaper plant	UPL	native
Poaceae (Gramineae) (Grass Family)			
Avena sp.			
Bromus madritensis ssp. *rubens*	red brome	UPL	non-native (invasive)
Bromus tectorum	cheat grass	UPL	non-native (invasive)
Schismus arabicus	Mediterranean grass	UPL	non-native (invasive)
Stipa hymenoides	Indian rice grass	UPL	native
Polygonaceae (Buckwheat Family)			
Chorizanthe brevicornu	brittle spine flower	UPL	native
Eriogonum sp.	buckwheat	UPL	native

Scientific Name	Common Name	Wetland Indicator Status[1]	Origin
Solanaceae (Nightshade Family)			
Datura wrightii	jimsonweed	UPL	native
Zygophyllaceae (Caltrop Family)			
Larrea tridentata	creosote bush	UPL	native

[1] FAC = facultative. FACU = facultative upland, FACW = facultative wetland, OBL = obligate, UPL = upland. Status based on Lichvar, R. W., D. L. Banks, W. N. Kirchner, and N. C. Melvin. 2016. The National Wetland Plant List: 2016 wetland ratings. Phytoneuron 2016-30: 1-17. Published 28 April 2016. ISSN 2153 733X.

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Appendix C REPRESENTATIVE PHOTOS

Appendix C. Representative Photos

Photo 1. View to the north of Creosote bush scrub in the western portion of the Project Area.

Photo 2. View to the north of Creosote bush scrub in the western portion of the Project Area.

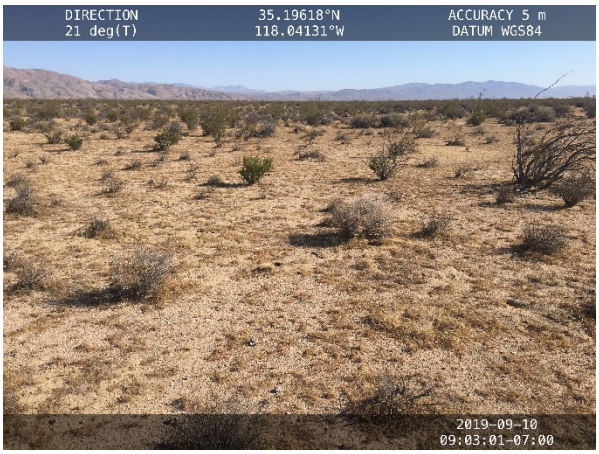

Photo 3. View to the north of Creosote bush scrub in the western portion of the Project Area.

Photo 4.View to the north of Creosote bush scrub in Transect 1.

Photo 5. View to the west of Creosote bush scrub in the western portion of the Project Area.

Photo 6. View to the northwest of calciferous alkali sink in Transect 2.

Appendix C. Representative Photos

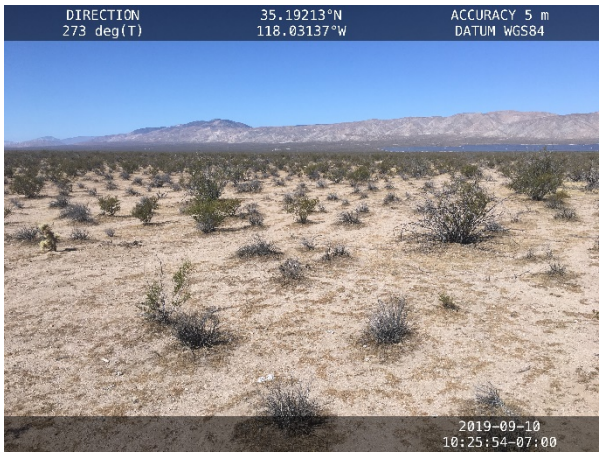

Photo 1. View to the northwest of calciferous alkali sink in Transect 2.

Photo 8. View to the east of calciferous alkali sink and SP-01.

Photo 9. View to the southeast of Creosote bush scrub in the central portion of the Project Area.

Photo 10. View to the northeast of ES-39.

Photo 2. View to the north of Creosote bush scrub in the northeast portion of the Project Area

Photo 3. View to the west of Creosote bush – white bursage scrub in the central portion of the Project Area.

Appendix C. Representative Photos

Photo 4. View to the south of Creosote bush scrub in the central portion of the Project Area.

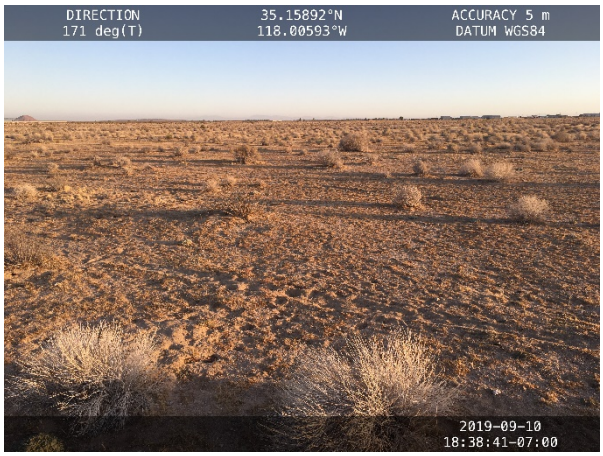

Photo 14. View to the south of white bursage scrub and Transect 5.

Photo 5. View to the north of intermittent drainage CDFW-01 and Transect 4.

Photo 6. View to the north of intermittent drainage CDFW-01.

Photo 17. View to the north of intermittent drainage CDFW-01 and scalebroom scrub vegetation.

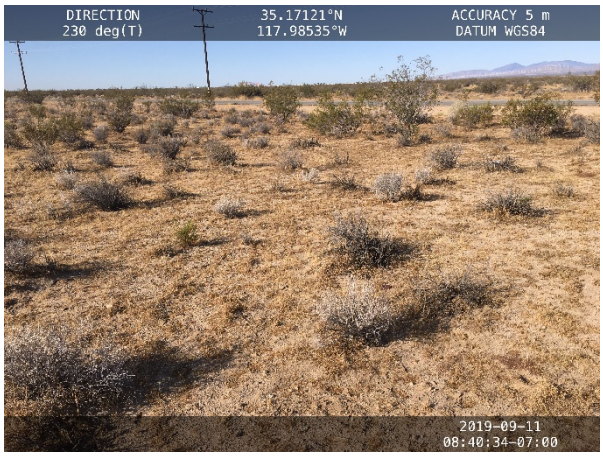

Photo 18. View to the north of Creosote bush – white bursage scrub in eastern portion of the Project Area.

Appendix C. Representative Photos

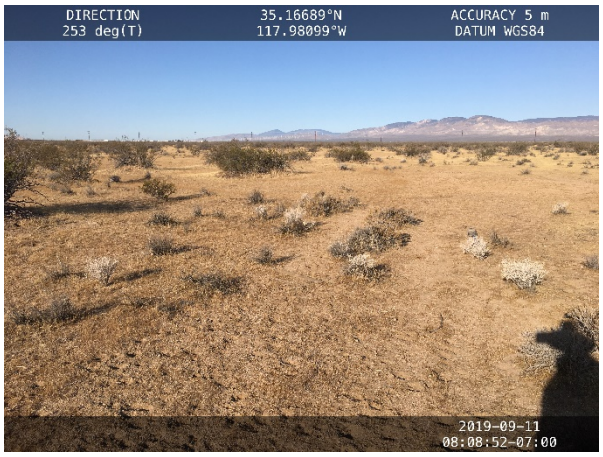

Photo 19. View to the west of Creosote bush – white bursage scrub and Transect 7.

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Appendix D WETLAND DETERMINATION FORMS

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Kudu Solar Project | City/County: Mojave/Kern County | Sampling Date: 09/10/2019
Applicant/Owner: 8minute Solar Energy | State: CA | Sampling Point: 01 up
Investigator(s): J. Holson; S. Creer | Section, Township, Range:
Landform (hillslope, terrace, etc): | Local relief (concave, convex, none): None | Slope (%): 0
Subregion (LRR): D - Western Range and Irrigated Region | Lat: 35.192048 | Long: -118.03117 | Datum: WGS84
Soil Map Unit Name: Cajon loamy sand, 0 to 5 percent slopes | NWI classification: R4SBJ
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?**	Yes	No X
Hydric Soil Present?	Yes	No X			
Wetland Hydrology Present?	Yes	No X			

Remarks:

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: N/A)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 2 meter radius)			
1. *Larrea tridentata* / Creosote bush	30	Yes	UPL
2. *Ambrosia dumosa* / Burro weed, White bur-sage	10	Yes	UPL
3.			
4.			
5.			
	40	= Total Cover	
Herb Stratum (Plot size: 2 meter radius)			
1. *Erodium cicutarium ssp. cicutarium* / Redstem stork's bill	20	Yes	UPL
2. *Schismus arabicus* / Arabian schismus	10	Yes	UPL
3. *Bromus madritensis* / Foxtail chess, Foxtail brome	10	Yes	UPL
4.			
5.			
6.			
7.			
8.			
	40	= Total Cover	
Woody Vine Stratum (Plot size: N/A)			
1.			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 80 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 5 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	80	x 5 =	400
Column Totals:	80 (A)		400 (B)

Prevalence Index = B/A = 5.0

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes No X

Remarks:

SOIL

Sampling Point: 01 up

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
16	10 YR 4/4	100	None	0				10% cobble/pebble

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required: check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Surface Soil Cracks (B6)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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Appendix E OHWM DATA FORMS

Project: Kudu Solar Project
Project Number:
Stream: 0919-04-water course OHWM-01
Investigator(s): JI Holson, S. Creer

Date: 9/10/19
Town: Mojave
Photo begin file#

Time: 1800
State: CA
Photo end file#

Y ☒ / N ☐ Do normal circumstances exist on the site?

~~Y~~ / N ☒ Is the site significantly disturbed?

Location Details:

Projection: WGS84 **Datum:** WGS84
Coordinates: 35° 9' 21" N, 118° 0' 12" W

Notes: Int. stream parallel to a road. Spring-fed/shallow groundwater. Airfield and road disrupt hydrology

Brief site description: Spring-fed intermittent drainage, interrupted by an unpaved access road (flows across). Flow is from S→N; spring bubbling @ time of survey

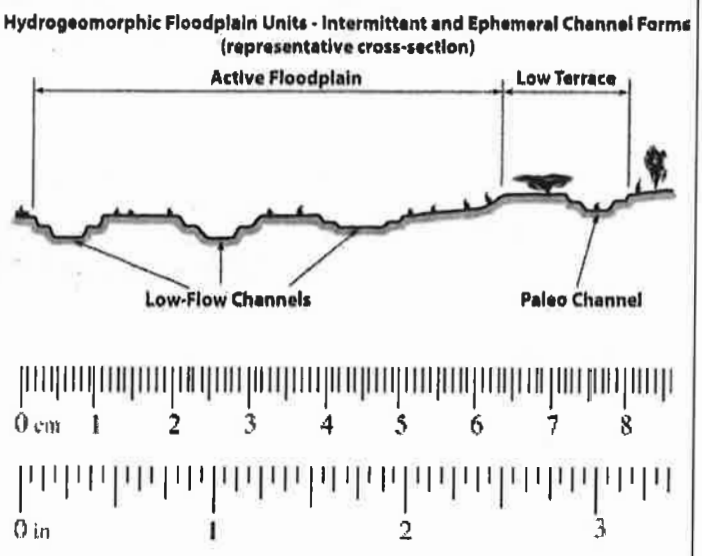
Checklist of resources (if available):

- ☒ Aerial photography
  Dates: back to '80s
- ☒ Topographic maps
  Scale:
- ☐ Geologic maps
- ☐ Vegetation maps
- ☒ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☒ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
- ☐ Clinometer / level
- ☐ History of recent effective discharges
- ☐ Results of flood frequency analysis
- ☐ Most recent shift-adjusted rating
- ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

The dominant Wentworth size class that imparts a characteristic texture to each zone of a channel cross-section is recorded in the average sediment texture field under the characteristics section for the zone of interest.

Millimeters (mm)	Inches (in)	Wentworth size class	
10.08	256	Boulder	
2.56	64	Cobble	Gravel
0.157	4	Pebble	
0.079	2.00	Granule	
0.039	1.00	Very coarse sand	
0.020	0.50	Coarse sand	
1/2 0.0098	0.25	Medium sand	Sand
1/4 0.005	0.125	Fine sand	
1/8 0.0025	0.0625	Very fine sand	
1/16 0.0012	0.031	Coarse silt	
1/32 0.00061	0.0156	Medium silt	Silt
1/64 0.00031	0.0078	Fine silt	
1/128 0.00015	0.0039	Very fine silt	
		Clay	Mud



☒ **Walk the channel and floodplain within the study area to get an impression of the vegetation and geomorphology present at the site. Record any potential anthropogenic influences on the channel system in "Notes" above.**

☐ **Locate the low-flow channel (lowest part of the channel). Record observations.**

Characteristics of the low-flow channel:

Average sediment texture: Fine sand

Total veg cover: 0 % Tree: ____% Shrub: ____% Herb: ____%

Community successional stage:

☒ NA ☐ Mid (herbaceous, shrubs, saplings)

☐ Early (herbaceous & seedlings) ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: _____

Other: ☐ _____

☐ _____

☐ _____

☐ _____

☐ **Walk away from the low-flow channel along cross-section. Record characteristics of the low-flow/active floodplain boundary.**

Characteristics used to delineate the low-flow/active floodplain boundary:

☒ Change in total veg cover ☐ Tree ☒ Shrub ☐ Herb

☐ Change in overall vegetation maturity

☐ Change in dominant species present

☐ Other ☐ Presence of bed and bank

☒ Drift and/or debris

☐ Other: ripples

☒ Other: sediment sorting

☐ **Continue walking the channel cross-section. Record observations below.**

Characteristics of the low-flow channel:

Average sediment texture: Sand

Total veg cover: 35 % Tree: ____% Shrub: 35 % Herb: ____%

Community successional stage:

☐ NA ☒ Mid (herbaceous, shrubs, ~~saplings~~)

☐ Early (herbaceous & seedlings) ☐ Late (herbaceous, shrubs, mature trees)

Dominant species present: Ericameria nauseosa

Lepidospartum squamatum

Other: ☐ _____

☐ _____

☐ _____

☐ _____

☒ **Continue walking the channel cross-section. Record indicators of the active floodplain/low terrace boundary.**

Characteristics used to delineate the active floodplain/ low terrace boundary:

- ☐ Change in average sediment texture
- ☒ Change in total veg cover ☐ Tree ☐ Shrub ☐ Herb
- ☐ Change in overall vegetation maturity
- ☐ Change in dominant species present
- ☐ Other
  - ☐ Presence of bed and bank
  - ☒ Drift and/or debris in place
  - ☒ Other: bioturbation
  - ☐ Other: _____

☒ **Walk the active floodplain/low terrace boundary both upstream and downstream of the cross-section to verify that the indicators used to identify the transition are consistently associated the transition in both directions.**

Consistency of indicators used to delineate the active floodplain/low terrace boundary:

- Y ☐ N ☒ Change in average sediment texture
- Y ☐ N ☒ Change in total veg cover ☐ Tree ☐ Shrub ☐ Herb
- Y ☐ N ☒ Change in overall vegetation maturity
- Y ☐ N ☒ Change in dominant species present
- Y ☐ N ☒ Other:
  - Y ☐ N ☐ Presence of bed and bank
  - Y ☐ N ☐ Drift and/or debris
  - Y ☐ N ☐ Other: _____
  - Y ☐ N ☐ Other: _____

☐ **If the ~~characteristics used to delineate the active floodplain/low terrace~~ boundary were NOT consistently ~~associated with the transition in both the~~ upstream and downstream ~~directions~~, repeat all steps above.**

☒ **Continue walking the channel cross-section. Record characteristics of the low terrace.**

Characteristics of the low terrace:

Average sediment texture: Sand

Total veg cover: 30 % Tree: ____% Shrub: 30 % Herb: ____%

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☒ Late (herbaceous, shrubs, ~~mature trees~~)

Dominant species present: Ambrosia dumosa

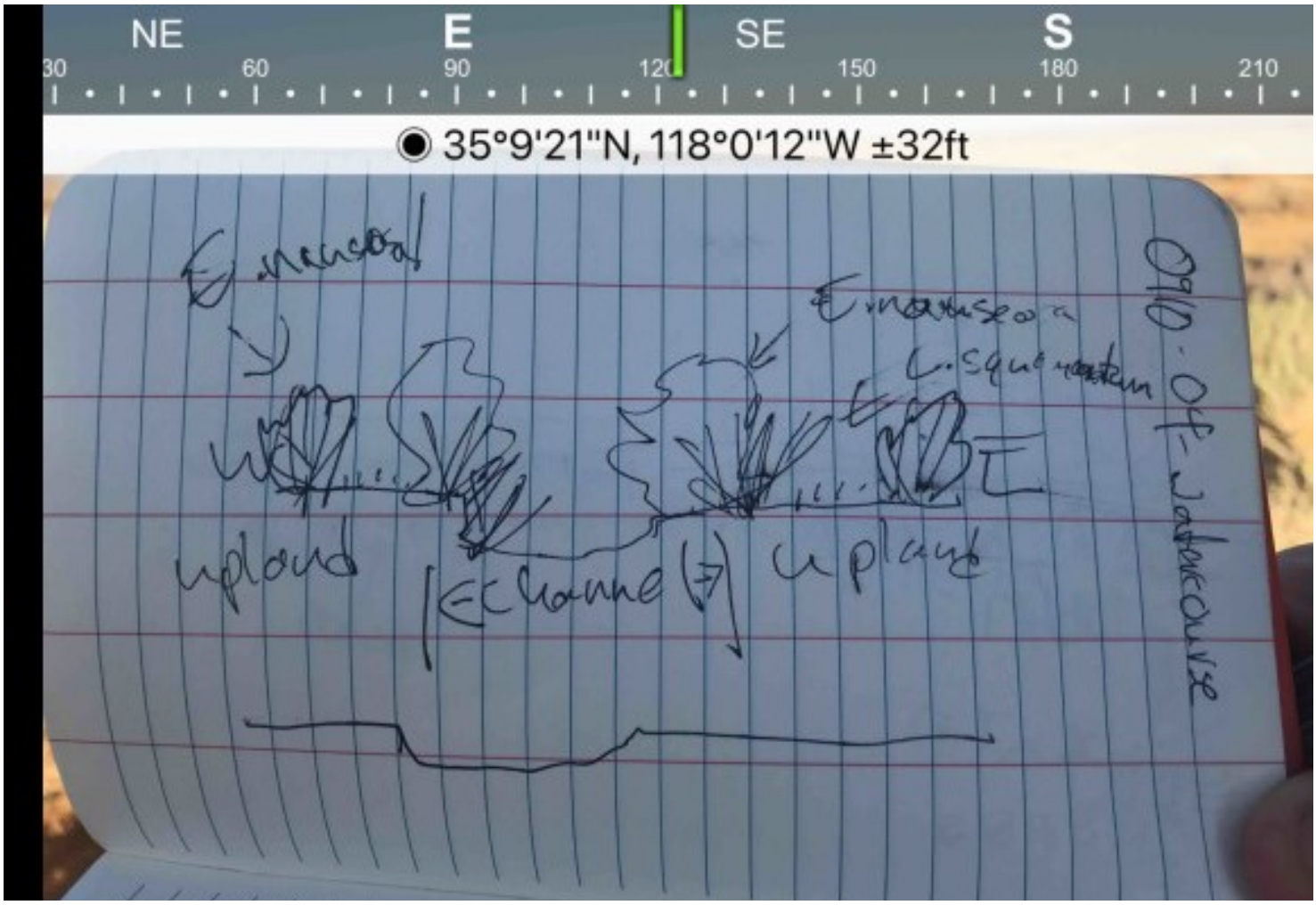
Other:

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

☒ **If characteristics used to delineate the active floodplain/low terrace boundary were deemed reliable, acquire boundary.**

Active floodplain/low terrace boundary acquired via:

- ☒ Mapping on aerial photograph
- ☐ Digitized on computer
- ☐ GPS
- ☐ Other: _____


NE
E
SE
S
30
60
90
120
150
180
210
35°9'21"N, 118°0'12"W ±32ft
E. macrodon
E. macrodon x
L. squamosum
upland
channel
upland
OHW - Off-watercourse

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Appendix F MESA DATA FORMS

MESA Drainage Mapping 1.0

Project	Kudu Solar Dry Wash Mapping
ID	57299
Survey Date	09/10/2019
User	Sheryl Creer
Stream ID	**Transect 1** 0910-01 Upland
Project/Site	Kudu Solar Project
Nearest Town	Mojave
County	Kern
Investigators	01 - S Creer, 02 - J I Holson

Base Map

Aerial Photo Number	
Date	
Topographic Map Name	
Date	

GPS Data

GPS Name	Bad Elf GNSS Surveyor
Datum	WGS84
Transect Elevation (feet)	
Zone	11
GPS error +/- (feet)	
GPS Coordinates Transect Start	
Speed	
Direction	
Altitude	
Accuracy	0
GPS Coordinates Transect End	
Speed	
Direction	
Altitude	
Accuracy	0

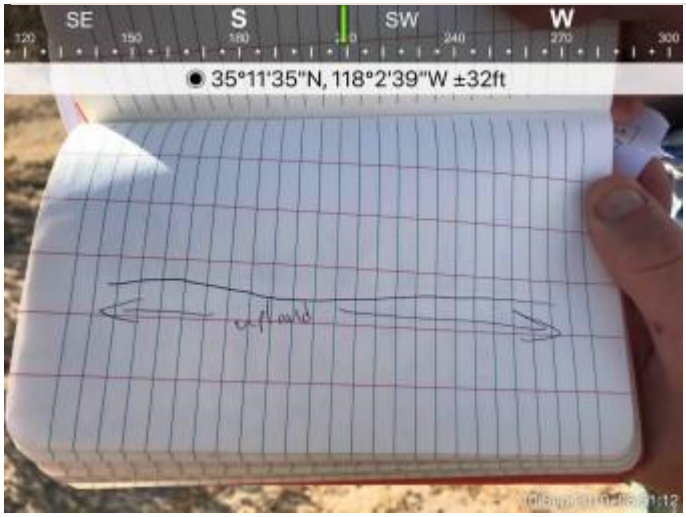
General Geomorphology

Geomorphic Province	Mojave
Landform (check all that apply)	
Channel form (select one)	Mojave

created with wildnote.

Transect Details

Transect was selected to	05 Other
Other	Document on the ground upland conditions of an aerial signature (no watercourse here).
Date of most recent runoff event	
Physical Setting	
Summary Site Descr/Cross-section	



0910-01 Upland. Transect cross-section.

Upland Observations

Upland Substrate Particle size	03 - pebble ≥ 4 - 64mm, 04 - granule ≥ 2 - 4mm, 05 - sand ≤ 2mm, 06 - silt/clay - fines
% granule	40
% pebble	10
% sand	30
% silt/clay	20
Upland Indicator(s) - Terrestrial:	03 - Bioturbation, 07 - Deflated surface, 15 - Surface rounding of landform, 16 - Woody debris in place
Upland Indicator(s) - Fluvial	

UPLAND VEGETATION

Est. Total Veg Cover (%)	35

Species

Taxon	*Larrea tridentata* / Creosote bush
% total cover	35
Avg. Height (feet)	3
Avg. Width (feet)	4
Differences in total	

created with wildnote.

shrub/perennial density (total #shrubs/perennial plants) between upland & fluvially active units or watercourse complex? (describe and qualify the differences):

Are there plant species that are present in (or absent from) the uplands when compared to fluvially active units or the watercourse complex? (describe differences):

Are there plant species that are more abundant (or less abundant) in the uplands when compared to the fluvially active units or the watercourse complex? (describe and qualify differences):

Watercourse Observations

Watercourse Substrate Particle size

Watercourse Indicators - Transportation, Deposition & Flow Transition

Watercourse Indicator(s) - Erosion

Watercourse Indicator(s) - Ponding & Evaporation, Eolian Transport & Deposition

WATERCOURSE VEGETATION

Est. Total Veg Cover (%)

Species

Taxon

% total cover

Avg. Height (feet)

Avg. Width (feet)

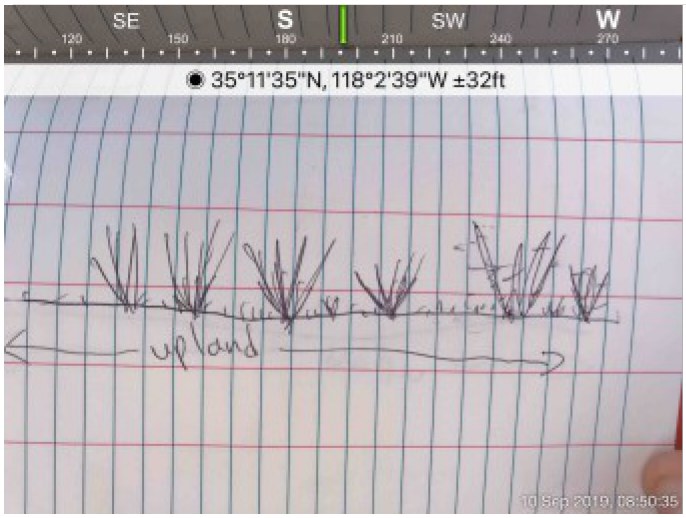
Differences in total shrub/perennial

created with wildnote.

density (total #shrubs/perennial plants) between the low-flow channel(s) and the adjacent floodplain? (describe and qualify the differences):	
Are there plant species that are present in (or absent from) the low-flow channel(s) when compared to the adjacent floodplain? (describe differences):	
Are there plant species that are more abundant (or less abundant) on the low-flow channel(s) and the adjacent floodplain? (describe and qualify differences):	

Vegetation Cross-Section

Vegetation cross-section diagram



0910-01 Upland. Transect cross-section with vegetation.

Photos

Photo

0910-01 Upland. Upland indicator (bioturbation).

MESA Drainage Mapping 1.0

Project	Kudu Solar Dry Wash Mapping
ID	57298
Survey Date	09/10/2019
User	Sheryl Creer
Stream ID	**Transect 2** 0910-02 Upland
Project/Site	Kudu Solar Project
Nearest Town	Mojave
County	Kern
Investigators	01 - S Creer, 02 - J I Holson

Base Map

Aerial Photo Number	
Date	
Topographic Map Name	
Date	

GPS Data

GPS Name	Bad Elf GNSS Surveyor
Datum	WGS84
Transect Elevation (feet)	
Zone	11
GPS error +/- (feet)	
GPS Coordinates Transect Start	
Speed	
Direction	
Altitude	
Accuracy	0
GPS Coordinates Transect End	
Speed	
Direction	
Altitude	
Accuracy	0

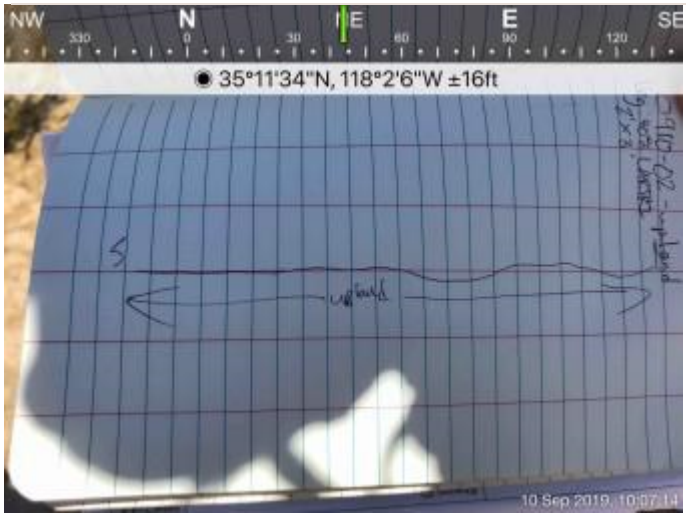
General Geomorphology

Geomorphic Province	Mojave
Landform (check all that apply)	
Channel form (select one)	Mojave

created with wildnote.

Transect Details

Transect was selected to	05 Other
Other	Document on the ground upland conditions of an aerial signature and NWI line (no watercourse here).
Date of most recent runoff event	
Physical Setting	
Summary Site Descr/Cross-section	



0910-02 Upland. Cross-section of transect.

Upland Observations

Upland Substrate Particle size	03 - pebble ≥ 4 - 64mm, 04 - granule ≥ 2 - 4mm, 05 - sand ≤ 2mm, 06 - silt/clay - fines
% granule	20
% pebble	20
% sand	40
% silt/clay	20
Upland Indicator(s) - Terrestrial:	03 - Bioturbation, 07 - Deflated surface, 15 - Surface rounding of landform, 16 - Woody debris in place
Upland Indicator(s) - Fluvial	

UPLAND VEGETATION

Est. Total Veg Cover (%)	35

Species

Taxon	*Larrea tridentata* / Creosote bush
% total cover	40
Avg. Height (feet)	2
Avg. Width (feet)	3

created with wildnote.

Differences in total shrub/perennial density (total #shrubs/perennial plants) between upland & fluvially active units or watercourse complex? (describe and qualify the differences):

Are there plant species that are present in (or absent from) the uplands when compared to fluvially active units or the watercourse complex? (describe differences):

Are there plant species that are more abundant (or less abundant) in the uplands when compared to the fluvially active units or the watercourse complex? (describe and qualify differences):

Watercourse Observations

Watercourse Substrate Particle size

Watercourse Indicators - Transportation, Deposition & Flow Transition

Watercourse Indicator(s) - Erosion

Watercourse Indicator(s) - Ponding & Evaporation, Eolian Transport & Deposition

WATERCOURSE VEGETATION

Est. Total Veg Cover (%)

Species

Taxon

% total cover

Avg. Height (feet)

Avg. Width (feet)

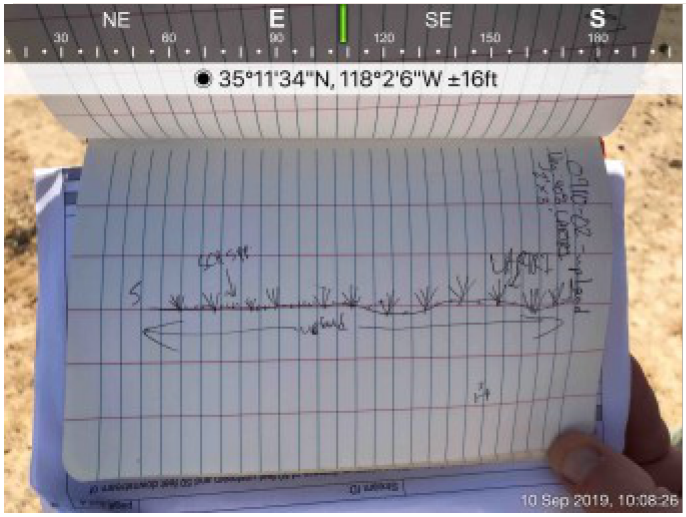
Differences in total

created with wildnote.

shrub/perennial density (total #shrubs/perennial plants) between the low-flow channel(s) and the adjacent floodplain? (describe and qualify the differences):	
Are there plant species that are present in (or absent from) the low-flow channel(s) when compared to the adjacent floodplain? (describe differences):	
Are there plant species that are more abundant (or less abundant) on the low-flow channel(s) and the adjacent floodplain? (describe and qualify differences):	

Vegetation Cross-Section

Vegetation cross-section diagram

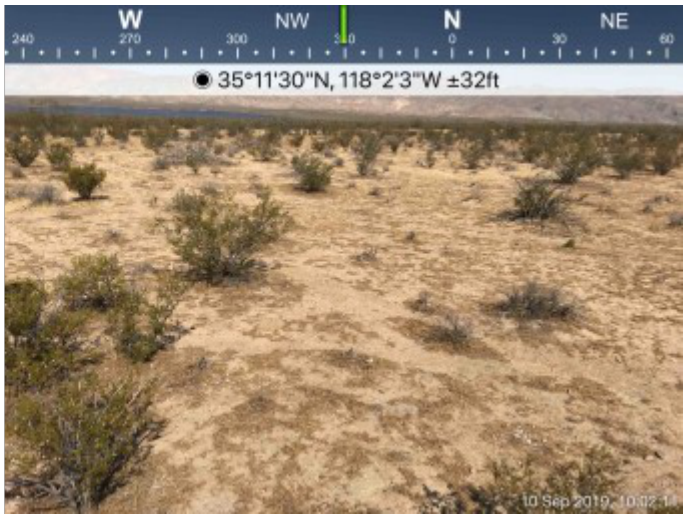


0910-02 Upland. Cross-section of transect with vegetation.

Photos

Photo

0910-02 Upland. Upland indicator (bioturbation).



0910-02 Upland. Upland indicator (woody debris in place).

MESA Drainage Mapping 1.0

Project	Kudu Solar Dry Wash Mapping
ID	57300
Survey Date	09/10/2019
User	Sheryl Creer
Stream ID	**Transect 3** 0910-03 upland
Project/Site	Kudu Solar Project
Nearest Town	Mojave
County	Kern
Investigators	01 - S Creer, 02 - J I Holson

Base Map

Aerial Photo Number	
Date	
Topographic Map Name	
Date	

GPS Data

GPS Name	Bad Elf GNSS Surveyor
Datum	WGS84
Transect Elevation (feet)	
Zone	11
GPS error +/- (feet)	
GPS Coordinates Transect Start	
Speed	
Direction	
Altitude	
Accuracy	0
GPS Coordinates Transect End	
Speed	
Direction	
Altitude	
Accuracy	0

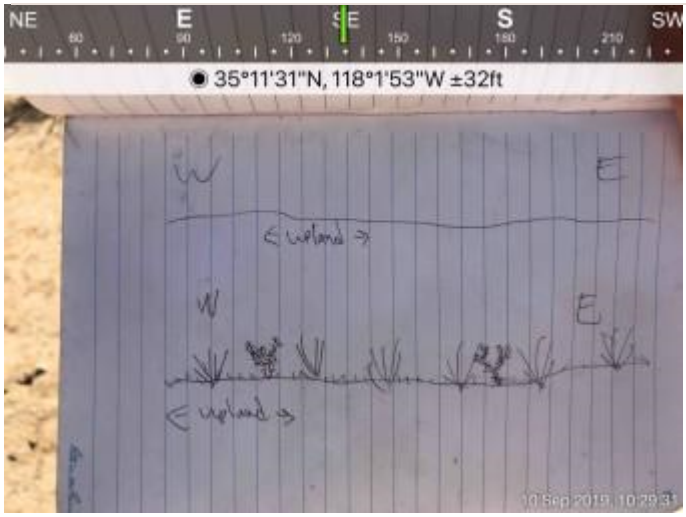
General Geomorphology

Geomorphic Province	Mojave
Landform (check all that apply)	03 Middle Fan
Channel form (select one)	01 Single thread

created with wildnote.

Transect Details

Transect was selected to	05 Other
Other	Document on the ground upland conditions of an aerial signature and NWI line (no watercourse here).
Date of most recent runoff event	
Physical Setting	
Summary Site Descr/Cross-section	



0910-03 Upland. cross section of transect with vegetation.

Upland Observations

Upland Substrate Particle size	04 - granule ≥ 2 - 4mm, 05 - sand ≤ 2mm, 06 - silt/clay - fines
% granule	20
% sand	50
% silt/clay	30
Upland Indicator(s) - Terrestrial:	03 - Bioturbation, 16 - Woody debris in place
Upland Indicator(s) - Fluvial	

UPLAND VEGETATION

Est. Total Veg Cover (%)	30

Species

Taxon	*Larrea tridentata* / Creosote bush
% total cover	25
Avg. Height (feet)	1.5
Avg. Width (feet)	1.5

Species

created with wildnote.

Taxon	*Cylindropuntia echinocarpa* / Wiggins' cholla, Silver or golden cholla
% total cover	5
Avg. Height (feet)	2.5
Avg. Width (feet)	.5
Differences in total shrub/perennial density (total #shrubs/perennial plants) between upland & fluvially active units or watercourse complex? (describe and qualify the differences):	
Are there plant species that are present in (or absent from) the uplands when compared to fluvially active units or the watercourse complex? (describe differences):	
Are there plant species that are more abundant (or less abundant) in the uplands when compared to the fluvially active units or the watercourse complex? (describe and qualify differences):	

Watercourse Observations

Watercourse Substrate Particle size	
Watercourse Indicators - Transportation, Deposition & Flow Transition	
Watercourse Indicator(s) - Erosion	
Watercourse Indicator(s) - Ponding & Evaporation, Eolian Transport & Deposition	
WATERCOURSE VEGETATION Est. Total Veg Cover (%)	0
Differences in total shrub/perennial density (total	

created with wildnote.

#shrubs/perennial plants) between the low-flow channel(s) and the adjacent floodplain? (describe and qualify the differences):	
Are there plant species that are present in (or absent from) the low-flow channel(s) when compared to the adjacent floodplain? (describe differences):	
Are there plant species that are more abundant (or less abundant) on the low-flow channel(s) and the adjacent floodplain? (describe and qualify differences):	

Vegetation Cross-Section

Vegetation cross-section diagram	None

Photos

Photo

0910-03 Upland. Upland indicator (bioturbation).

MESA Drainage Mapping 1.0

Project	Kudu Solar Dry Wash Mapping
ID	57364
Survey Date	09/10/2019
User	Sheryl Creer
Stream ID	**Transect 4** 0910-4-watercourse
Project/Site	Kudu Solar Project
Nearest Town	Mojave
County	Kern
Investigators	01 - S Creer, 02 - J I Holson

Base Map

Aerial Photo Number	
Date	
Topographic Map Name	
Date	

GPS Data

GPS Name	Bad Elf GNSS Surveyor
Datum	WGS84
Transect Elevation (feet)	
Zone	11
GPS error +/- (feet)	
GPS Coordinates Transect Start	
Speed	
Direction	
Altitude	
Accuracy	0
GPS Coordinates Transect End	
Speed	
Direction	
Altitude	
Accuracy	0

General Geomorphology

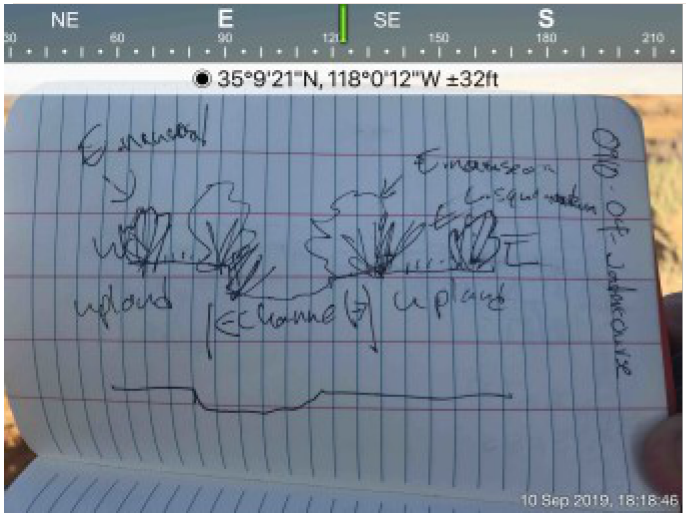
Geomorphic Province	Mojave
Landform (check all that apply)	04 Lower Fan
Channel form (select one)	01 Single thread

created with wildnote.

Transect Details

Transect was selected 01 Document fluvial activity & boundaries to

Date of most recent runoff event	
Physical Setting	
Summary Site Descr/Cross-section	



transect cross-section with vegetation

Upland Observations

Upland Substrate Particle size	03 - pebble ≥ 4 - 64mm, 04 - granule ≥ 2 - 4mm, 05 - sand ≤ 2mm, 06 - silt/clay - fines
% granule	25
% pebble	25
% sand	30
% silt/clay	20
Upland Indicator(s) - Terrestrial:	03 - Bioturbation, 16 - Woody debris in place
Upland Indicator(s) - Fluvial	

UPLAND VEGETATION

Est. Total Veg Cover (%)	30

Species

Taxon	*Ambrosia dumosa* / Burro weed, White bur-sage
% total cover	30
Avg. Height (feet)	1.5
Avg. Width (feet)	2
Differences in total shrub/perennial density (total #shrubs/perennial	Higher density (70%) along watercourse edge; adjacent uplands has much lower density.

created with wildnote.

plants) between upland & fluvially active units or watercourse complex? (describe and qualify the differences):	
Are there plant species that are present in (or absent from) the uplands when compared to fluvially active units or the watercourse complex? (describe differences):	No Lepidospartum in uplands.
Are there plant species that are more abundant (or less abundant) in the uplands when compared to the fluvially active units or the watercourse complex? (describe and qualify differences):	

Watercourse Observations

Substrate Particle size Watercourse	04 - granule ≥ 2 - 4mm, 05 - sand ≤ 2mm, 06 - silt/clay - fines
% granule	10
% silt/clay (fines)	15
% sand	75
Watercourse Indicators - Transportation, Deposition & Flow Transition	08 - Organic Drift, 11 - Ripples, 16 - Sediment sorting, 18 - Vegetation-channel alignments, 19 - Wrack
Watercourse Indicator(s) - Erosion	01 - Cut banks, 02 - Exposed roots, 04 - Rills, 05 - Scour, 09 - Other
Other	Water present (3 inches average depth) and flowing. Source is a spring.
Watercourse Indicator(s) - Ponding & Evaporation, Eolian Transport & Deposition	07 - Springs

WATERCOURSE VEGETATION

Est. Total Veg Cover (%)	55

Species

Taxon	*Ambrosia acanthicarpa* / Annual burrweed, Annual bur-sage
% total cover	10

created with wildnote.

Avg. Height (feet)	2
Avg. Width (feet)	1

Species

Taxon	*Lepidospartum squamatum* / Scalebroom
% total cover	15
Avg. Height (feet)	2
Avg. Width (feet)	1.5

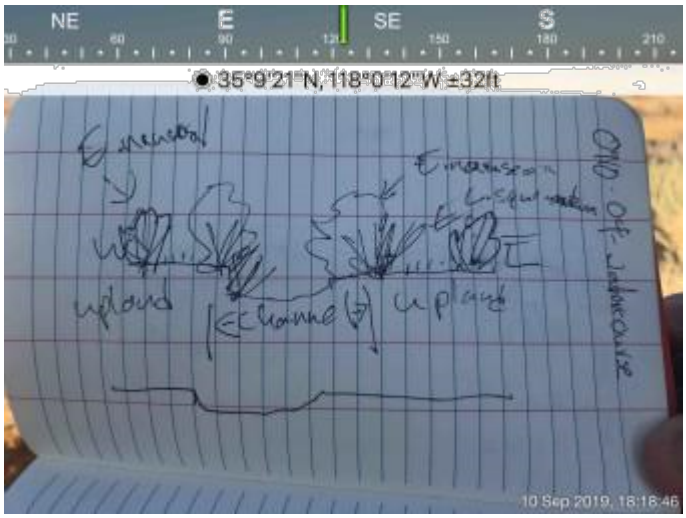
Species

Taxon	*Ericameria nauseosa* / Rubber rabbitbrush
% total cover	30
Avg. Height (feet)	4
Avg. Width (feet)	6

Differences in total shrub/perennial density (total #shrubs/perennial plants) between the low-flow channel(s) and the adjacent floodplain? (describe and qualify the differences):	
Are there plant species that are present in (or absent from) the low-flow channel(s) when compared to the adjacent floodplain? (describe differences):	
Are there plant species that are more abundant (or less abundant) on the low-flow channel(s) and the adjacent floodplain? (describe and qualify differences):	

Vegetation Cross-Section

Vegetation cross-section diagram	



Photos

Photo

stream

stream

MESA Drainage Mapping 1.0

Project	Kudu Solar Dry Wash Mapping
ID	57359
Survey Date	09/10/2019
User	Sheryl Creer
Stream ID	**Transect 5** 0910-05 Upland
Project/Site	Kudu Solar Project
Nearest Town	Mojave
County	Kern
Investigators	01 - S Creer, 02 - J I Holson

Base Map

Aerial Photo Number	
Date	
Topographic Map Name	
Date	

GPS Data

GPS Name	Bad Elf GNSS Surveyor
Datum	WGS84
Transect Elevation (feet)	
Zone	11
GPS error +/- (feet)	
GPS Coordinates Transect Start	
Speed	
Direction	
Altitude	
Accuracy	0
GPS Coordinates Transect End	
Speed	
Direction	
Altitude	
Accuracy	0

General Geomorphology

Geomorphic Province	Mojave
Landform (check all that apply)	
Channel form (select one)	Mojave

created with wildnote.

Transect Details

Transect was selected to	05 Other
Other	Document on the ground upland conditions of an aerial signature and NWI (no watercourse here).
Date of most recent runoff event	
Physical Setting	
Summary Site Descr/ Cross-section	None

Upland Observations

Upland Substrate Particle size	02 - cobble ≥ 64 - 256mm, 03 - pebble ≥ 4 - 64mm, 04 - granule ≥ 2 - 4mm, 05 - sand ≤ 2mm
% cobble	40
% granule	30
% pebble	20
% sand	10
Upland Indicator(s) - Terrestrial:	03 - Bioturbation, 07 - Deflated surface, 15 - Surface rounding of landform, 16 - Woody debris in place
Upland Indicator(s) - Fluvial	

UPLAND VEGETATION

Est. Total Veg Cover (%)	20

Species

Taxon	*Ericameria nauseosa* / Rubber rabbitbrush
% total cover	20
Avg. Height (feet)	1.5
Avg. Width (feet)	2
Differences in total shrub/perennial density (total #shrubs/perennial plants) between upland & fluvially active units or watercourse complex? (describe and qualify the differences):	
Are there plant species that are present in (or absent from) the uplands when compared to fluvially active units or the watercourse complex? (describe	

differences):

Are there plant species that are more abundant (or less abundant) in the uplands when compared to the fluvially active units or the watercourse complex? (describe and qualify differences):

Watercourse Observations

Watercourse

Substrate Particle size

Watercourse Indicators - Transportation, Deposition & Flow Transition

Watercourse Indicator(s) - Erosion

Watercourse Indicator(s) - Ponding & Evaporation, Eolian Transport & Deposition

WATERCOURSE VEGETATION

Est. Total Veg Cover (%)

Species

Taxon

% total cover

Avg. Height (feet)

Avg. Width (feet)

Differences in total shrub/perennial density (total #shrubs/perennial plants) between the low-flow channel(s) and the adjacent floodplain? (describe and qualify the differences):

Are there plant species that are present in (or absent from) the low-flow channel(s) when compared to the adjacent floodplain? (describe differences):

Are there plant

species that are more abundant (or less abundant) on the low-flow channel(s) and the adjacent floodplain? (describe and qualify differences):	

Vegetation Cross-Section

Vegetation cross-section diagram	None

Photos

Photo

0910-05 Upland. Upland indicator (bioturbation).

MESA Drainage Mapping 1.0

Project	Kudu Solar Dry Wash Mapping
ID	57461
Survey Date	09/11/2019
User	Sheryl Creer
Stream ID	**Transect 6** 0911-02 upland
Project/Site	Kudu Solar Project
Nearest Town	Mojave
County	Kern
Investigators	01 - S Creer, 02 - J I Holson

Base Map

Aerial Photo Number	
Date	
Topographic Map Name	
Date	

GPS Data

GPS Name	Bad Elf GNSS Surveyor
Datum	WGS84
Transect Elevation (feet)	
Zone	11
GPS error +/- (feet)	
GPS Coordinates Transect Start	
Speed	
Direction	
Altitude	
Accuracy	0
GPS Coordinates Transect End	
Speed	
Direction	
Altitude	
Accuracy	0

General Geomorphology

Geomorphic Province	Mojave
Landform (check all that apply)	04 Lower Fan
Channel form (select one)	Mojave

created with wildnote.

Transect Details

Transect was selected to	05 Other
Other	Ground-truth NWI and aerial signature; no watercourse present.
Date of most recent runoff event	
Physical Setting	
Summary Site Descr/ Cross-section	None

Upland Observations

Upland Substrate Particle size	03 - pebble ≥ 4 - 64mm, 04 - granule ≥ 2 - 4mm, 05 - sand ≤ 2mm
% granule	30
% pebble	15
% sand	55
Upland Indicator(s) - Terrestrial:	03 - Bioturbation, 15 - Surface rounding of landform, 16 - Woody debris in place
Upland Indicator(s) - Fluvial	14 - Vegetation-channel alignment

UPLAND VEGETATION

Est. Total Veg Cover (%)	20

Species

Taxon	*Larrea tridentata* / Creosote bush
% total cover	10
Avg. Height (feet)	3
Avg. Width (feet)	4

Species

Taxon	*Ericameria pinifolia* / Pine bush, Pine-bush
% total cover	10
Avg. Height (feet)	1
Avg. Width (feet)	2
Differences in total shrub/perennial density (total #shrubs/perennial plants) between upland & fluvially active units or watercourse complex? (describe and qualify the differences):	
Are there plant	

species that are present in (or absent from) the uplands when compared to fluvially active units or the watercourse complex? (describe differences):

Are there plant species that are more abundant (or less abundant) in the uplands when compared to the fluvially active units or the watercourse complex? (describe and qualify differences):

Watercourse Observations

Watercourse

Substrate Particle size

Watercourse Indicators - Transportation, Deposition & Flow

Transition

Watercourse Indicator(s) - Erosion

Watercourse Indicator(s) - Ponding & Evaporation, Eolian Transport & Deposition

WATERCOURSE VEGETATION

Est. Total Veg Cover (%)

Species

Taxon

% total cover

Avg. Height (feet)

Avg. Width (feet)

Differences in total shrub/perennial density (total #shrubs/perennial plants) between the low-flow channel(s) and the adjacent floodplain? (describe and qualify the differences):

Are there plant species that are present in (or absent

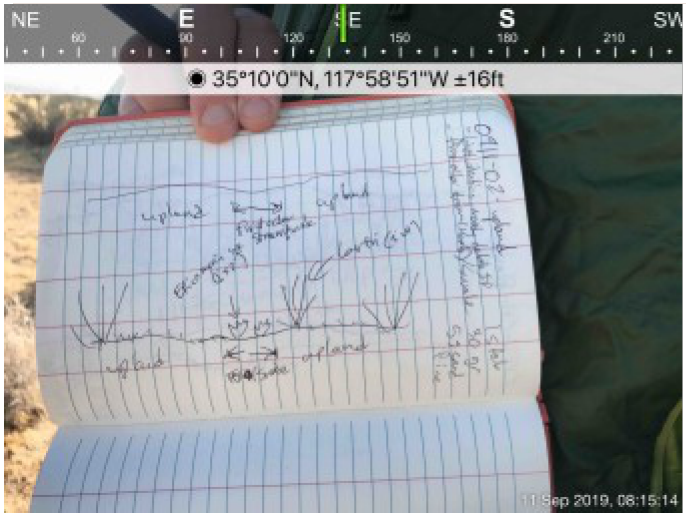
from) the low-flow channel(s) when compared to the adjacent floodplain?

(describe differences):

Are there plant species that are more abundant (or less abundant) on the low-flow channel(s) and the adjacent floodplain? (describe and qualify differences):

Vegetation Cross-Section

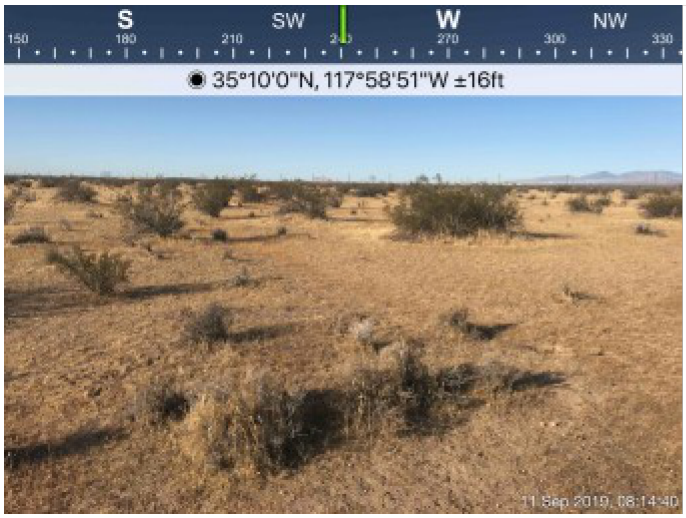
Vegetation cross-section diagram



0911-02 transect cross section with vegetation.

Photos

Photo



0911-02 swale

created with wildnote.

MESA Drainage Mapping 1.0

Project	Kudu Solar Dry Wash Mapping
ID	57459
Survey Date	09/11/2019
User	Sheryl Creer
Stream ID	**Transect 7** 0911-04 upland
Project/Site	Kudu Solar Project
Nearest Town	Mojave
County	Kern
Investigators	01 - S Creer, 02 - J I Holson

Base Map

Aerial Photo Number	
Date	
Topographic Map Name	
Date	

GPS Data

GPS Name	Bad Elf GNSS Surveyor
Datum	WGS84
Transect Elevation (feet)	
Zone	11
GPS error +/- (feet)	
GPS Coordinates Transect Start	
Speed	
Direction	
Altitude	
Accuracy	0
GPS Coordinates Transect End	
Speed	
Direction	
Altitude	
Accuracy	0

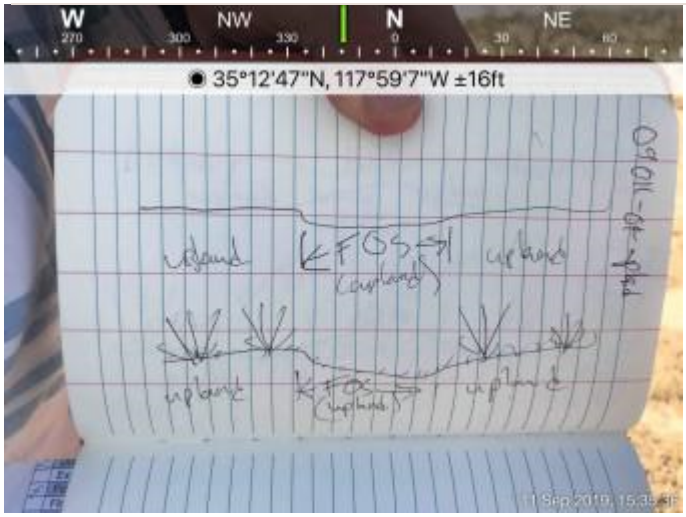
General Geomorphology

Geomorphic Province	Mojave
Landform (check all that apply)	04 Lower Fan
Channel form (select one)	Mojave

created with wildnote.

Transect Details

Transect was selected to	05 Other
Other	Ground-truth NWI and aerial signature; Swale in upland present
Date of most recent runoff event	
Physical Setting	
Summary Site Descr/Cross-section	



0911-04 upland

Upland Observations

Upland Substrate Particle size	03 - pebble ≥ 4 - 64mm, 04 - granule ≥ 2 - 4mm, 05 - sand ≤ 2mm
% granule	50
% pebble	20
% sand	30
Upland Indicator(s) - Terrestrial:	03 - Bioturbation, 07 - Deflated surface, 16 - Woody debris in place
Upland Indicator(s) - Fluvial	

UPLAND VEGETATION

Est. Total Veg Cover (%)	35

Species

Taxon	*Larrea tridentata* / Creosote bush
% total cover	15
Avg. Height (feet)	3
Avg. Width (feet)	3

Species

Taxon	*Ambrosia dumosa* / Burro weed, White bur-sage
% total cover	20
Avg. Height (feet)	.7
Avg. Width (feet)	1
Differences in total shrub/perennial density (total #shrubs/perennial plants) between upland & fluvially active units or watercourse complex? (describe and qualify the differences):	Lower density of annual species in swale, lower density of mustard. No Larrea in swale.
Are there plant species that are present in (or absent from) the uplands when compared to fluvially active units or the watercourse complex? (describe differences):	
Are there plant species that are more abundant (or less abundant) in the uplands when compared to the fluvially active units or the watercourse complex? (describe and qualify differences):	

Watercourse Observations

Substrate Particle size Watercourse	04 - granule ≥ 2 - 4mm, 05 - sand ≤ 2mm, 06 - silt/clay - fines
% granule	30
% silt/clay (fines)	20
% sand	50
Watercourse Indicators - Transportation, Deposition & Flow Transition	
Watercourse Indicator(s) - Erosion	
Watercourse Indicator(s) - Ponding & Evaporation, Eolian Transport & Deposition	

WATERCOURSE VEGETATION

Est. Total Veg Cover	

created with wildnote.

(%)

Species

Taxon	
% total cover	
Avg. Height (feet)	
Avg. Width (feet)	
Differences in total shrub/perennial density (total #shrubs/perennial plants) between the low-flow channel(s) and the adjacent floodplain? (describe and qualify the differences):	
Are there plant species that are present in (or absent from) the low-flow channel(s) when compared to the adjacent floodplain? (describe differences):	
Are there plant species that are more abundant (or less abundant) on the low-flow channel(s) and the adjacent floodplain? (describe and qualify differences):	

Vegetation Cross-Section

Vegetation cross-section diagram	None

Photos

Photo

0911-04 swale

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Appendix D-5

Mohave Ground Squirrel
Protocol Survey Report

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MOHAVE GROUND SQUIRREL PROTOCOL SURVEY
KUDU SOLAR FARM

PREPARED FOR

8MINUTE SOLAR ENERGY
68SF 8ME LLC

Prepared by

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January 5, 2021

INTRODUCTION

68SF 8me LLC (the Applicant) proposes to develop a utility-scale solar photovoltaic project in unincorporated Kern County and in California City, California. The Kudu Solar Farm is comprised of 10 project areas totaling about 2,176 acres in the vicinity of Neuralia Road and Phillips Road. Power generated at the solar arrays will be transmitted to the Eland Solar Project Substation, and power will be delivered to the Barren Ridge Substation via an up to 230 kilovolt overhead and/or underground transmission line (gen-tie) route[1].

The Kudu project areas are at the western edge of the geographic range of the Mohave ground squirrel (*Xerospermophilus mohavensis*). According to the California Natural Diversity Data Base (CNDDB), there is a 1975 record of the species on one of the properties proposed for development (CNDDB Occ. No. 20). In addition, there is recent evidence that Mohave ground squirrels are present in the area to the east of Neuralia Road on conservation lands that are managed by the Desert Tortoise Preserve Committee and by the California Department of Fish and Wildlife. Mohave ground squirrels were also recorded in 2019 on properties east of Neuralia Road that are proposed for development as part of the Eland Solar Farm (Leitner 2019). As a result of the potential for occurrence of Mohave ground squirrels, the project proponent has conducted protocol surveys on the project areas making up the Kudu Solar Farm. This report describes the survey methodology and the results of this survey effort.

The Mohave ground squirrel protocol survey of the Kudu Solar Farm properties was initiated on March 15, 2020 and continued through July 15, 2020 in order to satisfy California Department of Fish & Wildlife (CDFW) requirements.

PROTOCOL SURVEY METHODS

The CDFW has published guidelines that describe surveys to be undertaken to determine whether the Mohave ground squirrel is present on a project site (California Department of Fish and Game 2003). These survey guidelines apply to projects that would potentially affect $\leq$180 acres of potential Mohave ground squirrel habitat or to linear projects $\leq$5 miles in length. However, the Department also requires that special survey protocols to be developed for larger scale projects. Since the Kudu project would affect an area larger than 180 acres, it was necessary for the project proponent to develop a special protocol in consultation with CDFW.

The special survey protocol as approved by CDFW Region 4 consisted of 3 elements: visual surveys, live-trapping, and camera trapping. This protocol was designed to provide a detailed picture of Mohave ground squirrel usage of the project properties. In particular, live-trapping was continued for the full 3 sessions on all grids even after a Mohave ground squirrel was captured. Live-trapping was also supplemented by camera trapping which began on March 15 and continued through July 15.

[1] The Eland to Barren Ridge Gen-tie line was analyzed under a separate EIR and 2081 permit application and is not included as part of the Kudu Project.

Visual Surveys

Visual surveys to assess Mohave ground squirrel presence were undertaken throughout the project area during the period of March 15 through April 15.

Live-trapping Surveys

Live-trapping surveys were undertaken at 9 locations throughout the project site (Figure 1). Following CDFW protocol requirements, 100 traps were deployed in a 4 x 25 pattern at each grid location and operated for 5 days on 3 different occasions. Trapping was conducted for the required 5-day period during March 15-April 15, May 1-31, and June 15-July 15. The trapping schedule is shown in Table 1.

Table 1. Schedule of live-trapping surveys.

Survey Area 4	**Trapping Session 1**	**Trapping Session 2**	**Trapping Session 3**
Grid 4A	Apr 9-Apr 13	May 6-May 10	June 27-July 1
Grid 4B	Mar 30-Apr 3	May 1-May 5	June 27-July 1
Survey Area 5			
Grid 5	Mar 16-Mar 20	May 6-May 10	June 22-June 26
Survey Area 7			
Grid 7	Mar 26-Mar 30	May 18-May 22	June 15-June 19
Survey Area 9			
Grid 9	Mar 23-Mar 27	May 4-May 8	June 15-June 19
Survey Area 10			
Grid 10A	Apr 4-Apr 8	May 12-May 16	July 4-July 8
Grid 10B	Apr 10-Apr 14	May 7-May 11	July 4-July 8
Grid 10C	Apr 4-Apr 8	May 11-May 15	June 19-June 23
Grid 10D	Mar 26-Mar 30	May 18-May 22	June 15-June 19

Camera Trapping Surveys

Since 2011, trail cameras have been widely used to survey for the presence of Mohave ground squirrels. They have been employed in regional surveys to determine the status of the species over wide areas (Leitner and Delaney, 2014). More recently, trail cameras have been used to confirm that proposed mitigation lands support Mohave ground squirrel populations and to monitor the status of the species on mitigation lands. Trail cameras were successfully used at the adjoining Eland Solar Farm in 2019 to determine presence of Mohave ground squirrels (Leitner 2019). Therefore, trail cameras were used extensively to supplement live trapping in all portions of the Kudu project area (Figure 1).

The cameras used in this survey protocol were Bushnell Trophy Cam HD models with a 0.2 sec trigger speed. They were set to operate in daytime mode with 3 MP resolution and equipped with 32 GB

capacity SDHC data storage cards. Cameras were securely attached to the tops of 3 ft steel U-posts, the camera lens aimed toward the north to minimize sun glare.

Bait was placed in front of the cameras in order to attract ground squirrels. The baits used were 10-lb wildlife feed blocks, which consist of a mixture of seeds embedded in a solid molasses matrix. These blocks have been shown in controlled tests to be attractive to Mohave ground squirrels and to last for 2 or more weeks under field conditions. Cameras were aimed carefully to ensure a clear view of the blocks that were placed approximately 4 ft to the north.

Cameras were deployed and operated starting March 15, 2020 and camera surveys continued through July 15, 2020. During the period March 15-May 16, cameras were operated at approximately one-half of the 56 camera stations for 2 weeks and then moved to the other camera stations for 2 weeks. Thus all cameras were in operation for 4 weeks at each station during this period. Beginning May 16, cameras were operated continuously at all 56 stations through July 15, ensuring complete coverage to detect possible dispersing juvenile Mohave ground squirrels. Every 2 weeks, all deployed cameras were inspected to replace bait blocks and to ensure that batteries were operating properly. SDHC cards were then removed from all cameras and replaced with new SDHC cards. The photos captured were then downloaded to external hard drives. All photos were examined to determine if Mohave ground squirrels were detected. Photos showing Mohave ground squirrels were recorded with date, time, and location noted. These data were entered in an Excel spreadsheet.

Table 2. Schedule of camera trapping surveys.

Survey Area	Mar 15-27	Mar 28-Apr 13	Apr 13-29	Apr 30-May 16	May 16-29	May 29-June 15	June 16-30	July 1-15
Survey Area 1	X		X		X	X	X	X
Survey Area 2	X		X		X	X	X	X
Survey Area 3	X		X		X	X	X	X
Survey Area 4		X		X	X	X	X	X
Survey Area 5	X		X		X	X	X	X
Survey Area 7	X		X		X	X	X	X
Survey Area 8	X		X		X	X	X	X
Survey Area 9		X		X	X	X	X	X
Survey Area 10		X		X	X	X	X	X

RESULTS

Visual Surveys

No Mohave ground squirrel detections were recorded in the visual surveys conducted from March 15 through April 15.

Live-trapping Surveys

Mohave ground squirrels were captured during live-trapping sessions on Survey Areas 4, 7, and 9 (Table 3). The locations of these captures are shown on Figure 2. The only adult Mohave ground squirrel captured at a trapping grid was an adult male on Grid 4B on May 4, 2020. Juvenile Mohave ground squirrels were all captured during the 3rd trapping session.

Table 3. Mohave ground squirrel captures at Kudu trapping grids.

Trapping Grid	Trapping Session 1	Trapping Session 2	Trapping Session 3
	Number of Mohave Ground Squirrel Captures		
Survey Area 4			
Grid 4A	0	0	4 juveniles
Grid 4B	0	1 adult male	6 juveniles
Survey Area 7			
Grid 7	0	0	2 juveniles
Survey Area 9			
Grid 9	0	0	1 juvenile

Camera Trapping Surveys

Camera trapping resulted in the collection of over 2 million photographic images (Table 4). Cameras were operated for more than 90 days and the mean number of images captured per camera was ~42,000. All images were viewed on a computer screen and all vertebrate species seen were identified and recorded. The great majority of images were of non-target species, including many reptiles and birds. The most common mammal species were the antelope ground squirrel (*Ammospermophilus leucurus*), California ground squirrel (*Otospermophilus beecheyi*), and black-tailed jack rabbit (*Lepus californicus*).

Mohave ground squirrels were detected at 24 of the 56 camera stations (Figure 2). They were present at Survey Areas 1, 2, 4, 5, 7, and 10 (Figure 3). The first Mohave ground squirrel camera record was an adult female on Apr 12 on Survey Area 4 at camera station C. Several other adult female detections followed on Survey Area 4 from Apr 30 through May 14. The first 2 juvenile records were May 9 and 16, again on Survey Area 4. From May 20 through early July there were camera detections of juvenile MGS at Survey Areas 1, 2, 5, 7, and 10. The apparent lack of adult females on these 5 survey areas and the timing of juvenile appearances indicate that these detections represent dispersing animals.

Table 4. The numbers of photographic images recorded by trail cameras during the period March 15-July 15, 2020.

Project Area	Mar 15-27	Mar 28-Apr 13	Apr 13-29	Apr 30-May 16	May16-29	May 29-June 15	June 16-30	July 1-15	Total Number of Photos
Survey Area 1	51,294		8,904		71,461	96,557	59,596	67,235	355,047
Survey Area 2	40,403		9,018		63,076	36,726	40,121	8,836	198,180
Survey Area 3	7,041		717		20,964	36,879	18,383	36,435	120,419
Survey Area 4		21,844		41,627	54,805	74,789	61,166	68,728	322,959
Survey Area 5	10,676		42,184		69,187	82,234	54,622	47,563	306,466
Survey Area 7	20,939		75,938		111,125	163,624	118,166	15,723	505,515
Survey Area 8	10,259		10,281		53,997	32,535	41,518	28,054	176,644
Survey Area 9		26,819		742	13,207	5,368	3,616	26,810	76,562
Survey Area 10		60,828		12,618	35,440	88,015	20,727	49,710	267,338
Totals	140,612	109,491	147,042	54,987	493,262	616,727	417,915	349,094	2,329,130

CONCLUSIONS

Survey Areas 1 and 2.

Camera surveys provided no evidence of resident adult MGS at these 2 areas, but dispersing juvenile Mohave ground squirrels were documented here. Juveniles first appeared at Survey Area 1 on May 21-29 then occasionally in June and July. The first Mohave ground squirrel detection at Survey Area 2 was on June 4 at one camera, with occasional detections at another camera during the period June 17-July 11. In 2019, there were records of dispersing juvenile Mohave ground squirrels at an adjoining Eland project property, so the 2020 detections may also represent dispersals from the conservation lands to the east.

Survey Area 3.

There were no Mohave ground squirrel detections on this small property.

Survey Area 4.

There were many Mohave ground squirrel detections on this property, with adult females documented beginning on April 12. Adult female Mohave ground squirrels were detected at 5 of the camera stations here, with records continuing through June 14. An adult male Mohave ground squirrel was captured at Grid 4B on May 4. This was the only survey area that appeared to support a resident reproductive Mohave ground squirrel population.

As would be expected, there were many camera and live-trap detections of juvenile Mohave ground squirrels throughout this survey area. The camera detections of juvenile Mohave ground squirrels here began as early as May 9, prior to the time at which some undertake dispersal to more distant locations.

Survey Area 5.

There were no Mohave ground squirrel captures at the live-trapping grid here. However, juvenile Mohave ground squirrel camera detections were noted here beginning May 30-June 2. These detections were very likely due to a single dispersing individual that took up residence at Camera D, where it was regularly photographed later during June and early July. This animal was observed to use a burrow in the immediate vicinity of Camera D.

Survey Area 7.

Two juvenile Mohave ground squirrels were captured at Grid 7 on June 17. In addition, there were a number of detections of juvenile Mohave ground squirrels at 6 camera stations adjacent to Grid 7, beginning June 3-5 and continuing through early July. The timing of camera detections suggests that there were no more than 2 juvenile Mohave ground squirrels in Survey Area 7, as only on 3 occasions were animals detected at the same day and time on 2 different cameras. In each case, the simultaneous detections were at Cameras J and L.

Survey Area 8.

There were no Mohave ground squirrel detections on this property.

Survey Area 9.

A juvenile female Mohave ground squirrel was captured at the live-trapping grid here on June 18. There were no camera detections on this project area.

Survey Area 10.

The only Mohave ground squirrel record on this large property was a juvenile detected here on June 2. It appeared at the camera for less than a minute. It may have been the same individual live-trapped about 0.5 mi to the west on June 18.

SUMMARY

This intensive protocol effort has yielded a clear picture of Mohave ground squirrel presence and usage throughout the Kudu survey areas. A resident Mohave ground squirrel population was documented on Survey Area 4, which is not surprising as it is immediately adjacent to a CDFW conservation property known to support the species. Survey Area 4 appears to be the only unit within the Kudu development area with habitat conditions capable of supporting a resident adult Mohave ground squirrel population. It does not appear to have been farmed, although sheep grazing occurs here annually. In spite of this grazing pressure, Survey Area 4 continues to support several shrub species that are important for Mohave ground squirrel forage and cover (Leitner and Leitner, 2017).

There were no detections of resident adult Mohave ground squirrels on Kudu survey areas to the west of Neuralia Road. This finding is entirely consistent with the results of extensive protocol surveys conducted in this same general area in 2019 for the proposed Eland solar project (Leitner, 2019). Survey properties for both projects west of Neuralia Road included former agricultural land and areas that have been heavily impacted by sheep grazing for decades.

The 2019 Eland protocol surveys also found no evidence of dispersing juvenile Mohave ground squirrels west of Neuralia Road. However, there was ample winter rainfall to support Mohave ground squirrel reproduction in 2019 and juveniles were detected on Eland survey areas to the east of Neuralia Road. The 2019-2020 winter also brought adequate rainfall and good Mohave ground squirrel reproduction. Thus, it was not surprising that dispersing juveniles were detected in late May-early June 2020 at several Kudu survey areas west of Neuralia Road. The timing of dispersal was consistent with data from an earlier radiotelemetry study of long-distance movements by juvenile Mohave ground squirrels (Harris and Leitner 2005). Assuming that these dispersing juveniles originated to the east of Neuralia Road, the distances that they traversed would also have been very similar to those cited in Harris and Leitner (2005).

To summarize, Kudu Project Area 4 east of Neuralia Road was the only site where a resident adult Mohave ground squirrel population was documented. Only dispersing juveniles were detected on survey areas west of Neuralia Road. This was even true of Kudu Survey Areas 1 and 2 east of Neuralia Road. The absence of adult Mohave ground squirrel records in 2019 on Eland survey areas west of Neuralia Road strongly suggests that the habitat there is not suitable to sustain a permanent population.

REFERENCES

California Department of Fish and Game. 2003. Mohave Ground Squirrel Survey Guidelines (minor updates July 2010).

Harris, J.H. and P. Leitner. 2005. Long-distance movements of juvenile Mohave ground squirrels, *Spermophilus mohavensis*. Southwestern Naturalist 50:188-196.

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Leitner, P. 2008. Current status of the Mohave Ground Squirrel. Transactions of the Western Section of The Wildlife Society 44:11-29.

Leitner, P. 2019. Mohave ground squirrel protocol survey, Eland Solar Farm. 11 pp.

Leitner, P. and D. K. Delaney. 2014. Mohave ground squirrel camera study 2011-2012. Prepared for California Department of Fish and Wildlife, Sacramento, California, USA. 10 pp.

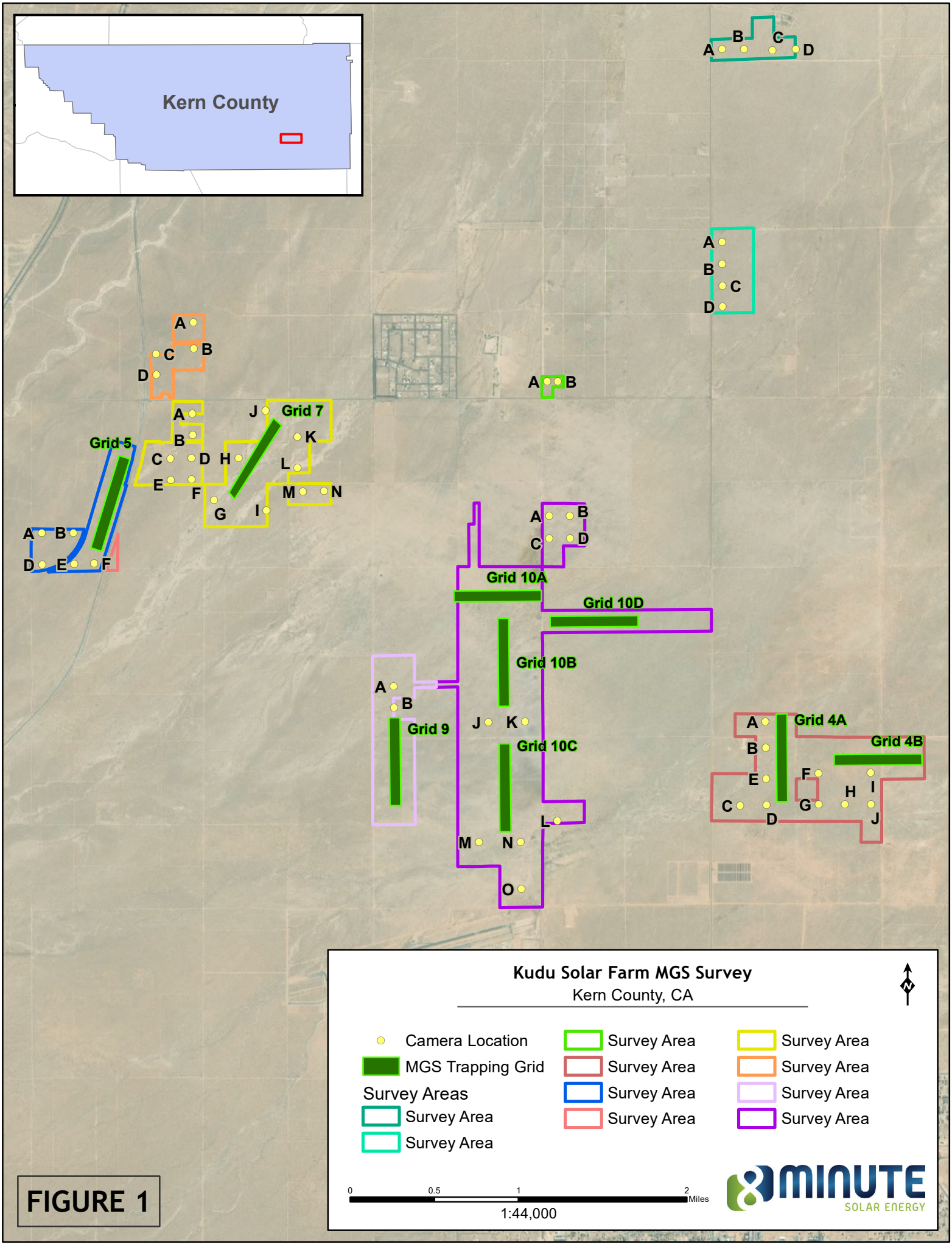
Kern County
Grid 5
Grid 7
Grid 10A
Grid 10B
Grid 10C
Grid 10D
Grid 9
Grid 4A
Grid 4B
Kudu Solar Farm MGS Survey
Kern County, CA
Camera Location
MGS Trapping Grid
Survey Areas
Survey Area
Survey Area
Survey Area
Survey Area
Survey Area
Survey Area
Survey Area
Survey Area
Survey Area
0
0.5
1
2
Miles
1:44,000
MINUTE
SOLAR ENERGY

FIGURE 1

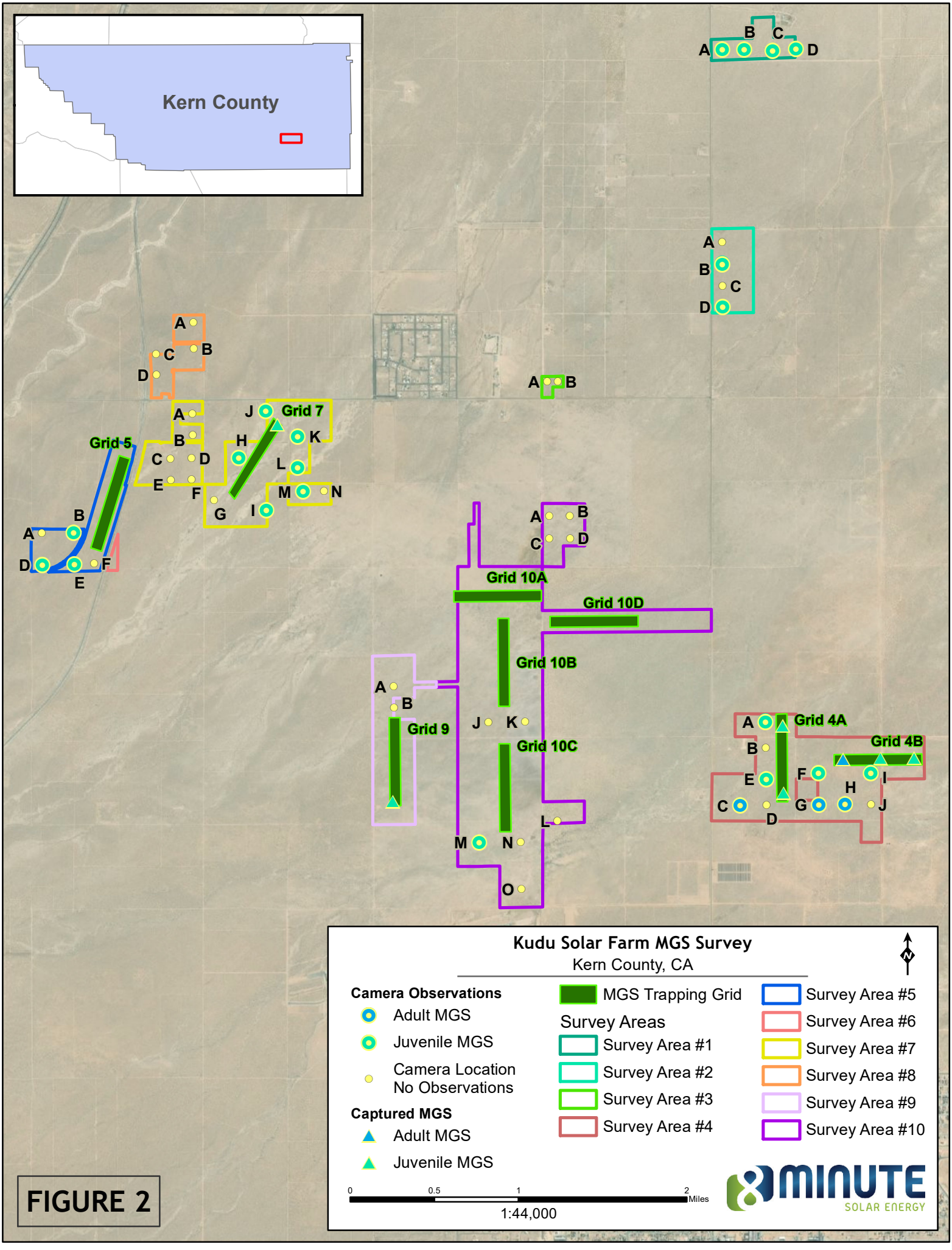
Kern County
Grid 5
Grid 7
Grid 10A
Grid 10B
Grid 10C
Grid 10D
Grid 9
Grid 4A
Grid 4B
Kudu Solar Farm MGS Survey
Kern County, CA
Camera Observations
Adult MGS
Juvenile MGS
Camera Location
No Observations
Captured MGS
Adult MGS
Juvenile MGS
MGS Trapping Grid
Survey Areas
Survey Area #1
Survey Area #2
Survey Area #3
Survey Area #4
Survey Area #5
Survey Area #6
Survey Area #7
Survey Area #8
Survey Area #9
Survey Area #10
0
0.5
1
2
Miles
1:44,000
MINUTE
SOLAR ENERGY

FIGURE 2

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| CAMERA | | DATE | | |

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Appendix E

Cultural Resources Inventory and Evaluation Report

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Cultural Resources Inventory and Evaluation Report

Kudu Solar Project

February 3, 2020

Prepared for:

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c/o 8minute Solar Energy
250 Sutter Street, Suite 600
San Francisco, CA 94108

Prepared by:

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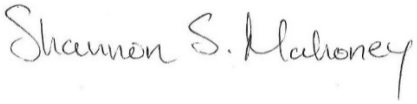
Prepared by _____
(signature)

Erin Sherlock, MA



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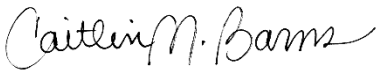
(signature)

Alisa Reynolds, MA, RPA



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Caitlin Barns

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Executive Summary

69SV 8me LLC (Applicant) proposes to permit, build, and operate the Kudu Solar Project (Project) in Kern County, California. As part of the study to support review of the Project pursuant to state and federal regulations, Stantec Consulting Services Inc. (Stantec) conducted a Cultural Resources Inventory and Evaluation. Twelve previously recorded archaeological sites are located within the Project area. Between August 16 and September 13, 2019, Stantec archaeologists conducted a pedestrian field survey of the entire Project area, which includes 1,955 acres on private property. The intensive reconnaissance-level pedestrian field survey resulted in the recordation of 29 new isolated artifacts or features and 26 newly discovered sites: 15 prehistoric resources, and 11 historic-era resources. Stantec archaeologists also revisited and updated 11 previously recorded resources.

Although this report was completed as part of CEQA permitting requirements, the level of effort undertaken by Stantec—and the eligibly discussions included—were established to comply with Section 106 of the National Historic Preservation Act, should it be required. As such, the resources were evaluated for eligibility for listing on the National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR).

Of the sites located within Project area (37), none of these are considered eligible for listing on the NRHP or CRHR. The proposed Project would not impact any known resources. Therefore, Stantec recommends a CEQA finding of No Effect and less than significant impact for cultural resources.

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Abbreviations

°F	degrees Fahrenheit
AC	alternating electrical current
Applicant	69SV 8me LLC
BP	Before Present
CCR	California Code of Regulations
CCS	cryptocrystalline
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
Client	69SV 8me LLC
cm	centimeter
CRHR	California Register of Historical Resources
DC	direct electrical current
ESS	electrical storage system
FAR	fire-affected rock
gen-tie	generation tie
GPS	Global Positioning System
ISO	International Organization of Standardization
kV	kilovolt
m	meter
M&R	Mendiburu and Rudnick
MW	megawatt
MWh	megawatt hour

NAHC	Native American Heritage Commission
NRHP	National Register of Historic Places
O&M	operations and maintenance
PRC	Public Resources Code
PV	photovoltaic
Project	Kudu Solar Farm Project
SPRR	Southern Pacific Railroad
Stantec	Stantec Consulting Services Inc.
TCR	tribal cultural resources

1.0 PROJECT DESCRIPTION

1.1 PROJECT INFORMATION

69SV 8me LLC (Applicant) is seeking approval of conditional use permits (CUPs) for the construction and operation of an up to 500 megawatt (MW) alternating electrical current (AC) utility-scale solar farm with energy storage, known as the Kudu Solar Farm Project (Project) in unincorporated Kern County and California City, California (Figure 1). The Applicant proposes to construct, own, and operate the Project and would secure conditional use permits from both Kern County and California City along with permits from other relevant agencies as required by law.

1.1.1 Project Site Information

The Project is comprised of 75 assessor's parcels (Project area) totaling approximately 1,955 gross acres (Table 1). The permanent disturbance acreage associated with development of the solar facility and associated infrastructure (Project site) within the Project area would be less than the gross acreage of the Project area. The Project area is adjacent to the approved Eland 1 Solar Farm, south of the existing Springbok 1 & 2 Solar Farms, and southeast of the Los Angeles Department of Water and Power Beacon Solar facility. The topography of the Project area is relatively flat.

1.1.2 Location

The Project area is located in portions of unincorporated Kern County and California City, north of the California City Municipal Airport. The majority of the Project is bisected by Washburn Boulevard (which is also the California City boundary) and Neuralia Road (Figure 1).

Table 1. Kudu Parcels

No.	APN	Acres
California City		
1	302-020-08	40.17
2	302-020-09	80.09
3	302-020-11	163.68
4	302-020-14	40.99
5	302-020-15	10.52
6	302-020-16	10.15
7	302-020-17	9.59
8	302-020-18	9.98
9	302-290-03	83.58
10	302-305-15	43.54
11	302-321-01	160.93
12	302-322-01	10.10

No.	APN	Acres
13	302-322-02	10.09
14	302-322-04	10.24
15	302-322-05	10.28
16	302-322-06	40.04
17	302-322-08	10.33
18	302-322-09	40.50
19	302-322-10	10.27
20	302-322-11	10.29
21	302-325-49	9.74
22	302-330-33	20.21
23	302-330-37	20.38
24	302-341-29	168.79
25	302-342-01	40.23
26	302-342-11	2.67
27	302-342-12	2.66
28	302-342-19	29.69
29	302-342-25	40.77
30	302-342-26	39.89
31	302-342-27	40.29
32	302-342-28	40.68
33	302-470-14	20.20
	California City Total	**1,281.51**
Unincorporated Kern County		
34	469-170-10	10.02
35	469-170-18	39.49
36	470-020-08	2.31
37	470-020-19	4.38
38	470-030-01	79.22
39	470-080-15	20.27
40	470-080-16	10.07
41	470-080-17	10.10
42	470-080-32	10.07
43	470-151-09	19.62
44	470-151-15	20.23
45	470-151-16	20.40
46	470-151-17	19.98
47	470-152-01	39.32

No.	APN	Acres
48	470-152-18	10.32
49	470-152-19	4.93
50	470-302-24	2.59
51	470-302-25	2.62
52	470-302-26	2.52
53	470-322-13	2.39
54	470-322-15	9.96
55	470-330-01	5.06
56	470-330-02	4.77
57	470-330-03	19.86
58	470-330-04	20.15
59	470-330-06	9.95
60	470-330-07	10.02
61	470-330-14	4.89
62	470-330-15	5.23
63	470-350-04	18.65
64	470-350-05	18.91
65	470-350-06	18.89
66	470-350-07	18.57
67	470-350-08	19.93
68	470-360-01	18.43
69	470-360-02	17.85
70	470-360-05	21.15
71	470-380-01	19.92
72	470-380-04	21.35
73	470-380-05	17.34
74	470-380-06	19.88
75	470-380-07	21.95
	Unincorporated Kern County Total	**673.55**
	Total	**1,955.06**

Note:
APN = Assessor Parcel Number

1.2 DESCRIPTION OF PROPOSED PROJECT

The Applicant proposes to develop a photovoltaic (PV) energy facility and energy storage system (ESS) that is capable of producing up to 500 MW of AC power, and 600 MW hours (MWh) of storage capacity. Power generated by the Project would be collected using up to 230 kilovolt (kV) collector lines which run underground and/or overhead

to a dedicated Project substation, or to the Eland 1 Substation. The Project may also share the Eland 1 generation tie (gen-tie) line facilities, or gen-tie rights-of-way. The Eland 1 substation and gen-tie line have gone through environmental analysis and subsequent approval by Kern County and are not part of the Project.

Additionally, the Project may share an operations & maintenance (O&M) building, ESS, and/or transmission facilities, as necessary, with one or more nearby solar projects, and may be remotely operated. Any unused O&M building, substation, and transmission facility areas onsite may be covered by solar panels under such scenarios.

The Applicant has considered the following in its selection of the Project site for detailed evaluation:

- Land availability (approximately 1,955 gross acres)
- Land use zoning: primarily agriculture located away from high-density residential developments
- Proximity to interconnecting substation (approximately 7 miles away) and ability to share facilities with other solar projects

Up to 20 full-time employees would operate the Project. Typically, most staff would work during the day shift (sunrise to sunset), and the remainder would work during the night shifts and weekend. If the Project shared O&M, substation, and/or transmission facilities with one or more nearby solar Projects, and/or became remotely, the Project's onsite staff could be reduced.

After the useful life of the Project, the panels would be disassembled from the mounting frames, and the Project site would be restored to its pre-development condition.

1.2.1 PV Module Configuration

The Project would use PV panels or modules[1] on mounting frameworks to convert sunlight directly into electricity. Individual panels would be installed on either fixed-tilt or tracker mount systems (single- or dual- axis, using galvanized steel or aluminum). If the panels are configured for fixed tilt, they would be oriented toward the south. For tracking configurations, the panels would rotate to follow the sun over the course of the day. Although the panels could stand up to 20 feet high, depending on the mounting system used and county building codes, panels are expected to remain between 6 and 8 feet high.

The solar panel array would be arranged in groups called blocks, with inverter stations generally located centrally within the blocks. Blocks would produce direct electrical current (DC), which is converted to AC at the inverter stations.

Each PV module would be placed on a fixed-tilt or tracker mounting structure. The foundations for the mounting structures can extend up to 10 feet below ground, depending on the structure, soil conditions, and wind loads, and may be encased in concrete or use small concrete footings. Final solar panel layout and spacing would be optimized for Project area characteristics and the desired energy production profile.

[1] Including but not limited to bi-facial or concentrated photovoltaic technology

1.2.2 Inverter Stations

Direct Current (DC) energy is delivered from the panels via cable to inverter stations, generally located near the center of each block. Inverter stations convert the DC energy to AC energy, which can be dispatched to the transmission system. Inverter stations are typically comprised of one or more inverter modules with a rated power of up to 2 MW each, a unit transformer, and voltage switch gear. The unit transformer and voltage switch gear are housed in steel enclosures, while the inverter module(s) are housed in cabinets. Depending on the supplier selected, the inverter station may lie within an enclosed or canopied metal structure, typically on a skid or concrete mounted pad.

1.2.3 Energy Storage System

The Project may include one or more ESS located at or near a substation/switchyard (onsite or shared), at the inverter stations, or elsewhere onsite. Such large-scale ESSs would be up to 600 MW AC in capacity and up to 25 acres in total area. ESSs consist of modular and scalable battery packs and battery control systems that conform to U.S. national safety standards. The ESS modules, which could include commercially available lithium or flow batteries, typically consist of International Organization of Standardization (ISO) standard containers (approximately 40 feet long by 8 feet wide by 8 feet high) housed in pad- or post-mounted, stackable metal structures, but may also be housed in a dedicated building(s) in compliance with applicable regulations. The maximum height of the structure is not expected to exceed 25 feet. The actual dimensions and number of energy storage modules and structures would vary depending on the application, supplier, and configuration chosen, as well as on offtaker/power purchase agreement requirements and on county building standards. The Project may share an ESS with one or more nearby solar projects or may operate one or more standalone ESS facilities within the Project site.

1.2.4 Substation

Output from the inverter stations would be transferred via electrical conduits and electrical conductor wires to one or more Project substations or switchyards (collectively referred to as substations herein), or the Eland 1 Substation. The Project and any associated ESS would have their own dedicated substation equipment located either within the Project site, or within the Eland 1 Substation footprint. Dedicated equipment may incorporate several components, including auxiliary power transformers, distribution cabinets, revenue metering systems, a microwave transmission tower, and voltage switch gear. Each substation would occupy an area of up to approximately 5 acres, secured separately by a chain-link fence. The final location(s) of each component would be determined before the issuance of building permits.

Substations typically include a small control building (roughly 500 square feet) standing 10 feet tall. The building would either be prefabricated concrete or steel housing, with rooms for the voltage switch gear and metering equipment, a room for the station supply transformer, and a separate control technology room within which the main computer, intrusion detection system, and main distribution equipment are housed. Components of this building (e.g., control technology room and intrusion detection system) may instead be located at an O&M building below.

1.2.5 Transmission Line

Power generated by the Project would be transmitted to the Los Angeles Department of Water and Power Barren Ridge Substation via a 230 kV overhead and/or underground gen-tie. The Project intends to share the Eland 1 gen-tie

line and right-of-way, which may require stringing additional line on the Eland 1 transmission structures or increasing the capacity of the Eland 1 gen-tie by reconductoring the line with thicker cable. If the Project cannot share these facilities, a new gen-tie line would be developed within one of the routes previously analyzed in the Eland 1 Environmental Impact Report.

1.2.6 Water Usage

Water demand for panel washing and O&M use is not expected to exceed 50 acre-feet per year (afy). Water usage during construction, primarily for dust-suppression purposes, is not expected to exceed 400 acre-feet (af). It is anticipated that water would be obtained from existing onsite wells. Alternatively, water may be obtained from one or more offsite source(s) and delivered to the Project area via truck. If offsite water is used, it would likely be obtained from one of the nearby Springbok Projects, the Eland 1 Project, or from a commercial source. If the Applicant determines that offsite water would be used, the Applicant would submit a Will Serve Letter from the proposed offsite water purveyor(s). A small water treatment system may be installed to provide deionized water for panel washing.

1.2.7 Water Storage Tank(s)

One or more aboveground water storage tanks with a total capacity of up to 50,000 gallons may be placed onsite near the O&M building. The storage tank(s) near the O&M building would have the appropriate fire department connections to be used for fire suppression purposes.

1.2.8 Operations and Maintenance Building

The Project may include an O&M building approximately 40 feet long by 80 feet wide, with associated onsite parking. The O&M building would be steel framed, with metal siding and roof panels. The O&M building may include the following:

1. Office
2. Repair building/parts storage
3. Control room
4. Restroom
5. Septic tank and leach field

Roads, driveways, and parking lot entrances would be constructed in accordance with Kern County and California City improvement standards. Parking spaces and walkways would be constructed in conformance with all California accessibility regulations.

1.2.9 Project Site Security and Fencing

The Project site would be enclosed within a chain link fence with barbed wire measuring up to 8 feet from

The Project site would be enclosed within a chain link fence with barbed wire measuring up to 8 feet above finished grade. An intrusion alarm system would be integrated into the perimeter fence, with intrusion detection cabinets placed every 1,500 feet along the perimeter fence. An intrusions control unit or similar technology may include additional security measures including but not limited to barbed wire, low voltage fencing with warning reflective

signage, controlled access points, security alarms, security camera systems, and security guard vehicle patrols to deter trespassing and/or unauthorized activities.

Gates would be maintained at the main entrances to the Project site to restrict access. Project site access would be provided to offsite emergency responders in the event of an after-hours emergency. Enclosure gates would be manually operated with a key provided in an identified key box location.

1.2.10 Project Lighting

Project lighting would be directed away from public rights-of-way and would be minimal. Site lighting may include motion sensor lights for added security purposes. Lighting would be of the lowest intensity, in compliance with any applicable regulations, measured at the property line after dark.

1.3 ANNUAL PRODUCTION

The Project would generate electrical power during daylight hours. Peak electricity demand in California corresponds with air conditioning use on summer afternoons when ambient temperatures are high. The Project's peak generating capacity corresponds to this time-period. There is no generating capacity between sunset and sunrise due to the lack of solar energy, though power may be released from the ESS at any time of day.

The Project would have a nominal output capacity of up to 500 MW AC and 600 MWh of storage capacity, sufficient to power roughly 240,000 homes and displacing 745,000 tons of carbon dioxide equivalent per year when compared to a gas-fired power plant or 1,476,000 tons when compared to a coal-fired power plant.

1.4 CONSTRUCTION ACTIVITIES

Site preparation through construction, testing, and commercial operation, is expected to commence as early as Q4 2021 and would extend for 12 to 18 months.

Construction would include the following:

- site preparation
- grading and earthwork
- concrete foundations
- structural steel work
- electrical/instrumentation work
- collector line installation
- architecture and landscaping

No roads would be affected by the Project, except during construction. Construction traffic would access the site from Philips Road, Gantt Road, and Neuralia Road, or through the Eland 1 Project site. Up to 1,000 workers per day (during peak construction periods) would be required during the construction of the Project.

Heavy construction is expected to occur between 6:00 AM and 5:00 PM, Monday through Friday. Additional hours may be necessary to make up schedule deficiencies or to complete critical construction activities. Some activities may continue 24 hours per day, seven days per week. Low-level noise activities may potentially occur between the hours of 10:00 PM and 7:00 AM. Nighttime activities could potentially include but are not limited to refueling equipment, staging material for the following day's construction activities, quality assurance and control, and commissioning.

Materials and supplies would be delivered to the Project area by truck. Truck deliveries would normally occur during daylight hours. However, there would be offloading and/or transporting to the Project area on weekends and during evening hours.

Earth-moving is expected to be limited to the construction of the access roads, O&M building, substation, ESS(s), and any stormwater protection or storage (detention) facilities. Final grading may include revegetation with low-lying grass or applying earth-binding materials to disturbed areas.

1.5 WORK FORCE

Once the Project is constructed, maintenance would generally be limited to the following:

1. Cleaning of PV panels
2. Monitoring electricity generation
3. Providing site security
4. Facility maintenance: replacing or repairing inverters, wiring, and PV modules

The project would require up to 20 full-time O&M employees. If the project uses shared O&M, substation, ESS, and/or transmission facilities with any future projects share personnel would reduce O&M staff.

The facility would operate seven days a week, 24 hours a day, generating electricity during normal daylight hours when the solar energy is available. Maintenance activities may occur seven days a week, 24 hours a day to ensure PV panel output when solar energy is available.

1.6 PROJECT FEATURES AND BEST MANAGEMENT PRACTICES

The following sections describe standard Project features and best management practices that would be applied during construction and long-term operation of the Project to maintain safety and minimize or avoid environmental impact.

1.6.1 Waste and Hazardous Materials Management

The Project would have minimal levels of materials onsite that have been defined as hazardous under 40 Code of Federal Regulations (CFR), Part 261. The following materials are expected to be used during the construction, operation, and long-term maintenance of the Project:

- Insulating oil: used for electrical equipment
- Lubricating oil: used for maintenance vehicles
- Various solvents and detergents: equipment cleaning

- Gasoline: used for maintenance vehicles

Hazardous materials and wastes would be managed, used, handled, stored, and transported in accordance with applicable local and state regulations. All hazardous wastes would be maintained at quantities below the threshold requiring a Hazardous Material Management Program: one 55-gallon drum. Though not expected, should any onsite storage of hazardous materials exceed one 55-gallon drum, a Hazardous Material Management Program would be prepared and implemented.

1.6.2 Spill Prevention and Containment

Less than 55 gallons of hazardous materials would be stored onsite. Spill prevention and containment for construction and operation of the Project would adhere to the Environmental Protection Agency's guidance on Spill Prevention Control and Countermeasures.

1.6.3 Wastewater/Septic System

A standard onsite septic tank and leach field may be used at the O&M building to dispose sanitary wastewater, designed to meet O&M guidelines required by Kern County laws, ordinances, regulations, and standards.

1.6.4 Inert Solids

Inert solid wastes resulting from construction activities may include recyclable items such as paper, cardboard, solid concrete and block, metals, wire, glass, type 1-4 plastics, drywall, wood, and lubricating oils. Non-recyclable items include insulation, other plastics, food waste, vinyl flooring and base, carpeting, paint containers, packing materials, and other construction wastes. A construction waste management plan would be prepared for review by the county and California City. Consistent with local regulations and the California Green Building Code, the plan would provide for diversion of a minimum of 50 percent of construction waste from landfill.

Chemical storage tanks (if any) would be designed and installed to meet applicable local and state regulations. Any wastes classified as hazardous, such as solvents, degreasing agents, concrete curing compounds, paints, adhesives, chemicals, or chemical containers, would be stored in an approved storage facility/shed/structure and disposed of as required by local and state regulations. Material quantities of hazardous wastes are not expected.

1.6.5 Health and Safety

Safety precautions and emergency systems would be implemented as part of the design and construction of the Project to ensure safe and reliable operation. Administrative controls would include classroom and hands-on training in O&M procedures, general safety items, and a planned maintenance program. These would work with the system design and monitoring features to enhance safety and reliability.

The Project would have an emergency response plan. The emergency response plan would address potential emergencies including chemical releases, fires, and injuries. All employees would be provided with communication devices, cell phones, or walkie-talkies to provide aid in the event of an emergency

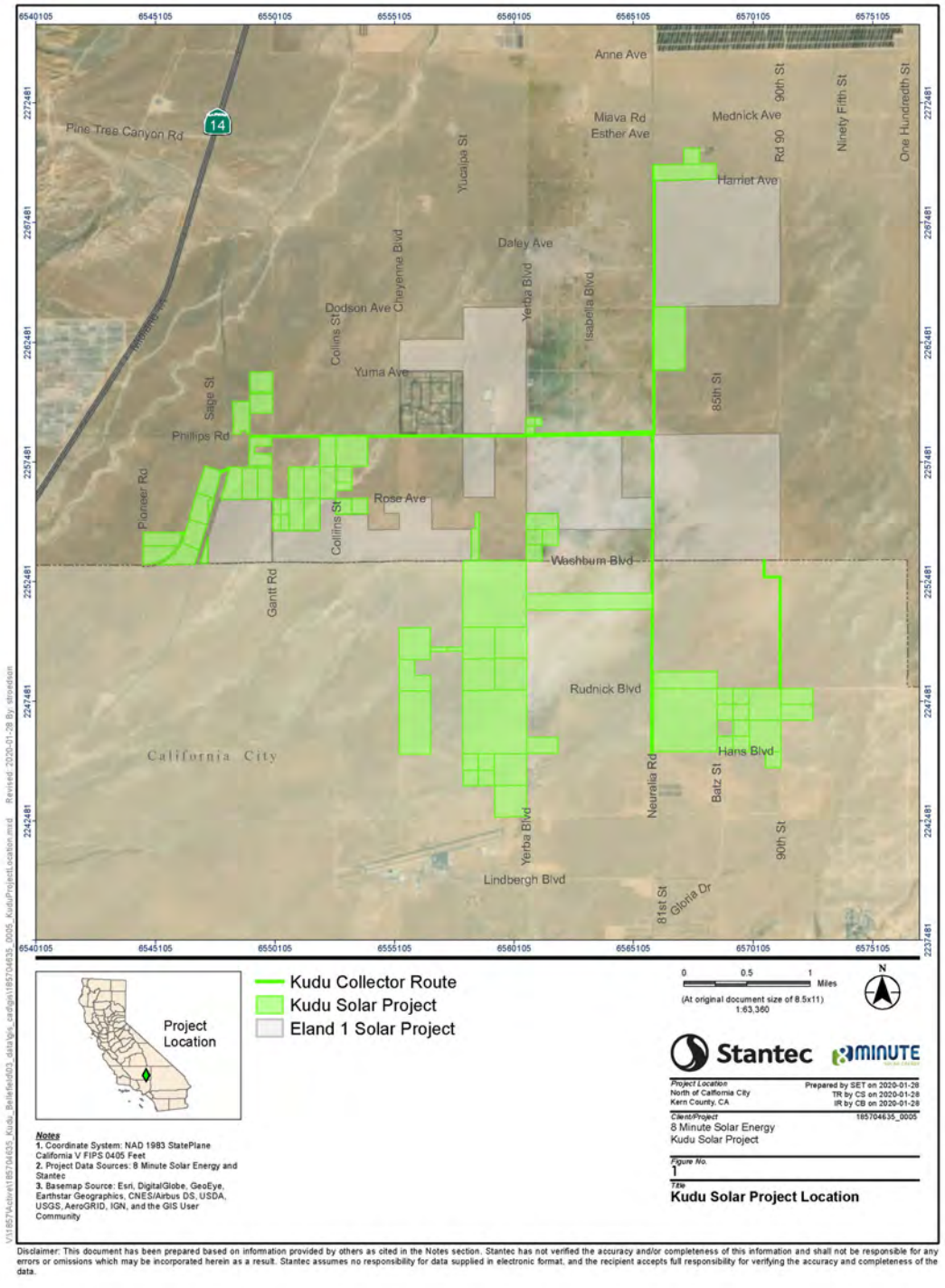

Figure 1 Project Location Map

2.0 REGULATORY CONTEXT

A cultural resources inventory was conducted to satisfy the requirements of the California Environmental Quality Act (CEQA) of 1970 as amended and the CEQA Guidelines, codified in Title 14 of the California Code of Regulations (CCR), which provides agencies guidance for compliance with environmental regulations. The guidance presented at CFR Title 36 Part 60.4 [a–d] was also used to address the significance of cultural resources within the Project area.

2.1 CALIFORNIA REGISTER OF HISTORICAL RESOURCES ELIGIBILITY FRAMEWORK

Historical and archaeological resources are afforded consideration and protection by CEQA (14 CCR Section 21083.2, 14 CCR Section 15064). CEQA Guidelines define significant cultural resources under two regulatory designations: historical resources and unique archaeological resources.

A historical resource is a “resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources (CRHR);” or “a resource listed in a local register of historical resources or identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code (PRC);” or “any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency’s determination is supported by substantial evidence in light of the whole record” (14 CCR Section 15064.5[a][3]).

Historical resources automatically listed in the CRHR include California cultural resources listed in or formally determined to be eligible for the National Register of Historic Places (NRHP) and California Historical Landmarks list from No. 770 onward (PRC 5024.1[d]). Locally listed resources are entitled to a presumption of significance unless a preponderance of evidence in the record indicates otherwise.

Under CEQA, a resource is generally considered historically significant if it meets the criteria for listing in the CRHR.

2.2 ASSEMBLY BILL 52 AND TRIBAL CULTURAL RESOURCES

Assembly Bill 52 establishes a formal role for California Native American tribes in the CEQA process. CEQA lead agencies are required to consult with tribes about potential tribal cultural resources (TCR) in the Project area, the potential significance of Project impacts, the development of Project alternatives, and the type of environmental document that should be prepared.

2.2.1 Definition

The definition of Native American tribe is a "Native American tribe located in California that is on the contact list maintained Native American Heritage Commission (NAHC)”. This definition does not distinguish between federally recognized and non-federally recognized tribal groups, and is therefore more inclusive than the federal definition of "Indian tribe" (PRC § 21073).

2.2.2 Qualification

To qualify as a tribal cultural resource, it must be: 1) listed on or eligible for listing on the CRHR or a local historic register, or 2) a resource that the lead agency, at its discretion and supported by substantial evidence, determines should be treated as a TCR (PRC § 21074). TCRs include “non-unique archaeological resources” that, instead of being important for “scientific” value as a resource, can also be significant because of the sacred and/or cultural tribal value of the resource. Tribal representatives are considered experts appropriate for providing substantial evidence regarding the locations, types, and significance of TCRs within their traditionally and cultural affiliated geographic area (PRC § 21080.3.1(a)).

2.2.3 Consultation

Consultation in the context of Assembly Bill 52 is the meaningful and timely process of seeking, discussing, and carefully considering the views of others. Meaningful consultation usually consists of face-to-face meetings conducted to recognize the cultural values of all parties involved and make a concerted effort to reach an agreement. Consultation should recognize the tribe’s potential need for confidentiality regarding places that hold traditional tribal significance. Consultation with tribes is considered the best way for lead agencies to determine if a project could result in significant environmental impacts on TCRs (PRC § 21080.3.1(a); Government Code § 65352.4).

A project that may cause a substantial adverse change in the significance of a TCR may be considered to have a significant effect on the environment (PRC § 21084.2).

TCRs are not addressed in a cultural resource survey, as they are resources that are specific concern to California Native American tribes. Pursuant to revisions to CEQA enacted in 2015, TCRs are to be identified by tribes during government-to-government consultation with the lead agency and can remain confidential (PRC § 21080.3.1).

PRC Section 5097.9 et seq. (1982) establishes that both public agencies and private entities using, occupying, or operating on state property under public permit shall not interfere with the free expression or exercise of Native American religion and shall not cause severe or irreparable damage to Native American sacred sites. This section also creates the NAHC, charged with identifying and cataloging places of special religious or social significance to Native Americans, identifying and cataloging known graves and cemeteries on private lands, and performing other duties regarding the preservation and accessibility of sacred sites and burials.

PRC 5097.98 discusses the procedures that need to be followed upon the discovery of Native American human remains. The NAHC, upon notification of the discovery of human remains, is required to contact the County Coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code and shall immediately notify those persons it believes to be most likely descended from the deceased Native American.

Health and Safety Code 7050.5 establishes that any person, who knowingly mutilates, disinters, wantonly disturbs, or willfully removes any human remains in or from any location without authority of law is guilty of a misdemeanor. It further defines procedures for the discovery and treatment of Native American human remains.

2.2.4 NRHP Eligibility Framework

CFR Title 36 Part 60.4 [a–d] presents criteria for determining the significance and eligibility of prehistoric and historic sites for inclusion on the NRHP. The criteria at 36 CFR 60.4 state:

"The quality of significance in American history, architecture, archeology, engineering and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and

(A) that are associated with events that have made a significant contribution to the broad patterns of our history; or

(B) that are associated with the lives of persons significant in our past; or

(C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(D) that have yielded, or may be likely to yield information important in prehistory or history.

Historic contexts provide a framework for determining the eligibility of cultural resources (e.g., prehistoric sites or historic sites) for inclusion on the NRHP. NPS Bulletin 15 defines historic contexts as:

"...patterns or trends in history by which a specific occurrence, property, or site is understood and its meaning (and ultimately its significance) within prehistory or history is made clear. Historians, architectural historians, folklorists, archeologists, and anthropologists use different words to describe these phenomena such as trend, pattern, theme, or cultural affiliation, but the concept is the same."

The concept of historic context has been fundamental to the study of history since the 18th Century and, arguably, earlier than that. Its core premise is that resources, properties, or happenings in history do not occur in a vacuum but rather are part of larger trends or patterns.

The eligibility for inclusion on the NRHP is based on relevant regional archaeological and historical research topics.

For an archaeological site or portion of a site to be considered a historical property eligible under Criterion D, it must retain integrity and contain data capable of informing relevant research issues. Appropriate research themes and data needs are presented in Section 5.0, Methods.

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3.0 ENVIRONMENTAL SETTING

3.1 NATURAL CONTEXT

The Project area is situated within the Fremont Valley region of the Mojave Desert, which is a flat, 523-square-mile valley located southwest of Koehn Dry Lake in the western portion of the Mojave Desert. Situated in the westernmost area of the Mojave Desert at the eastern base of the Sierra Nevada Mountains, the Fremont Valley has a continental climate with hot, dry summer and cold, dry winters. The area is home to many dry lake beds (playas), saline ponds, and north-south trending mountain ranges that cast a rain shadow over the Valley. Between the mountains, the terrain is dominated by sand and gravel basins, which are characterized by their lack of water.

3.2 CLIMATE

Fremont Valley is considered a “high desert” environment, with an arid climate that is characterized by hot summer daytime temperatures and cool winter temperatures, with very little precipitation. The weather consists of hot, dry summers and cooler, relatively humid winters. Most of the annual precipitation occurs during the period from November through April in the form of rain and snow. Air temperatures in the Project area range between an average of 45.0 degrees Fahrenheit (ºF) in December and January, and an average of 83.5ºF in July. The annual average temperature is approximately 62.8ºF.

The Western Regional Climate Center indicated the average annual precipitation in the Mojave Desert is slightly less than 6 inches, with measurable annual rainfall in each of the twelve months (Western Regional Climate Center 2018). On average, January and February have the most precipitation, with 1.14 and 1.23 inches, respectively, with only a minimal amount falling as snow.

3.3 VEGETATION

The Mojave Desert has a typical mountain and basin range topography with sparse vegetation located at various elevations (Warren 1984). Vegetation communities in the Project area were classified based on descriptions provided in □*anua*□*o*□□*a*□*i*□*ornia* □*e*□*etation*□2nd E*dition* (Sawyer et al., 2009) and the □*a*□*i*□*ornia* □*atura*□□*ommunit*□ *List* (CDFW 2018). Vegetation communities in the Project area consists of creosote bush scrub, creosote bush–white bursage scrub, white bursage scrub, and scale broom scrub.

3.4 FAUNA

Historically, Fremont Valley was home to a number of endemic and seasonal animals, such as pronghorn antelope, mule and black-tail deer, grizzly bear, and coyote, as well as smaller mammals, including bats, rabbits, foxes, skunks, voles, and rats. The area is also home to a number of reptiles, including rattlesnakes, lizards and tortoises, as well as a variety of birds (Brown 1985). Due to the harshness of the local climate, many of the animals in this region are nocturnal and get a majority of their water from the foods they consume.

3.5 CULTURAL CONTEXT

3.5.1 Prehistory

The prehistory of the southern California deserts spans at least the last 12,000 years and is usually characterized by four cultural and temporal periods. The prehistory of the southern California deserts and the surrounding areas are discussed in detail by Wallace et al. (1962), Warren (1967), Bettinger and Taylor (1974), Warren and Crabtree (1986), and Sutton et al. (2007). The work of these researchers is synthesized in the following discussion of regional archaeological cultures and chronologies.

The Pleistocene Period (12,000–7,500 Before Present [BP]) represents the first documented Native American occupation of the region. This time period is highlighted by a transition from cool and moist conditions of the Late Pleistocene to the arid and hot conditions of the Early Holocene. There are three distinct cultural complexes associated with this time period: fluted point complexes; the Lake Mojave Complex; and the San Dieguito Complex. Fluted point complexes have been identified both in the southern California deserts and the surrounding areas. Fluted point complexes, although present in the southern California deserts, are primarily identified in surface contexts. These contexts do not facilitate the recovery of data necessary to fully understand the culture and behaviors of the groups responsible for the manufacture of the points. However, there is more data for the Lake Mojave and San Dieguito complexes. These two complexes are more common in the area than fluted point complexes and also share several key artifacts types. Artifacts usually associated with these two complexes include crescents, scrapers, and large bifaces. The Lake Mojave complex is centered in the southwestern Great Basin, while the San Dieguito complex extends from coastal California to the Colorado Desert. San Dieguito sites in the Colorado Desert typically include cleared circles, rock rings, other rock features, and heavily varnished crude stone tools.

The Early and Middle Holocene Period (7,000–3,000 BP) was very hot and dry, and is poorly represented in the Colorado Desert. Although the reasons for this are not fully understood, it has been suggested that seasonal river flooding may have affected the numbers of sites dating to this time period. Regardless, neighboring regions provide data regarding the Early and Middle Holocene Period. In these areas, the time period is generally characterized by a diversification of artifact assemblages, including the introduction of groundstone technologies for seed processing. It is likely that these trends also occurred in the Lower Colorado Desert. Pinto, Silver Lake, and Humboldt (Humboldt points have a long time span and may also be associated with the Late Holocene Period) are associated with the Early and Middle Holocene Period. The bow and arrow appear in artifact assemblages towards the end of this time period.

The Late Holocene Period (2,500–450 BP) is characterized by Native American populations expanding their territories. Gypsum, Elko, Rose Spring, East Gate, Humboldt, and Desert series points are associated with this time period. During this time period, changes in the flow of the Colorado River into Lake Cahuilla expanded it and created a series of freshwater lakes around it. These changes facilitated the development of agriculture and semi-permanent villages along the Lower Colorado River. Simultaneously with the development of agriculture, extensive trade networks were established to connect agricultural settlements in the greater southwest with the Gulf of California and the Pacific Ocean.

Following the Late Holocene Period, Euroamerican exploration and contact with local Native Americans gradually increased across the region. Euroamerican activity in the area, as in other parts of California, negatively affected

Native American populations and culture. Euroamericans introduced new diseases, claimed Native American tribal territories for their uses, and relocated Native American groups to missions or areas beyond their traditional territories. These circumstances disrupted the cultural patterns of Native American groups.

3.5.2 Ethnographic Background

Kawaiisu inhabit the area encompassed by the Project (Kroeber 1925; Zigmond 1986). Kawaiisu primarily occupy a low mountainous ridge between the Mohave Desert and the San Joaquin Valley, which includes portions of the Tehachapi and Sierra Nevada mountains. Their core habitation area encompasses approximately 2,500 square miles, but Kawaiisu did not maintain strict territorial boundaries. Kawaiisu have been described as representing a blend of California and Great Basin cultures (Zigmond 1986).

Kawaiisu language is part of the Southern Numic division of the Uto-Aztecan language family (Miller 1986; Zigmond 1986). Some linguistic reconstructions consider the Kawaiisu language separate from the other Southern Numic dialects, with the Kawaiisu area identified as the original location of Proto-Numic and Southern Numic (Fowler 1972). Indeed, linguistic evidence suggests that Kawaiisu occupied their current territory for over 2,000 years (Zigmond 1986).

Kawaiisu social organization was primarily focused on the family group. Political leadership was relatively informal, and it was not uncommon for groups to recognize several individual males as local leaders. Qualifications for leadership were wealth and generosity, and a primary responsibility of a local leader was to sponsor and supply food for celebrations (Zigmond 1986).

Kawaiisu collected numerous plant resources for food, including acorns, seeds, nuts, berries, and roots. They also hunted a wide variety of large and small mammals, including deer, antelope, mountain sheep, various rodents, chuckwallas, and birds (Zigmond 1986). Kawaiisu also acquired aquatic resources (e.g., fish and shellfish) from streams in their territory and also collected insects for food. In addition, Kawaiisu made seasonal trips to areas such as Indian Wells Valley, the Granite Mountains, and the Mojave Desert to acquire various resources.

Kawaiisu constructed several types of structures including; winter houses (tomokahni) made of wood poles, willow, bark, and brush; open, flat-roofed shade houses (havakahni) for use in the summer; sweathouses (tivikahni); and granaries to store acorns, nuts, and seeds (Zigmond 1986). Bark and tule mats were used to strengthen structures and for protection from the rain. In addition, circular brush enclosures were created for ceremonies. Kawaiisu material culture included the bow and arrow; bone and thorn awls; undecorated pottery such as Owens Valley Brownware, which was probably obtained through trade with neighboring Great Basin groups; twined and coiled baskets; cordage for use in nets and mats; and stone bowls and pestles (Zigmond 1986). Kawaiisu used twined and coiled baskets and developed a distinctive variant of the coiled technique that is easily recognized for its design and decorative qualities (Zigmond 1986:401). It is believed that pottery was traded, rather than manufactured by Kawaiisu (Zigmond 1986).

Kawaiisu interacted and traded with their neighbors that included Great Basin groups such as Western Shoshone and Southern Paiute and California groups such as Tubatulabal, Southern Yokuts, Kitanemuk, and Serrano. Kawaiisu generally maintained peaceful relations with their neighbors and interacted with them during seasonal expeditions to acquire resources in different ecological zones and to trade for resources such as obsidian, salt, and pottery (Zigmond 1986).

3.5.3 History

The following historical background reviews three important themes (i.e., transportation, settlement, and ranching) in the history and development of Kern County, California. The themes, although discussed separately, are economically and socially intertwined in Fremont Valley history.

Transportation

Prior to the arrival of non-natives, well-worn trails and footpaths used by Kawaiisu undoubtedly crisscrossed Fremont Valley. Non-native explorers often followed existing Native American trails and footpaths or used Native American guides, knowing that they had already traversed difficult terrain, and that there were likely settlements as well as water and food sources along the way. The General Land Office 1856 map for T31S R37 depicts only a small portion of the “road to Salt Lake” in Sections 24 and 25, and the rest of the township appears to have no roads or settlements of any kind.

The first indication of development in the Fremont Valley area was the town of Mojave that dates to 1876 and is associated with the construction of the Southern Pacific Railroad across the Tehachapi Range and through the desert. Mojave served as an appropriate location to couple and uncouple helper engines before proceeding west on to the Tehachapi pass (Morgan 1914). The town also served as a shipping center for borax from Death Valley and Borax Lake in the 1890s. During this period, a road, now known as the Twenty Mule Team road, ran diagonally across Fremont Valley from Searles Lake directly to Mojave. The road also passed through what is now California City.

The Rand Mining District was organized in 1895 approximately 24 miles northeast of the Project area. During the initial years of the mining district’s existence, supplies coming in and ore going out were shipped from Mojave, which served as the transfer point between the railroad and overland travel routes used by the miners (Morgan 1914). An 1898 map of Kern County shows the “Mojave to Randsburg” road running along the base of the Tehachapi Range at the western edge of Fremont Valley, roughly following the modern alignment of State Highway 14 (Congdon 1898) (Figure 3:Congdon 1898). A Stage Station was located along the road in Section 8 (Figure 3), just a few miles northwest of the Project area.

As the 1898 map indicates, most of the landownership in the Project area alternated between Southern Pacific Railroad (SPRR) and Charles Crocker Estate. From the 1850s through the 1870s, the federal government gave public land to the railroad companies in order to encourage development. The lands were given in alternating sections creating a unique “checkerboard” pattern that is visible in the 1898 map. SPRR lands were given to SPRR. Opposite alternating sections are owned by the Charles Crocker Estate. Crocker was one of the chief railroad executives responsible for initiating and executing transcontinental railroads, including SPRR. Only one section within the Project area appears to be privately owned. Section 31 in T31S R37E is owned by I.W. Gardner, no structures are depicted on the map in this section.

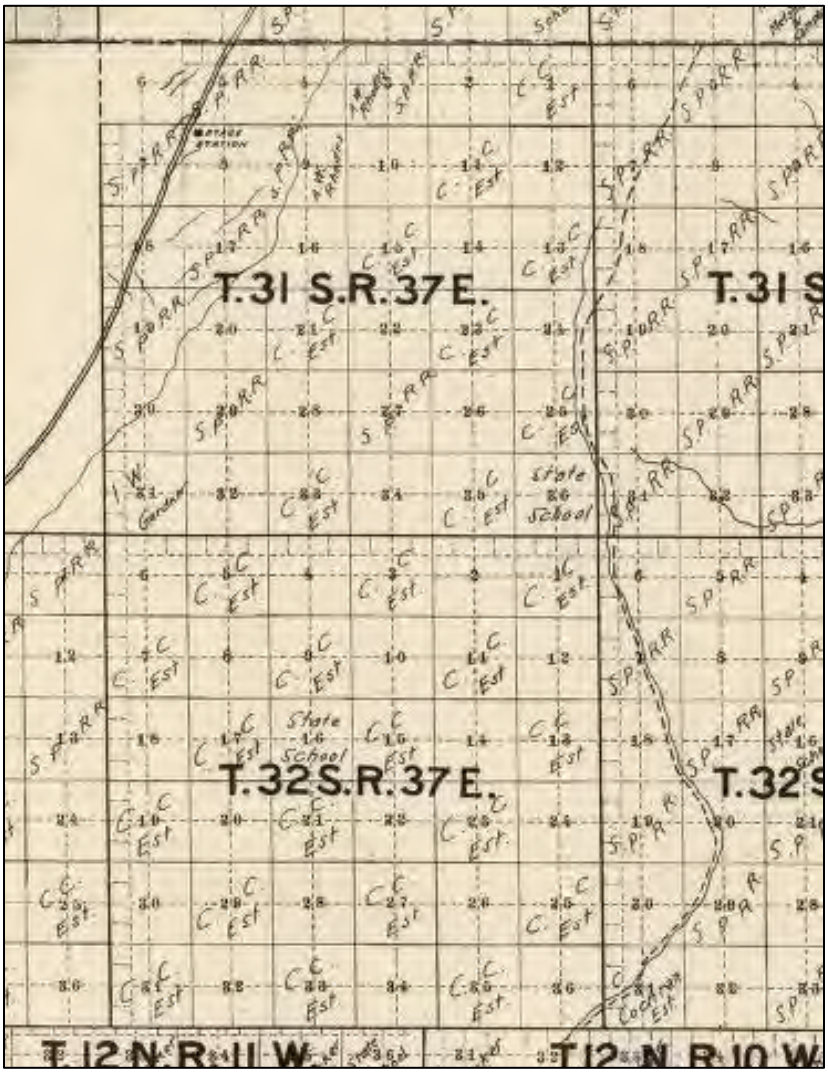

Figure 2. Official Map of Kern County 1898 Showing the Project Area

Between 1908 and 1913, the Los Angeles Aqueduct was constructed to bring water from Owens Valley to Los Angeles, and the alignment ran along the base of the Tehachapi Range at the west end of Fremont Valley. Transporting the materials needed for the pipeline through Fremont Valley was challenging, at best, because of the poorly maintained roads in the area. The Southern Pacific struck a deal with the City of Los Angeles to construct the Owenyo branch of the railroad from Mojave to Owenyo (near Independence in Inyo County) in exchange for a guarantee of transporting freight for the aqueduct project. The Owenyo branch was completed in 1910 and the Los Angeles Aqueduct was completed in 1913 with their parallel alignments demonstrating the intertwined relationship between the two infrastructure projects.

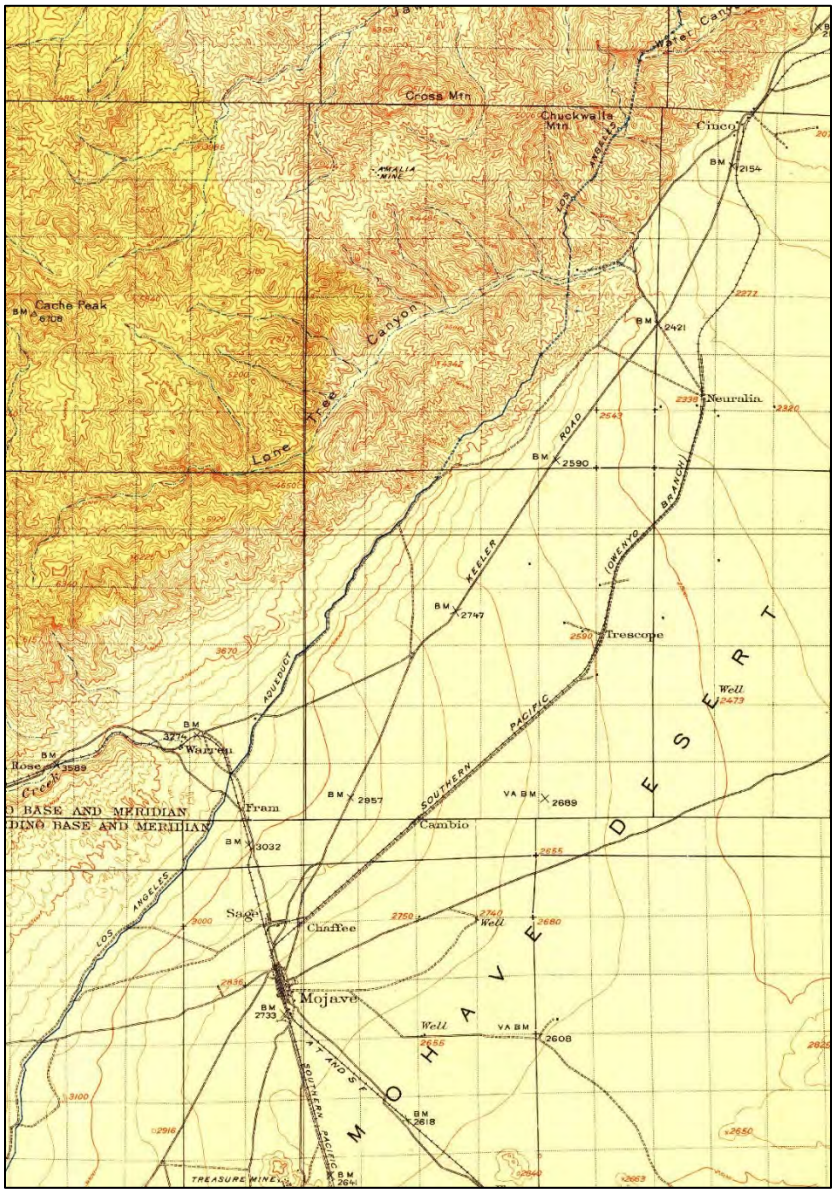

Figure 3: 1915 Mojave, CA 1:25,000 USGS Topographic Map showing Mojave, Neuralia, and Los Angeles Aqueduct

Sometime between 1915 and 1943, an unimproved Phillips Road was graded through the Project area following section lines east from State Highway 14 and passing through the small settlement of Neuralia along the SPRR connecting with Neuralia Road running north-south, also along section lines (Figure 4:1943 Mojave, CA 7.5' U.S. Geological Survey [USGS] topographic quadrangle). General improvements to the area, such as graded roads along section lines, may have been an attempt to draw settlers to the area in the early twentieth century.

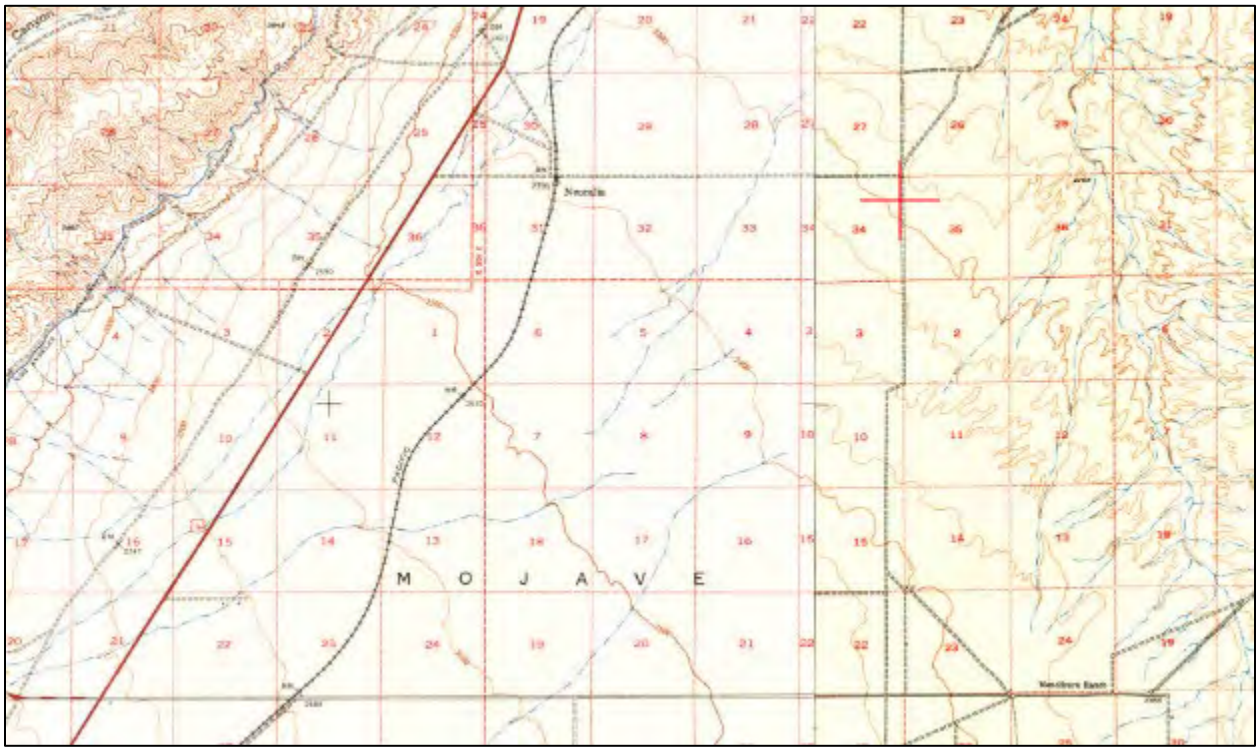

Figure 4. 1943 Mojave, CA and Castle Butte, CA 7.5-foot USGS Topographic Maps Showing Mendiburu Ranch, Neuralia, Phillips Road, and Neuralia Road.

Non-Native Settlement

The location of the Project area, on the edge of the Mojave Desert, appears to be in a relatively inhospitable location. However, in a study by Frank Norris on "Homesteading in the California Desert, 1885-1940," he notes that "…homesteading was one of the most prevalent land use activities in the California Desert during the first third of the twentieth century" (Norris 1982:297-298). In Fremont Valley, the potential for homesteading was enhanced by the presence of a reliable water source beneath the surface of the desert. According to Norris, the depth of the water table had more to do with whether or not an area in the desert was settled and had less to do with its relative isolation from other towns or transportation lines. He emphasizes that "(h)omesteads nearer these amenities, however, appear to have been more adaptable, and thus more long-lasting that their more isolated counterparts" (Norris 1982:300).

After the Los Angeles Aqueduct was installed, SPRR started to promote settlement in the area with the hope of selling the company's lands in Fremont Valley, some of which are in the Project area (see Figure 3:Congdon 1898). In 1912, the San Bernardino County Sun announced that SPRR was "making good in its efforts to place actual settlers on its land grant lands" (San Bernardino County Sun 1912). Part of the plan appeared to be that SPRR would promote settlement around its existing stations on the Owenyo Branch, including Neuralia, which was located in the northwest corner of the Project area (Figure 4: 1915 map). The San Francisco Call announced that the "…land is adapted to general crops and especially apples and pears. Wells are being sunk and a first class water supply is being developed and the Southern Pacific is to open up a townsite at Neuralia" (San Francisco Call 1914). A post

office was established at Neuralia in March 1914, with Marcus B. White serving as postmaster, but it was discontinued just two years later (Los Angeles Times 1914). The 1915 Mojave, CA 1:250,000 USGS topographic map depicts three structures in the vicinity of the Neuralia station, one of which might be the post office (see Figure 4: 1915 map). In February 1916, the Bakersfield Californian newspaper reported that "several thousand" fruit and ornamental trees were planted by residents in the Neuralia district (Bakersfield Californian 1916). After 1916, there are very few mentions of Neuralia in the newspaper, although it is possible that SPRR either stopped promoting the settlement, or residents may have just been included in the more substantial Cantil settlement to the north.

Census records indicate that there were a fair number of people living and working in Fremont Valley in the 1920s and 1930s. Among them was a man named William Gantt who moved to the area around 1920 to take advantage of the Homestead Entry-Stock Raising Act of 1916 (see Agriculture and Ranching). However, there were also teachers, retailers, farmers, ranchers, and herders living in the area immediately surrounding Gantt. Desert settlements were also an option during the Great Depression for people who looked to practice self-sufficiency rather than looking for jobs and food lines in larger cities (Norris 1982).

In the 1940s and 1950s, the establishment and expansion of Edwards Airforce Base just 18 miles south of the Project area and the presence of the Mendiburu and Rudnick (M&R) Ranch at Cantil helped bring more families into the area. Then, in the 1950s, a sociologist from Los Angeles named Nat K. Mendelsohn was attracted to Fremont Valley by the M&R Ranch that seemed to have a consistent supply of water on their ranch (see the Agriculture and Ranching section below). Mendelsohn started the California City Development Company and began to purchase property in Fremont Valley, including large sections of M&R Ranch holdings. In 1958, after purchasing 58,000 acres, work started on the first subdivision for California City at the southern end of the Project area. During the last 100 years, people were drawn to settle in Fremont Valley for a variety of reasons that largely depended upon the national economy and socioeconomic trends.

Agriculture and Ranching

Spanish colonists first brought cattle to the San Diego area in 1769. The initial count of 200 cattle expanded as missions and mission ranches spread up the California coastline. By 1823, there were an estimated 400,000 cattle, 61,600 horses, and 300,000 sheep on mission lands. However, it may have been Native Americans who brought cattle from the missions on the coastline into the Central Valley (Larson-Praplan 2014). The influx of non-native settlers into California who came with the California Gold Rush in the 1850s and 1860s created a constantly growing demand for beef and mutton at burgeoning mining towns. To meet demand, cattle were brought in from the Midwest, Mexico, and Texas, and by 1872, cattle were predominately bred and fattened on ranches rather than being left to open-range grazing (Jelenik 1998). In 1856, a General Land Office surveyor mapped the terrain for T31S R37 and described it as "…covered with greasewood brush though scattering and has plenty of bunch grass which is fine for grazing purposes. There is no water nor timber on this township" (Washburn 1856).

Settlers who moved into the Fremont Valley during the first quarter of the twentieth century were likely using small-scale farming practices on relatively small parcels. In 1926, William Gant received a patent for most of Section 32, T31S R37E (within the Project area)under the Homestead Entry-Stock Raising Act of 1916 (39 Stat., 862), although he may have already been living on and improving the land for several years (Gantt 1926). The 1920 United States Federal Census shows William as a 42-year-old widower from Nebraska who was living in the area with his 63-year-old mother and his 3-year-old daughter, both named Carolyn (U.S. Federal Census 1920). He listed his occupation as

farmer, and since this was 6 years before he received his land patent, he was likely trying to improve the land to meet the patent requirements. In the 1930 United States Census, Gantt is listed as a rancher living with just his daughter (U.S. Federal Census 1930). The 1930 Census also indicates that there were nine Basque herders and ranchers in the immediate vicinity of Gantt's household, indicating a significant shift from the 1920 Census toward larger ranching endeavors.

By the 1930s, ranchers and farmers in Fremont Valley were starting to use deeper wells with modern pumping technology that allowed them to maintain larger parcels and bigger herds (Norris 1982). The M&R Ranch, which grew crops of alfalfa and cotton, as well as raising and selling sheep, was located at Cantil, just 5 miles north of the Project area. Gregorio Mendiburu and Oscar Rudnick and their spouses announced their partnership as M&R Sheep Company in 1943 (Bakersfield Californian 1943). Gregorio (Gregory) Mendiburu arrived in the Bakersfield area from Spain in 1908 and worked as a farmhand before purchasing 160 acres of land in Oildale to start raising sheep (Los Angeles Times 1959a). In his obituary, the Los Angeles Times stated that Mendiburu "…built his holdings into one of the most extensive grazing and wool-producing empires in the United States, held jointly with Oscar Rudnick, a cattleman" (Los Angeles Times 1959a). Oscar Rudnick was born in Russia and arrived in Kern County in 1918. He arrived with extensive knowledge of the cattle business from his parents who were stock raisers in Russia. Eventually he developed and was sole owner of the Kern Valley Packing Company. His obituary states that "(w)ith the late George Mendiburu, Mr. Rudnick developed deep-well irrigation practices on the Mojave Desert and the two were responsible for the spread of agriculture in the area. He was also known as one of the county's chief philanthropists" (Los Angeles Times 1959b). Their ability to keep consistent waterflow for the ranch's crops was what initially lead Mendehlson to start California City (see the Non-Native Settlement section above).

Since the 1950s, the ranching and agricultural trends have changed yet again, declining dramatically in the Project area and are not evident in Fremont Valley. In describing the demise of many of the desert settlements that were more common in the first half of the twentieth century, Norris states, "(m)any of the old farming areas, however, have remained relatively untouched for a half century or more. Little suggests their previous land use. A small rectangular pattern of roads and the lack of a fully developed vegetation climax provide some evidence, and the patient explorer can still find such minor remnants as wells, foundations, twisted fencing, rusted metal, and other domestic refuse" (Norris 1982:309).

3.6 POTENTIAL FOR BURIED DEPOSITS OF CULTURAL RESOURCES

The geology of the Project area primarily consists of alluvium and granitic rocks. The soils maps for the Project indicate that it primarily consists of Neuralia, Randsburg, and Wasco Series. Neuralia soils are Aridisols, and the Randsburg and Wasco soils are Entisols. Aridisols are typical of arid environments and contain high quantities of salt (NRCS 1999). Entisols do not exhibit evidence of the development of pedogenic horizons and are typical of landscapes with actively eroding slopes, flood plains, or glacial outwash plains that receive new deposits of alluvium at frequent intervals (NRCS 1999).

The geologic and soils conditions in the Project area indicate that it was an active landscape subject to flooding and/or erosion. These conditions are not conducive to settlement, and the regional archaeological and ethnographic record indicates that Native American occupation of the area was typically located near water sources and in and along the mountain ranges to the north and east of the Project area. Based on the geology, soil types, and the known

distribution of archaeological and ethnographic sites, the current Project area exhibits a low sensitivity for the presence of buried archaeological sites or other cultural material.

4.0 ARCHIVAL RESEARCH

4.1 RECORDS SEARCH

A records search of the Project area, including a 0.25-mile buffer, was conducted by staff at the Southern San Joaquin Valley Information Center of California Historic Resource Inventory System on August 19, 2018 (19-326) and September 9, 2019 (19-352). The following lists and databases were also reviewed:

- Office of Historic Preservation Directory of Properties in the Historic Property Data File for KernCounty, California
- National Register of Historic Places
- California Register of Historical Resources
- California Inventory of Historic Resources (1998)
- California Historical Landmarks (1990)
- California Points of Historical Interest (1992)

In addition to conducting a record search at the Southern San Joaquin Valley Information Center, Stantec reviewed historical maps, aerials, and literature to determine past land use activities within the Project area that could indicate the likelihood of encountering cultural resources.

4.2 RECORD SEARCH RESULTS

The records search results identified 12 previously recorded sites within the project area (see Appendix B and Figure 5), and an additional 24 within 0.25-mile of the Project area. Additionally, four previously conducted studies covered portions of the Project area.

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4.3 NATIVE AMERICAN HERITAGE COMMISSION OUTREACH

Stantec submitted a sacred lands search request to the NAHC on September 3, 2019. A response from the NAHC was received on September 13, 2019, stating the results of the search were negative. The NAHC included a list of Native American tribes who may have additional information concerning cultural resources in the area. Stantec sent letters to the listed tribes on September 23, 2019. As of October 11, 2019, no responses have been received. Prior to the final draft report, Stantec will conduct follow-up calls to all tribes identified by the NAHC (See Appendix C).

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5.0 METHODS

5.1 SURVEY METHODS

Between August 16 and September 13, 2019, Stantec archaeologists conducted an archaeological inventory of the Project area by walking parallel transects spaced at approximately 10 to 15 meters (m) (Figure 6). The purpose of the archaeological inventory was to inspect the entire Project area for Prehistoric and historic-era cultural resources, such as debitage, flaked tools, ground stone, milling stations, historic period trails, evidence of mining exploration and extraction, farming, and other manifestations of past human activities more than 50 years of age. The goals of the inventory were to identify cultural resources and collect sufficient data regarding the quality and quantity of the resources relating to specific site types and appropriate research domains. The collection of this data would facilitate making preliminary recommendations regarding a site's eligibility for the CRHR and NRHP and to determine if further archaeological studies (e.g., subsurface testing) may be required at specific sites).

Most of the Project area is located on the desert floor, and consequently, prehistoric sites would likely occur as surface expressions of artifacts primarily associated with subsistence and resource manufacturing activities. Expected artifact types include ground stone artifacts associated with seed, nut, and root/tuber collection and processing and cutting tools; projectile points and other flaked tools associated with game hunting, capture, and butchery of terrestrial fauna; and debitage associated with the repair and manufacture of stone tools. Historic site types in the Project area include sites associated with agriculture, ranching, and recreational use. Expected features and artifacts associated with these types of sites include claim markers, barns, houses, roads, corrals, fences, water conveyance features, improved spring areas, livestock loading and unloading (i.e., chutes and corrals) facilities, feeding and salt lick facilities, and campgrounds and their associated refuse.

During the field survey, archaeologists noted that both modern and historic wind-blown refuse is prevalent throughout the Project area. In most of these cases, metal cans have blown away from a primary refuse deposit, and their origin cannot be determined. Cans that were out of their original context were not recorded as part of Stantec's inventory process because of their inability to provide any useful data regarding use and/or settlement of the Project area. Instead, archaeologists focused recordation efforts on historic refuse deposits with obvious areas of deposition and distinguishable boundaries.

Survey strategy followed California Office of Historic Preservation (California OHP 1995) guidelines regarding survey of topographical features considered sensitive for cultural resources, such as springs, meadows with running water, intermittent or seasonal drainages, and rock outcrops, as well as subsurface exposures such as rodent burrows. Cut banks were examined for physical manifestation of human activity greater than 50 years in age. Archaeologists carefully inspected and documented these types of features in field notes and photographs.

Using the Environmental Systems Research Institute Collector application and an EOS Positioning System Arrow 100 Global Positioning System (GPS), Stantec recorded and/or updated new and previously recorded resources on California Department of Parks and Recreation DPR-523 series forms. The GPS provided real-time, sub-meter location information for data collection and navigation. Site recordation included photographic documentation; mapping and data collection using GPS to capture precise location of isolated finds, artifacts, and features; and documentation of the spatial extent of resources. Stantec used this information to prepare sketch maps and location

maps. For sites extending beyond the Project area, archaeologists recorded site boundaries up to a distance of 30 meters beyond the limits of the Project area.

Methods

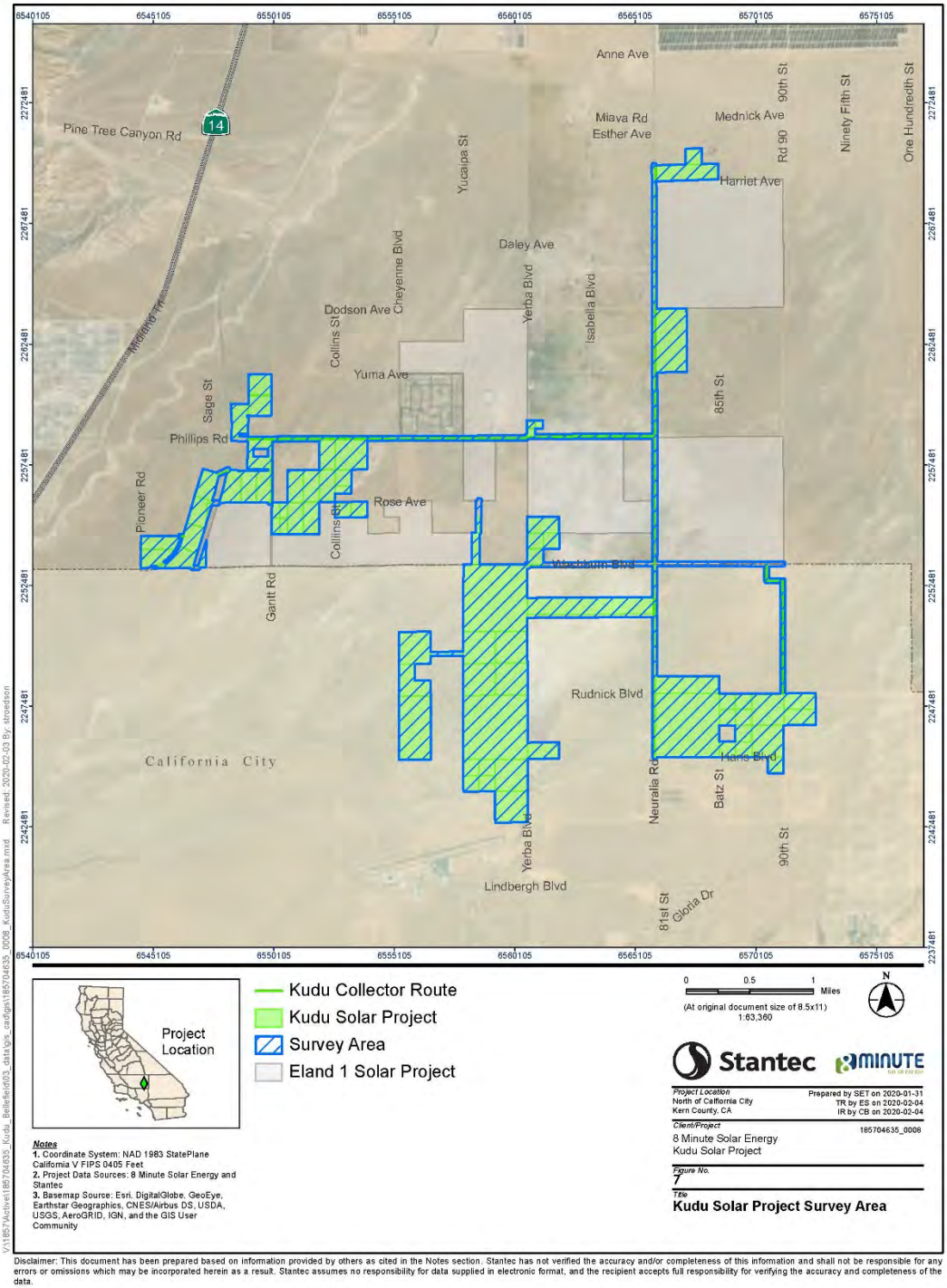

Figure 6 Survey Coverage Map

5.2 SITE TYPES

5.2.1 Prehistoric Site Types

Lithic Scatters

Lithic scatters are the most often identified prehistoric resources type. These sites contain flaked stone debitage and/or tools. They are typically small and shallow, representing short-term occupations. Lithic scatters can range from a single episode of flaking to larger scatters including multiple periods of use and material types. Material utilized consist mainly of cryptocrystalline (CCS) materials, such as chert and chalcedony. Obsidian is another material, with a main source located in the Coso Mountains, located northwest of the Project area.

Simple Habitation Sites

Habitation sites show evidence of occupational debris, including lithic scatters, subsistence remains, fire-cracked rock, and/or architecture or shelters. These sites can contain bedrock mortar or portable milling equipment and/or midden deposits or accumulations of dietary remains. Hearth features and associated fire-cracked rock may also be observed and are typically accompanied with charcoal and/or darkened soils.

Ceramic Scatters

Prehistoric ceramics have been identified in the western Mojave Desert (Zigmond 1986). It is speculated that the Owens Valley Paiute may have introduced pottery to the Kawaiisu. While the Kawaiisu may have made small quantities of their own pottery, they maintained a preference for basketry. Isolated scatters or sherds may be observed in the Project area and could be associated with habitation sites.

Human Cremains

Surface cremations of human remains are typical of some desert environments in southern California. The evidence of cremations typically consists of circular areas of darkened soils that may be associated with very fragmentary skeletal remains.

5.2.2 Historic Site Types

Refuse Scatters and Dumps

Refuse scatters and dumps can represent small deposits to larger scatters of domestic, commercial, or industrial debris. They can be found along trails, dirt roads, or at former habitation areas.

Early Farms and Ranches

Archaeological and historic architectural remnants of the nineteenth to mid-twentieth century farms and ranches reflect the early historic-era settlement in the area. Remnants can include structures and features such as foundations or fence lines.

Transportation Routes

Transportation routes primarily consist of roads or railroad lines. Historic trials may be identified as well, but can be difficult to determine. Railroad lines can include rails, lines, and railroad beds.

5.2.3 Isolated Finds

Isolated finds can be prehistoric or historic and consist of one to three artifacts. Less than three artifacts in an area 30 meters or less in diameter with a distance of 30 meters from any other site or artifact constitutes an isolate. Isolates are not considered a prehistoric or historic site because of their inability to provide useful data beyond their identification and documentation and therefore considered not eligible

5.3 RESEARCH ISSUES AND THEMES

5.3.1 Prehistoric

This discussion organizes the study of regional prehistory into three broad thematic and hierarchical research domains: archaeological context, past lifeways, and culture process. Topics relating to the basic level of inquiry or archaeological context, include investigations of site formation processes, paleoenvironment, and cultural chronology. Such studies seek to explicate how the archaeological record was created and to place it in a temporal framework. These topics must be considered before addressing research issues in the next tier of inquiries, past lifeways (e.g., settlement, subsistence, technology). Studies pertaining to past lifeways are more interpretive in nature, relying heavily on arguments based in understanding the formation of the archaeological record. These research issues must be sufficiently considered before addressing those in the top level of inquiry, culture process (e.g., cultural development associated with gatherer-hunter adaptations). Interpretations and inferences increase through the higher levels of inquiry (e.g., past lifeways and culture process), with the higher levels aimed at contributing to explanatory theories of cultural development.

5.3.2 Archaeological Context

This fundamental domain of inquiry refers to the temporal and physical context of prehistoric human land use and the creation of the archaeological record. Topics relevant to this research include site formation processes, characterization of paleoenvironment(s) and human response to environmental change, and cultural chronology. In other words, studies in the domain of archaeological context seek to understand how and when artifacts and other remains came to be deposited in the archaeological record.

Site Formation Processes

This basic subject of research refers to the cultural and natural factors that create, structure, and alter archaeological deposits. Archaeological sites are initially created when humans deposit evidence of their behavior on the landscape. This evidence takes form of lost or discarded artifacts, refuse, or alterations of the landscape. Natural processes (e.g., erosion, weathering, decay, bioturbation, animal scavenging, etc.) and subsequent human activity (e.g., digging, artifact scavenging, etc.) subsequently act on this evidence. These processes transform the original depositional context of the cultural remains. Understanding the behaviors associated with how cultural materials were

deposited in the first place and how subsequent contextual transformations occurred are an important part of studies of archaeological context.

Paleoenvironment

Paleoenvironmental analyses typically focus on reconstructing the natural environment of a site during the tenure of human occupation. Such reconstructions have implications for archaeological analysis of changes in human adaptive subsistence and settlement strategies. The late Pleistocene and Holocene climate in the region fluctuated, resulting in significant changes in temperature and precipitation over time. These shifts in climate have affected the diversity, distribution, and availability of subsistence resources for humans living on the foothill margin landscape, prompting human adaptive responses that are reflected in technological developments, settlement patterns, and other aspects of prehistoric Native American culture. The recovery and interpretation of faunal and floral remains indicative of past environmental conditions is an important aspect of understanding human adaptation in the region.

Cultural Chronology

Defined as the temporal sequencing of cultural events and patterns, cultural chronology seeks to identify distinctive archaeological assemblages and features that characterize particular cultural expressions in time. Numerous chronological frameworks have been developed during previous archaeological research in the vicinity of the Project. Building a cultural chronology is a methodological pursuit involving a variety of dating methods. Factors that affect the development of a cultural chronology include taxonomic strategies and methods, data availability, and theoretical paradigms.

Research Questions

1. Can temporal data from the site(s) be used to refine the cultural chronology and culture history of the area?
2. Where does the site(s) fit within existing chronologies for the Mojave Desert?
3. Are cultural assemblages present that could aid in the construction of source-specific obsidian hydration rates?
4. Does the site(s) appear to represent ethnographic of protohistoric occupation?
5. Does the site(s) exhibit evidence of changes in resource procurement strategy, such as hunting to collection and processing of food sources or resources over time?

Data Requirements

- Identification of archaeological contexts retaining integrity of cultural and/or natural stratigraphy.
- Culturally modified obsidian for hydration studies.
- Chronological indicators such as stylistically diagnostic artifacts including projectile points, shell beads, or other temporally discrete items.
- Historic materials, such as glass, that show modifications from adaptive reuse by Native Americans that could be used to identify protohistoric occupations.

5.3.3 Past Lifeways

The second level of research domains concerns past lifeways. Unlike studies involved in understanding archaeological context, which are primarily methodological pursuits, the reconstruction of past lifeways requires refined procedures to extract relevant information from the archaeological record. The data are then interpreted to describe and explain how past cultures functioned. Relevant topics within the domain of past lifeways include subsistence and settlement patterns, trade and exchange, and technological innovation. These issues address the interaction between prehistoric people and the landscape around them.

Subsistence and Settlement

A common theme of archaeological studies in the Project vicinity concerns prehistoric adaptive strategies as reflected by evidence of settlement and subsistence strategies. The origins of intensive use of plants and hunting, and their associated changes in settlement strategies are important regional archaeological research themes.

Trade and Exchange

One way to gain insight into prehistoric trade and exchange is to use chemical analysis of obsidian artifacts to determine their place of origin and then plotting temporal and spatial distributions of these artifacts organized by their geological sources. Obsidian is present in archaeological deposits near the Project area, but not in the same quantities as basalt and local metavolcanic materials. Both obsidian and basalt can be analyzed through x-ray florescence techniques to determine their geological source(s). Obsidian hydration facilitates the dating of obsidian samples. The material for lithic artifacts can be traded, exchanged, and brought into an area in various stages of reduction from unmodified cobbles to highly refined preforms and finished tools. The stages of manufacture speak to the state in which obsidian or basalt was brought to sites and the state of the material when it was carried away. In other words, we can address the question of whether obsidian and basalt were traded as raw materials, partially finished artifacts, finished tools, or in a variety of forms. The answer helps in understanding the range and duration of activities carried on at archaeological sites. Other ways to examine trade and exchange in the past include material studies of artifacts that are produced from nonlocal materials.

Technology

Studies of prehistoric technology involve analysis and description of innovations in the design and form of tools (e.g., hunting implements and plant food processing tools), variations in manufacture methods, and other attributes of artifacts, features, and assemblages. These studies can potentially be used to differentiate among cultural groups (based on manufacturing techniques and styles), site functions, and temporal periods. Flaked stone and groundstone are common artifact classes found at archaeological sites. Flaked stone, for example, is diagnostic of the methods employed to reduce raw material and produce finished stone tools. Certain styles of projectile points (e.g., concave base, side-notched, or corner-notched projectile points) may display stylistic differences indicative of the cultural groups that produced them. Portable milling tools, such as handstones, pestles, and hopper mortars, are common artifact types and are part of milling technologies associated with the processing of plant foods. Examination of projectile points at these sites may differentiate those used prior to the innovation and adoption of bow-and-arrow technology that largely replaced atlatl-and-dart technology. The use of obsidian or silicates as opposed to basalt or course-grained volcanic materials at sites may indicate that they represent a transition in preferred lithic technology.

Research Questions

1. Can resources acquisition strategies be identified?
2. Are dietary changes indicated in the archaeological record through time?
3. Are there indications of technological evolution associated with food production through time?
4. Does any of the site(s) data provide new or previously unknown information about prehistoric settlement patterns in the desert?
5. Can the site(s) be associated with specific ethnographic villages, historical events, or ethnographic trails?

Data Requirements

- Samples of lithic artifacts, including flaked and ground stone tools and debitage, that will allow characterization of site assemblage(s) in terms of subsistence focus.
- Archaeological deposits containing a substantial sample of faunal remains or microbotanical and/or botanical remains for analysis.
- Flaked stone samples representative of the extent and variability of tool stone production, use, and discard at the site(s).

5.3.4 Culture Process

Studies of culture process pertain to archaeological context and past lifeways and seek to explain how and why particular cultures developed along a specific trajectory. This research domain requires a level of interpretation that relates most directly to general anthropological theory. The most relevant major topic relating to culture process for research in the Project area involves the examination of the development and changes in hunter-gatherer settlement and subsistence strategies as identified in changes in projectile point types and the introduction and elaboration milling tool technology.

Data Requirements

A variety of data sets may be used for the study of culture process. All of the data sets identified for other research topics could provide information relevant to culture process. These data sets will be used as appropriate for the study of culture process as related to the sites in the Project area.

5.3.5 Archaeological Data Requirements

It is difficult to define a quantifiable threshold regarding the amount of data necessary to address research or management questions. Rarely will a single site yield enough information to fully address any research question, but sites may yield data that incrementally expand our understanding of cultures in the past. Indeed, sites need to yield appropriate data sets, such as artifacts and ecofacts, that can be used to address the research issues and themes identified for the Project. For example, questions relating to the age of cultural deposits and artifacts, the development of cultural chronologies, and culture process can only be addressed if there are datable archaeological

materials such as obsidian, temporally and functionally diagnostic artifacts forms, or organic remains. Without these data sets, research questions cannot be addressed.

5.3.6 Historic

Transportation

Transportation networks are critical to the social and economic development of a relatively isolated agricultural and ranching settlement. Maintained transportation routes allow residents to have access to supplies and maintain social networks. Easy and reliable transportation corridors facilitated movement of goods, resources, and people between remote settlements and larger economic centers like Bakersfield or transportation hubs like Mojave. In addition, good transportation infrastructure allows ranchers and farmers to transport goods for sale.

Research Questions for Transportation

1. What was the role of roads in the development and continued use of the Project area for agriculture, ranching, and settlement?

2. Are the roads planned or developed through use and what does this indicate about the nature of how people access the Project area, pass through it, or go around it?

3. What types of transportation were used on the roads and how did this change over time?

4. How has the construction or alignment of the roads changed over time? Does this reflect socioeconomic changes in the Fremont Valley?

5. How and by whom where the roads initially constructed, and how were they maintained?

Data Needs for Transportation Networks

Archival research using historic documents, newspaper accounts, maps, and photographs can assist in understanding how and when roads developed and how they were used. Roadside refuse also provides an indication of how long the road was in use and when it was most frequently in use. The level of maintenance and level of surface treatments on roads can indicate how well or how often the roads are used and maintained.

Agriculture and Ranching

Agriculture and ranching were critical parts of California's economy and helped supply early mining efforts. During the first quarter of the twentieth century, agricultural and ranching efforts in Fremont Valley were likely small-scale businesses or self-sufficiency efforts. Large-scale ranches using modern technology were able to drill deeper and gain access to the reliable, underground water sources. M&R Ranch began to acquire larger tracts of land in the 1930s and 1940s.

Research Questions for Agriculture and Ranching

1. Can any of the ranching features or artifacts be associated with a specific person or family during a specific time period?

2. Which specific ranching-related activities (corrals, line camps, etc.) are evident on the landscape?

3. What methods of water management did local ranchers utilize for watering livestock?

4. Is there evidence of ranchers participating in other subsistence or leisure activities, such as freighting, woodcutting, hunting, trapping, or mining?

5. Who used the area for ranching and when was its most intensive period of occupation/use?

6. Is there evidence of distinctive ethnic groups, such as the Basque, involved in ranching activities in the area?

Data Requirements for Agriculture and Ranching

To provide information relevant to the ranching theme, a site would have to be associated with features like residences, barns, corrals, wells, pumps, cisterns, troughs, and/or pipes that could help address questions about water management. In addition, archival research using census records, newspaper articles, oral histories, and photographs can provide information about local residents and may be able to identify specific families who occupied the Project area.

Non-Native Settlement

Access to transportation, a relatively reliable underground water source, and the 1916 Stock-Raising Homestead Act contributed to early twentieth-century non-native settlement in Fremont Valley. In the latter half of the twentieth century, the presence of Edwards Air Force Base and the planned community of California City drew a different demographic to the area. Today, Fremont Valley remains relatively sparsely populated even though California City remains the third largest city in the California bay area.

Research Questions for Non-Native Settlement

1. Does the site provide important information about attempts to settle the area during the 1910s (Neuralia) or the 1960s (California City)?

2. Does the refuse provide information about consumer behavior and supplying households in the Mojave?

3. Does the foundations or refuse provide information about ethnicity of the occupants or specialized occupation?

4. Is there evidence of how long parcels were occupied?

5. Is there evidence of the relative success/or failure of settlement in the Mojave?

6. How did the residents of Fremont Valley access and supply water to their homestead?

7. Does the cultural assemblage reflect gender, age, or other demographic information of its occupants?

Data Requirements for Non-Native Settlement

To provide information relative to the non-native settlement research theme, a site would have to have be associated with unique and temporally diagnostic artifacts that could be used to determine dates of occupancy and specific activities and/or residences or structures exhibiting specific architectural styles. Surface refuse deposits at domestic sites consisting of cans, bottles, and jars can provide data settlement and use of the Project area. In addition, other

features such as privies root cellars, pumps, wells, cisterns, and pipes can provide information related to occupation and use of the Project area.

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6.0 ARCHAEOLOGICAL SURVEY RESULTS

Stantec archaeologists identified 26 new resources and 29 new isolates (Table 3) and updated 12 previously recorded resources (Table 2). Of the newly recorded resources, 11 are prehistoric and 15 are historic (see Figure 7) Site evaluations are summarized in Table 4.

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6.1 NEWLY IDENTIFIED SITES

6.1.1 SSM-2

Photo 1. Overview of SSM-2, Facing North, 8/27/2019

This historic site consists of a large diffuse refuse scatter located at the intersection of Neuralia Road and Dodson Avenue. The scatter consists of household items, including assorted cans, stoneware, and glass bottle fragments. The artifacts date to circa 1950-1970.

6.1.2 JT-1

Photo 2. Overview of JT-1, Facing North, 8/28/2019

This historic site consists of refuse deposits that include tobacco tins, sanitary cans, hole-in-top cans, external friction coffee cans/lids, intact bottles, and various glass bottle fragments. The southeastern portion of the site has a concentration of these items (concentration 1), while the remainder of the refuse is scattered about the site.

6.1.3 JT-2

Photo 3. Overview of JT-2, Facing North, 8/28/2019

This historic site consists of a refuse deposit that primarily includes metal cans. The majority of the cans appear to be beer cans with church key and punch hole openings. The site also contains various colored glass fragments including, green, clear, brown, and a “Pepsi” bottle fragment. The area appears to have been used for target practice, as numerous shotgun shells were found in the area.

6.1.4 JT-3

Photo 4. Overview of JT-3, Facing North, 8/28/2019

This historic site consists of a refuse deposit that mainly includes sanitary cans and various glass fragments including, flat window glass, milky colored glass, and clear, amethyst, green, and brown bottle glass. This area appears to have been used for target practice, as the cans are damaged, and multiple shotgun shells were found in the area.

6.1.5 JT-4

Photo 5. Overview of JT-4, Facing North, 8/28/2019

This prehistoric lithic scatter consists of eight tertiary white CCS flakes with reddish and brown coloring. The flake size varies from 1 to 3 centimeters (cm) in length. An access road bisects the site.

6.1.6 JT-5

This historic site consists of a refuse deposit. The refuse is concentrated at the northern end of the site boundary. The refuse consists of clear and amber glass fragments, a milk glass bottle base, white ceramic dinner plates, a tuna can, and a dinner plate with calendar months and the year 1958 on it.

6.1.7 JT-6

Photo 6. Overview of JT-6, Facing North, 8/29/2019

This historic site primarily consists of a refuse deposit that includes glass and ceramic fragments. The deposit measures 115 feet north to south by 52 feet east to west. One prehistoric artifact, a light beige chert flake measuring 7 cm by 1.5 cm by 2.5 cm, was also observed at the site.

6.1.8 JT-7

Photo 7. Overview of JT-7, Facing North, 8/29/2019

This historic site consists of a refuse deposit that includes approximately 20 hole-in-top cans with knife cut openings. The site also contains modern beer and juice bottles. This site measures 37 feet north to south by 26 feet east to west.

6.1.9 JT-8

Photo 8. Overview of JT-8, Facing North, 8/31/2019

This prehistoric site consists of a very sparse lithic scatter and three handstones. A concentration of fire-affected rock (FAR) is also scattered throughout the site. No charcoal or darkened soil was observed, consequently the origin of the FAR is undetermined. The site measures 17 meters north south by 30 meters east west.

6.1.10 JT-9

Photo 9. Planview Site of JT-9, 9/1/2019

This small prehistoric site consists of a CCS biface fragment and mano and metate fragments. The biface has been split lengthwise and measures 4.7 cm by 1.7 cm by 1.0 cm. The site measures 17 meters north south by 30 meters east west.

6.1.11 JT-10

Photo 10. Overview of JT-10, Facing Southeast, 9/1/2019

This prehistoric site consists of a very sparse lithic scatter that includes two obsidian flakes and one schist flake.

6.1.12 GM-1

Photo 11. GM-1 Site Overview, Facing North, 8/27/2019

This prehistoric site consists of two artifacts, eight pieces of FAR arranged in a triangle shape, a scatter of modern bottles, and a scatter of FAR. Artifact 1 is an obsidian leaf-shaped projectile point, possibly a Humboldt concave base projectile point (Justice 2002). The point is 95 percent intact, features edge modification, and measures 7 cm by 3.4 cm by 9 cm thick. Artifact 2 is a rose colored quartz flake was found near the triangular arrangement of FAR. The modern bottle scatter is located in association with the scattered FAR. The FAR scatter measures 78 cm (southeast/northwest), 61 cm (north/south). No charcoal or darkened soil was found near the FAR, and consequently the origin of the FAR is undetermined.

6.1.13 GM-2

Photo 12. GM-2 Overview of Site, Facing Southeast, 8/28/2019

This historic site consists of a refuse deposit along a roadway. The deposit contains post WW-II clear liquor bottle glass, amber bottle glass, and modern clear glass; a small scatter of cans, including three with church key openings, a 1-quart Quaker State oil can, and a crushed, knife opened sanitary vegetable can measuring 4.5 inch by 3.875 inch; an iron pipe fragment; and concrete fragments.

6.1.14 GM-3

Photo 13. Overview of site, Facing North, 8/28/2019

This historic site primarily consists of a refuse deposit that includes approximately 70 cans and a small amount of glass bottle fragments dating to the late 1950s, but also includes a prehistoric brown chert utilized flake. The historic artifacts are scattered across a dune swale.

6.1.15 GM-4

Photo 14. Overview of GM-4, Facing northwest, 8/29/2019

This historic site primarily consists of a refuse deposit that includes 15 sanitary cans; a single sardine can; a clear bottle base with an ‘OWENS’ makers mark; a cobalt blue bottle side panel fragment embossed with ’MAGN_THE CHAS_CHEMICAL_GLENBRO’; a cobalt blue bottle base embossed with ‘USA_M_22’; amethyst, aqua, and green glass bottle fragments; ceramic whiteware that appears to date from the 1920s-1930s; a modern white lacquered bread box; and an aqua glass insulator.

6.1.16 GM-5

Photo 15. Overview of GM-5, Facing West, 8/30/2019

This historic site consists of an abandoned well, pump, cistern, motor mount foundations, and a sparse artifact and debris scatter. Two upright 8 inch by 8 inch wood posts are present at the west end of the site. The debris scatter consists of clear glass fragments, wire nails, and miscellaneous metal debris.

6.1.17 GM-6

Photo 16. Overview of FAR Concentrations, Facing Northwest, 8/31/2019

This prehistoric site consists of three discrete concentrations of FAR. All three concentrations consist of 30-100 fire affected rhyolite and granite cobbles that appear to have been scattered across the site by past agricultural practices. All three concentrations were recorded as features. Feature 1 consists of approximately 50 FAR and covers 370 square feet. Feature 2 consists of approximately 30 FAR and covers 240 square feet. Feature 3 consists of approximately 100 FAR and covers 1327 square feet.

6.1.18 GM-7

Photo 17. Overview of GM-7, Facing Northwest, 8/31/2019

This prehistoric site consists of four metate fragments and a concentration of 35 fire affected rhyolite porphyry and andesite cobbles. The site is located on an alluvial terrace at the edge of a creosote scrub vegetation community.

6.1.19 GM-8

Photo 18. Overview of GM-8, Facing North, 8/31/2019

This prehistoric site consists of an extensive scatter of fire affected basalt, andesite, rhyolite, and granite cobbles; a blue-black chert bi-face fragment; a sand-blasted obsidian flake; and a basalt mano fragment. Approximately 45-50 FAR cobbles are concentrated in one area of the site.

6.1.20 GM-9

Photo 19. Overview of GM-9, Facing North, 9/10/2019

This historic site primarily consists of a large refuse deposit that includes a number of small concentrations of historic artifacts, but also includes a prehistoric mano fragment. Artifacts include 150+cans of various types. Associate household artifacts include tan, salt-glazed pipe fragments; barrel hoops; milled lumber;1/8-inch metal hardware embossed “Homer Laughlin”; semi-vitreous whiteware embossed “The Angelus”, with a Pink Rose Floral pattern; amber bottle base embossed “IPW” with diamond makers mark; amber hand tooled bottle finish; sleeping cot bracket; Blue glazed fiesta ware; and a 1.75-inch pipe hammered into the ground near the main debris concentration. Artifact 1 is a metal cone top can, which was developed in 1935 (Rock 1989). Artifact 2 consists of two fragments of a Homer Laughlin plate with a pink floral decal design, scalloped edge, and a black transfer print manufacturer’s mark. The mark reads “HL (mark) / Homer Laughlin / Angelus (italics).” The Angelus was produced by Homer Laughlin between 1905 and 1916 (Laurel Hollow Park 2019). Artifact 3 is a brown glass bottle neck with a tooled crown cap finish. Tooled crown finishes date between 1894 and 1915 (Lindsey 2010). Overall, diagnostic elements of the artifacts at the site span 1894 to 1935+ but seem to cluster between 1905 and 1935.

6.1.21 GM-10

Photo 20. Overview of GM-10, Facing North, 9/11/2019

This historic site is an agricultural holding pond. The holding pond is a rectangular depression measuring 100 feet east/west by 61 feet north/south encompassing 6,100 square feet that is surrounded by a berm measuring 1 to 3 feet high. No metal pipes or other infrastructure materials indicating the exact usage of the feature were identified, and there are no roads in the vicinity of the pond.

6.1.22 GM-11

Photo 21. Overview of GM-11, Facing Southwest, 9/12/2019

This historic site primarily consists of a refuse scatter with two concentrations of artifacts. One concentration includes approximately 20 rotary opened sanitary cans measuring 3.375 inch x 1.75 inch; one lid embossed “OP7_Ø_132_B”; a sanitary vegetable can with corrugated body measuring 3 inch x 4.375 inch with rotary opening; nine round cans, most likely tuna fish cans; rotary opened metal can lids; and green, clear, and amber glass fragments. The other concentration includes 12 metal cans. In addition to the two concentrations of artifacts, there are metal cans scattered across the site area.

6.1.23 GM-12

Photo 22. Overview of Site, Facing Northwest, 9/10/2019

This prehistoric site consists of 10 FAR covering an area measuring approximately 5 meters by 5 meters and a sparse lithic scatter that includes four white chert flakes and an agate tool resembling a burin or drill, measuring 1.0 cm by 1.5 cm by .08 cm.

6.1.24 Phillips Road/GM-13

Photo 23. Overview of Phillips Road, 9/12/2019

This site is historic Phillips Road that was constructed sometime between 1915 and 1943. The original historic alignment of the road is intact, but the roadbed itself was destroyed during recent road construction activities, including raising the roadbed, grading the shoulders, and paving the alignment with asphalt.

6.1.25 Neuralia Road/GM-14

Photo 24. Overview of Neuralia Road, 9/12/2019

This site is historic Neuralia Road that was constructed sometime between 1915 and 1943. The original historic alignment is intact, but the roadbed itself was destroyed during recent road construction activities, including raising the roadbed, grading the shoulders, and paving the alignment with asphalt.

6.1.26 GM-15

This historic site consists of a historic building foundation associated with a refuse deposit and a shallow ditch. The foundation is rectangular with a semi-subterranean building pad and raised stem walls for the main floor with a stairwell outside of the eastern edge of the structure. Hundreds of household cans, bottle shards, and ceramic fragments are located in and around the structure, as well as a terra-cotta pipe and miscellaneous hardware debris. The site may be associated with historic site P-15-014733 that is located near it across Washburn Boulevard.

6.2 UPDATED SITES

Table 2 Updated Sites

P-Number	Description	Updated
P-15-003826	originally recorded in 1993 and consists of an abandoned dirt road and a small irregularly shaped asphalt pad, scattered brick and slag, and trash scatter	Not relocated

P-15-019695	Isolated jasper flake.	Not relocated
P-15-019685	originally recorded in 2018 as a historic trash scatter. A 7-Up bottle from the site is dated to 1957.	
P-15-019686	originally recorded in 2017 as a large historic trash scatter. The site consists of five 16-ounce church-key open beer cans, one condensed milk can, and 16 clear glass medicine bottles.	
P-15-000970	This site was originally recorded in 1971 as a lithic scatter	Not relocated
P-15-019691	originally recorded in 2018 and consists of a small historic trash scatter.	
P-15-014732	originally recorded in 2008 as a large historic trash scatter consisting of 70 cans, glass, ceramics, and metal	Relocated, no changes observed
P-15-014733	Originally recorded in 2008 as two concrete foundations and historic debris	Relocated, no changes observed
P-15-019712	originally recorded in 2018 as a historic trash scatter. The artifact assemblage consists of more than nine crushed matchstick filled cans.	Relocated, no changes observed
P-15-019715	originally recorded in 2018 as an isolate consisting of a broken metate	Not relocated
P-15-019720	consists of a metate made from a green granitic material that measures 31 cm by 43 cm by 6 cm	Not relocated

6.3 ISOLATES

Table 3. Isolates

Isolate Number	Description
GM-ISO-1	Sanitary can
GM-ISO-2	Sanitary Can
GM-ISO-3	Sanitary Can
GM-ISO-4	Sanitary Can
GM-ISO-5	Sanitary Can
GM-ISO-6	Household Item
GM-ISO-8	Metate

Isolate Number	Description
GM-ISO-9	Historic Machine Part
GM-ISO-10	Mano
GM-ISO-11	Mano
GM-ISO-12	Grenade Fuse
GM-ISO-13	Chert Biface
GM-ISO-15	Mano
GM-ISO-16	Mano
GM-ISO-17	Obsidian Flake
GM-ISO-18	Mano Fragment
GM-ISO-19	Can
GM-ISO-20	Mano
GM-ISO-21	Bullet Casing
GM-ISO-22	Chert Flake
GM-ISO-23	Chert Biface
GM-ISO-24	Chert Flake
JT-ISO-1	Aqua Glass Fragment
JT-ISO-2	CCS Core Fragment
JT-ISO-3	Iron Fragment
JT-ISO-4	Metate
JT-ISO-5	Chert Flake
JT-ISO-8	Chert Flake
SM-ISO-1	Kerosene Can

7.0 EVALUATIONS

Table 4. Evaluations

Site Number	Description	CRHR/NRHP Eligibility
SSM-2	Historic Refuse	Not Eligible
JT-1	Historic Refuse	Not Eligible
JT-2	Historic Refuse	Not Eligible
JT-3	Historic Refuse	Not Eligible
JT-4	Prehistoric Lithic Scatter	Not Eligible
JT-5	Historic Refuse	Not Eligible
JT-6	Historic Refuse	Not Eligible
JT-7	Historic Refuse	Not Eligible
JT-8	Prehistoric Lithic Scatter	Not Eligible
JT-9	Prehistoric Lithic Scatter	Not Eligible
JT-10	Prehistoric Lithic Scatter	Not Eligible
GM-1	Prehistoric Lithic Scatter	Not Eligible
GM-2	Historic Refuse	Not Eligible
GM-3	Historic Refuse	Not Eligible
GM-4	Historic Refuse	Not Eligible
GM-5	Historic Foundation	Not Eligible
GM-6	Fire Affected Rock (FAR)	Not Eligible
GM-7	Prehistoric Lithic Scatter	Not Eligible
GM-8	Prehistoric Lithic Scatter	Not Eligible
GM-9	Refuse Scatter	Not Eligible
GM-10	Agricultural Holding Pond	Not Eligible
GM-11	Historic Refuse	Not Eligible
GM-12	Prehistoric Lithic Scatter	Not Eligible
Phillips Road/GM-13	Historic Road	Not Eligible
Neuralia Road/GM-14	Historic Road	Not Eligible
GM-15	Historic Refuse	Not Eligible
P-15-003826	Historic Road	Not Eligible
P-15-019695	Isolate	Not Eligible (Isolate, not considered resource)
P-15-019685	Historic Refuse	Not Eligible
P-15-019686	Historic Refuse	Not Eligible
P-15-000970	Prehistoric Lithic Scatter	Not Eligible
P-15-019691	Historic Refuse	Not Eligible

Evaluations

Site Number	Description	CRHR/NRHP Eligibility
P-15-014732	Historic Refuse	Not Eligible
P-15-014733	Historic Foundation and refuse	Not Eligible
P-15-019712	Historic Refuse	Not Eligible
P-15-019720	Isolate	Not Eligible (Isolate, not considered resource)
P-15-019715	Isolate	Not Eligible(Isolate, not considered resource)

Notes:
CRHR = California Register of Historical Resources
NRHP = National Register of Historic Places

7.1 LITHIC SCATTERS

Lithic scatters were the most commonly identified prehistoric resources type identified within the project area. None of these reached the threshold of eligibility, evaluations are described in detail below.

7.1.1 JT-4

The evaluation for this site was conducted through a review of ethnographic and ethnohistorical data and through an analysis of data collected during field investigations. The ethnographic and ethnohistorical data was used to examine the eligibility of the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. The field investigation was used to gather data to assess the potential of the site to include buried cultural deposits and its ability to yield data important in prehistory.

JT-4 is a prehistoric lithic scatter containing eight white CCS tertiary flakes with reddish and brown coloring. The flake size varies from 1 to 3 cm in length. An access road bisects the site.

Research into the ethnographic use of this area did not result in any information that tied this site to any particular event in the past and there was no indication of the site being associated with any person or entity important in the past. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B or the CRHR under Criteria 1 and 2. It does not embody the distinctive characteristic of a type, period, or method of construction and does not represent the work of a master (e.g., the artifacts are not temporally sensitive and do not provide any new information regarding stone tool manufacture). Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

To examine the site's NRHP eligibility under Criterion D, the first step is to determine if there are cultural deposits that have depositional integrity. This is the basis for looking at the ability of the data contained within a site to address research questions about the past. Though no archaeological excavation was conducted at this site, the paucity of flakes and lack of formal tools at the site indicate that it is unlikely to yield additional information in prehistory beyond the existing documentation of the site. Based on these observations, we recommend that the site is not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.1.2 JT-8

The evaluation for this site was conducted through a review of ethnographic and ethnohistorical data and through analysis of field investigation. The ethnographic and ethnohistorical data was used to examine the eligibility of the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. The field investigation was used to gather data to assess the potential of the site to include buried cultural deposits and its ability to yield data important in prehistory.

JT-8 consists of two handstones and one possible hammerstone. A concentration of FAR is scattered throughout the site. No charcoal or darkened soil was observed, consequently the origin of the FAR cannot be determined. The site measures 17 meters north south by 30 meters east west.

Research into the ethnographic use of this area did not result in any information that tied this site to any particular event in the past, and there was no indication of the site being associated with any person or entity important in the past. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B or the CRHR under Criteria 1 and 2. It does not embody the distinctive characteristic of a type, period, or method of construction and does not represent the work of a master (e.g., the artifacts are not temporally sensitive and do not provide any new information regarding stone tool manufacture). Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

To examine the site's NRHP eligibility under Criterion D, the first step is to determine if there are cultural deposits that have depositional integrity. This is the basis for looking at the ability of the data contained within a site to address research questions about the past. Though no archaeological excavation was conducted at this site, the paucity of artifacts at site indicate that it is unlikely to yield additional information in prehistory beyond the existing documentation of the site. Based on these observations, we recommend that the site is not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.1.3 JT-9

The evaluation for this site was conducted through a review of ethnographic and ethnohistorical data and through analysis of field investigation. The ethnographic and ethnohistorical data was used to examine the eligibility of the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. The field investigation was used to gather data to assess the potential of the site to include buried cultural deposits and its ability to yield data important in prehistory.

This site consists of a CCS biface fragment and mano and metate fragments. The biface has been split lengthwise and measures 4.7 cm by 1.7 cm by 1.0 cm. The site measures 17 meters north south by 30 meters east west.

Research into the ethnographic use of this area did not result in any information that tied this site to any particular event in the past, and there was no indication of the site being associated with any person or entity important in the past. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B or the CRHR under Criteria 1 and 2. It does not embody the distinctive characteristic of a type, period, or method of construction and does not represent the work of a master (e.g., the artifacts are not temporally sensitive and do not provide any new information regarding stone tool manufacture). Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

To examine the site's NRHP eligibility under Criterion D, the first step is to determine if there are cultural deposits that have depositional integrity. This is the basis for looking at the ability of the data contained within a site to address research questions about the past. Though no archaeological excavation was conducted at this site, the paucity of artifacts at the site indicate that it is unlikely to yield additional information in prehistory beyond the existing documentation of the site. Based on these observations, we recommend that the site is not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.1.4 JT-10

The evaluation for this site was conducted through a review of ethnographic and ethnohistorical data and through analysis of field investigation. The ethnographic and ethnohistorical data was used to examine the eligibility of the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. The field investigation was used to gather data to assess the potential of the site to include buried cultural deposits and its ability to yield data important in prehistory.

This site is a small lithic scatter consisting of two obsidian flakes and one schist fragment.

Research into the ethnographic use of this area did not result in any information that tied this site to any particular event in the past, and there was no indication of the site being associated with any person or entity important in the past. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B or the CRHR under Criteria 1 and 2. It does not embody the distinctive characteristic of a type, period, or method of construction and does not represent the work of a master (e.g., the artifacts are not temporally sensitive and do not provide any new information regarding stone tool manufacture). Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

To examine the site's NRHP eligibility under Criterion D, the first step is to determine if there are cultural deposits that have depositional integrity. This is the basis for looking at the ability of the data contained within a site to address research questions about the past. Though no archaeological excavation was conducted at this site, the paucity of artifacts and lack of formal tools at the site indicate that it is unlikely to yield additional information in prehistory beyond the existing documentation of the site. Based on these observations, we recommend that the site is not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.1.5 GM-1

The evaluation for this site was conducted through a review of ethnographic and ethnohistorical data and through analysis of field investigation. The ethnographic and ethnohistorical data was used to examine the eligibility of the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. The field investigation was used to gather data to assess the potential of the site to include buried cultural deposits and its ability to yield data important in prehistory.

This prehistoric site consists of two artifacts, eight pieces of FAR arranged in a triangle shape, and a scatter of modern bottles. Artifact 1 is an obsidian leaf shaped projectile point, possibly a Humboldt concave base projectile point (Justice 2002). The point is 95 percent intact, features edge modification, and measures 7 cm by 3.4 cm by 9 cm thick. Artifact 2 is a rose-colored quartz flake was found near the triangular arrangement of FAR. The modern bottle scatter is located in association with the scattered FAR. The FAR scatter measures 78 cm,

(southeast/northwest), 61 cm (north/south). No charcoal or darkened soil was found near the FAR, and consequently the origin of the FAR is undetermined.

Photo 25. Planview of Humboldt Projectile Point, 8/27/2019

Research into the ethnographic use of this area did not result in any information that tied this site to any particular event in the past, and there was no indication of the site being associated with any person or entity important in the past. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B or the CRHR under Criteria 1 and 2. It does not embody the distinctive characteristic of a type, period, or method of construction and does not represent the work of a master (e.g., the projectile point is temporally sensitive, but spans a very wide timeframe and the artifacts do not provide any new information regarding stone tool manufacture). Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C or the CRHR under Criterion 3.

To examine the site's NRHP eligibility under Criterion D, the first step is to determine if there are cultural deposits that have depositional integrity. This is the basis for looking at the ability of the data contained within a site to address research questions about the past. Though no archaeological excavation was conducted at this site, the paucity of artifacts at the site indicate that it is unlikely to yield additional information in prehistory beyond the existing documentation of the site. The projectile point likely dates to 7,000–3,000 B.P., but is also found in contexts dating to 1,000 B.P.(Justice 2002), and is common throughout the Mojave Desert. Based on these observations, we recommend that the site is not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.1.6 GM-6

The evaluation for this site was conducted through a review of ethnographic and ethnohistorical data and through analysis of field investigation. The ethnographic and ethnohistorical data was used to examine the eligibility of the site

under NRHP Criteria A, B, and C and CRHR Criteria 1, 2 and 3. The field investigation was used to gather data to assess the potential of the site to include buried cultural deposits and its ability to yield data important in prehistory.

This prehistoric site consists of three discrete concentrations of FAR. All three concentrations consist of 30-100 fire-affected rhyolite and granite cobbles that appear to have been scattered across the site by past agricultural practices. All three concentrations were recorded as features. Feature 1 consists of approximately 50 FAR and covers 370 square feet. Feature 2 consists of approximately 30 FAR and covers 240 square feet. Feature 3 consists of approximately 100 FAR and covers 1327 square feet.

Research into the ethnographic use of this area did not result in any information that tied this site to any particular event in the past, and there was no indication of the site being associated with any person or entity important in the past. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B or the CRHR under Criteria 1 and 2. It does not embody the distinctive characteristic of a type, period, or method of construction and does not represent the work of a master (e.g., the origin of the FAR cannot be determined and it does not provide any useful information regarding settlement or subsistence in the area). Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C or the CRHR under Criterion 3.

To examine the site's NRHP eligibility under Criterion D, the first step is to determine if there are cultural deposits that have depositional integrity. This is the basis for looking at the ability of the data contained within a site to address research questions about the past. Though no archaeological excavation was conducted at this site, the paucity of artifacts and lack of formal tools at the site indicate that it is unlikely to yield additional information in prehistory beyond the existing documentation of the site. In addition, there is no evidence that unequivocally supports a determination that the FAR is prehistoric in nature and has been heavily disturbed. Based on these observations, we recommend that the site is not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.1.7 GM-7

The evaluation for this site was conducted through a review of ethnographic and ethnohistorical data and through analysis of field investigation. The ethnographic and ethnohistorical data was used to examine the eligibility of the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2 and 3. The field investigation was used to gather data to assess the potential of the site to include buried cultural deposits and its ability to yield data important in prehistory.

The site consists of a prehistoric lithic scatter. Artifacts identified include four metate fragments and a concentration of 35 pieces of FAR. The site is located on an alluvial terrace on the edge of a creosote scrub vegetation community.

Research into the ethnographic use of this area did not result in any information that tied this site to any particular event in the past, and there was no indication of the site being associated with any person or entity important in the past. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B or the CRHR under Criteria 1 and 2. It does not embody the distinctive characteristic of a type, period, or method of construction and does not represent the work of a master (e.g., the artifacts are not temporally sensitive, the origin of the FAR cannot be determined, and it does not provide any useful information regarding settlement or subsistence in the area). Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C or the CRHR under Criterion 3.

To examine the site's NRHP eligibility under Criterion D, the first step is to determine if there are cultural deposits that have depositional integrity. This is the basis for looking at the ability of the data contained within a site to address research questions about the past. Though no archaeological excavation was conducted at this site, the paucity of artifacts and lack of formal tools at the site indicate that it is unlikely to yield additional information in prehistory beyond the existing documentation of the site. In addition, there is no evidence that unequivocally supports a determination that the FAR is prehistoric in nature and has been heavily disturbed. Based on these observations, we recommend that the site is not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.1.8 GM-8

The evaluation for this site was conducted through a review of ethnographic and ethnohistorical data and through analysis of field investigation. The ethnographic and ethnohistorical data was used to examine the eligibility of the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. The field investigation was used to gather data to assess the potential of the site to include buried cultural deposits and its ability to yield data important in prehistory.

This prehistoric site consists of an extensive scatter of fire-affected basalt, andesite, rhyolite, and granite cobbles; a blue-black chert bi-face fragment; a sand-blasted obsidian flake and a basalt mano fragment. Approximately 45-50 FAR cobbles are concentrated in one area of the site.

Research into the ethnographic use of this area did not result in any information that tied this site to any particular event in the past, and there was no indication of the site being associated with any person or entity important in the past. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B or the CRHR under Criteria 1 and 2. It does not embody the distinctive characteristic of a type, period, or method of construction and does not represent the work of a master (e.g., the artifacts are not temporally sensitive, the origin of the FAR cannot be determined, and it does not provide any useful information regarding settlement or subsistence in the area). Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C or the CRHR under Criterion 3.

To examine the site's NRHP eligibility under Criterion D, the first step is to determine if there are cultural deposits that have depositional integrity. This is the basis for looking at the ability of the data contained within a site to address research questions about the past. Though no archaeological excavation was conducted at this site, the paucity of artifacts and lack of formal tools at the site indicate that it is unlikely to yield additional information in prehistory beyond the existing documentation of the site. In addition, there is no evidence that unequivocally supports a determination that the FAR is prehistoric in nature and has been heavily disturbed. Based on these observations, we recommend that the site is not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.1.9 GM-12

The evaluation for this site was conducted through a review of ethnographic and ethnohistorical data and through analysis of field investigation. The ethnographic and ethnohistorical data was used to examine the eligibility of the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. The field investigation was used to gather data to assess the potential of the site to include buried cultural deposits and its ability to yield data important in prehistory.

This prehistoric site consists of 10 FAR covering an area measuring approximately 5 meters by 5 meters and a sparse lithic scatter that includes four white chert flakes and an agate tool resembling a burin or drill measuring 1.0 cm by 1.5 cm by .08 cm.

Research into the ethnographic use of this area did not result in any information that tied this site to any particular event in the past, and there was no indication of the site being associated with any person or entity important in the past. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B or the CRHR under Criteria 1 and 2. It does not embody the distinctive characteristic of a type, period, or method of construction and does not represent the work of a master (e.g., the artifacts are not temporally sensitive, the origin of the FAR cannot be determined, and it does not provide any useful information regarding settlement or subsistence in the area). Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C or the CRHR under Criterion 3.

To examine the site's NRHP eligibility under Criterion D, the first step is to determine if there are cultural deposits that have depositional integrity. This is the basis for looking at the ability of the data contained within a site to address research questions about the past. Though no archaeological excavation was conducted at this site, the paucity of artifacts and lack of diagnostic tools at the site indicate that it is unlikely to yield additional information in prehistory beyond the existing documentation of the site. In addition, there is no evidence that unequivocally supports a determination that the FAR is prehistoric in nature and has been heavily disturbed. Based on these observations, we recommend that the site is not eligible to the NRHP under Criterion D and the CRHR under Criterion 4

7.1.10 P-15-019695

This artifact is an isolated jasper flake measuring 3 cm by 2 cm by 1 millimeter. Isolates do not meet the criteria required to be considered a resource, and therefore, this artifact was not evaluated.

7.1.11 P-15-019720

The artifact is biface metate made from a green granitic material. It measures 31 cm by 43 cm by 6 cm. Isolates do not meet the criteria required to be considered a resource, and therefore, this artifact was not evaluated.

7.1.12 P-15-019715

This artifact is an isolated metate. Isolates do not meet the criteria required to be considered a resource, and therefore, this artifact was not evaluated.

7.1.13 P-15-000970

This site could not be relocated and is most likely destroyed.

7.2 TRANSPORTATION

Transportation routes identified in the project area primarily consisted of roads or railroad lines. Individual evaluations are detailed below.

7.2.1 Neuralia Road/ GM-14

Neuralia Road is first depicted on the 1943 Castle Butte, CA 1:62,500 USGS topographic map with a slight variation from the modern alignment south of the Project area. Today, Neuralia Road follows the same alignment today as it did in 1943 through the Project area. However, on the 1943 map, the road juts out to the west and parallels the section lines rather than following them directly just south of the Project area. In 1954, Neuralia Road was named a public highway and became County Road 1625 (Kern County 1954). The proposed road plans indicate that the road was straightened to follow the section lines from Section 22, T32S R37E to Section 34, T31S R37E. The road appears to have provided access between Cantil to the north and an unnamed road that ran east-west between Mendiburu Ranch and Tehachapi Pass. Neuralia Road was likely r paved not long after it became a county road in 1954.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. The field investigation was used to gather data regarding archaeological data potential for the road. Archival research did not indicate that the road is associated with any broad patterns in Kern County, California, or U.S. history. In addition, the road cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The road does not embody the distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

Although historic artifacts were recorded along the Neuralia Road corridor within the Project area, there is no evidence to suggest that any buried deposits of cultural resources are associated with the road. The roadside artifact inventory and archival research has essentially exhausted the data potential for the road to address research questions associated with the transportation research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.2.2 Phillips Road/GM-13

Phillips Road was first depicted and an unimproved road on the 1943 Mojave, CA and Castle Butte, CA 1:62,500 USGS topographic maps extending from State Highway 14 on the west end for approximately 4.5 miles through Neuralia, and terminating at Neuralia Road on the east end. The road appears to have been designed to provide access along two north-south thoroughfares as well as inhabited parcels along the road. In April 1914, the road was designated a public highway (County Road 316), but it also included the segment extending from Mojave to Neuralia as well as the road that turned east at Neuralia. In 1914, SPRR began to promote settlement around their Neuralia train station on the Owenyo branch. The adoption of Phillips Road as a county road during this time was undoubtedly related to trying to draw settlers to the area.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. The field investigation was used to gather data regarding archaeological data potential for the road. Archival research did not indicate that the road is associated with any broad patterns in Kern County, California, or U.S. history. In addition, the road cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B or the CRHR under Criteria 1 or 2. The road does not embody the

distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible to the NRHP under Criterion C and the CRHR under Criterion 3.

Although historic artifacts were recorded along the Neuralia Road corridor within the Project area, there is no evidence to suggest that any buried deposits of cultural resources are associated with the road. The roadside artifact inventory and archival research has essentially exhausted the data potential for the road to address research questions associated with the transportation research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.2.3 P-15-003826

This site was originally recorded in 1993 and consists of an abandoned dirt road and a small irregularly shaped asphalt pad, scattered brick and slag, and trash scatter. Stantec archaeologists revisited this site on October 1, 2019. No evidence of the site was observed. It is assumed that this site has been destroyed and cannot be evaluated.

7.3 NON-NATIVE SETTLEMENT

Non-native settlement sites primarily consisted of refuse scatters. These sites are evaluated below.

7.3.1 SSM-2

This resource is an unassociated refuse deposit with diagnostic elements dating between 1950 and 1970. Before municipal garbage collection, rural dumping was a common method of discarding refuse from nearby small towns (e.g., Mojave). Although the refuse is located on a land parcel that may have been occupied at one time, the refuse deposit appears to be a single dumping episode that cannot be attributed to a specific person.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.2 JT-1

This site is an unassociated refuse deposit with diagnostic elements dating to the 1900s. Before municipal garbage collection, rural dumping was a common method of discarding refuse from nearby small towns (e.g., Mojave). Although the refuse is located on a land parcel that may have been occupied at one time, the refuse deposit appears to be a single dumping episode that cannot be attributed to a specific person.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.3 JT-2

This resource is an unassociated refuse deposit without definitive diagnostic elements. Before municipal garbage collection, rural dumping was a common method of discarding refuse from nearby small towns (e.g., Mojave). Although the refuse is located on a land parcel that may have been occupied at one time, the refuse deposit appears to be a single dumping episode that cannot be attributed to a specific person.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.4 JT-3

This resource is an unassociated refuse deposit with non-diagnostic artifacts. Before municipal garbage collection, rural dumping was a common method of discarding refuse from nearby small towns (e.g., Mojave). Although the refuse is located on a land parcel that may have been occupied at one time, the refuse deposit appears to be a single dumping episode that cannot be attributed to a specific person.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2 and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.5 JT-5

This resource is an unassociated refuse deposit with diagnostic elements dating to the 1950s. Before municipal garbage collection, rural dumping was a common method of discarding refuse from nearby small towns (e.g., Mojave). Although the refuse is located on a land parcel that may have been occupied at one time, the refuse deposit appears to be a single dumping episode that cannot be attributed to a specific person.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.6 JT-6

This resource is an unassociated refuse deposit with nondiagnostic elements. Before municipal garbage collection, rural dumping was a common method of discarding refuse from nearby small towns (e.g., Mojave). Although the refuse is located on a land parcel that may have been occupied at one time, the refuse deposit appears to be a single dumping episode that cannot be attributed to a specific person.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.7 JT-7

This resource is an unassociated refuse deposit with nondiagnostic elements. Before municipal garbage collection, rural dumping was a common method of discarding refuse from nearby small towns (e.g., Mojave). Although the refuse is located on a land parcel that may have been occupied at one time, the refuse deposit appears to be a single dumping episode that cannot be attributed to a specific person.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.8 GM-2

This resource is an unassociated refuse deposit with diagnostic elements dating between 1935 and the 1960s. Before municipal garbage collection, rural dumping was a common method of discarding refuse from nearby small towns (e.g., Mojave). Although the refuse is located on a land parcel that may have been occupied at one time, the refuse deposit appears to be a single dumping episode that cannot be attributed to a specific person.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.9 GM-3

This resource is an unassociated refuse deposit with diagnostic elements dating to the 1950s. Before municipal garbage collection, rural dumping was a common method of discarding refuse from nearby small towns (e.g., Mojave). Although the refuse is located on a land parcel that may have been occupied at one time, the refuse deposit appears to be a single dumping episode that cannot be attributed to a specific person.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.10 GM-4

This resource is an unassociated refuse deposit with diagnostic elements dating between 1920 and 1930. Before municipal garbage collection, rural dumping was a common method of discarding refuse from nearby small towns (e.g., Mojave). Although the refuse is located on a land parcel that may have been occupied at one time, the refuse deposit appears to be a single dumping episode that cannot be attributed to a specific person.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the refuse is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.11 GM-15

This resource is an unassociated refuse deposit with diagnostic elements dating between 1920 and 1930. Before municipal garbage collection, rural dumping was a common method of discarding refuse from nearby small towns (e.g., Mojave). Although the refuse is located on a land parcel that may have been occupied at one time, the refuse deposit appears to be a single dumping episode that cannot be attributed to a specific person.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the refuse is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.12 P-15-0019685

This resource is an unassociated refuse deposit with diagnostic elements dating to 1957. Before municipal garbage collection, rural dumping was a common method of discarding refuse from nearby small towns (e.g., Mojave). Although the refuse is located on a land parcel that may have been occupied at one time, the refuse deposit appears to be a single dumping episode that cannot be attributed to a specific person.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.13 P-15-0019686

This site was originally recorded in 2017 as a large historic trash scatter. The site consists of five 16-ounce church-key open beer cans, one condensed milk can, and 16 clear glass medicine bottles.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The site represents a surface scatter of historic trash, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The trash scatter artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.14 P-15-0019691

This resource is an unassociated refuse deposit with diagnostic elements dating to 1957. Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.15 P-15-014732

This resource is an unassociated refuse deposit with diagnostic elements dating to 1957. Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.16 P-15-014733

This resource is an unassociated refuse deposit with two concrete foundations and diagnostic elements dating to 1957. Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose

components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.17 P-15-019712

This resource is an unassociated refuse deposit with diagnostic elements dating to 1957. Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2 and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.18 GM-5

This historic site consists of an abandoned well, pump, cistern, motor mount foundations, and a sparse artifact and debris scatter. Two upright 8 inch by 8 inch wood posts are present at the west end of the site. The debris scatter consists of clear glass fragments, wire nails, and miscellaneous metal debris. This site may represent the remains of a homestead associated with the occupation of the parcel dating to 1943.

Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As building foundations and refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. Thus, the site is recommended as not eligible to the NRHP under Criterion A and the CRHR under Criterion 1. Although the building foundations can be associated with M&R Sheep Company, they are not a significant individual who has played an important role in local, state, or national history. As such, the site is recommended as not eligible to the NRHP under Criterion B and the CRHR under Criterion 2.

The concrete foundation is of a standard design prevalent in the twentieth century and does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible to the NRHP under Criterion C and the CRHR under Criterion 3.

The homestead foundations are relevant to the non-native settlement research theme; however there is no evidence to suggest that the site is associated with buried deposits of cultural resources. The data potential for the site has been exhausted by the artifact inventory conducted during the survey. Therefore, the site is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.19 GM-9

This resource is an unassociated refuse deposit with diagnostic elements dating between 1894 and 1935. Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2 and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.20 GM-10

This resource is an agricultural holding pond. Although there are no diagnostic elements at the site, the depression is located in the northwest quarter of Section 32, which was patented to a man named William Gantt. In 1926, William Gant received a patent for most of Section 32 T31S R37E (within the Project area) under the Homestead Entry-Stock Raising Act of 1916 (39 Stat., 862) although he may have already been living on and improving the land for several years to receive the patent (Gantt 1926). Census records indicate that he may have lived there for at least 10 years from 1920 up to 1930 and worked as a farmer and rancher. The rectangular depression may have served a specific, but unknown, purpose on his property. Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. Although the refuse can be associated with William Gantt, they are not a significant individual who has played an important role in local, state, or national history. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The rholding pond is located surfically, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research

theme. As such, the site is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

7.3.21 GM-11

This resource is an unassociated refuse deposit with diagnostic elements postdating 1904. Historical information was used to evaluate the site under NRHP Criteria A, B, and C and CRHR Criteria 1, 2, and 3. As unassociated refuse, the site does not contribute to broad patterns of history in Kern County, California, or the U.S. In addition, the refuse cannot be associated with a specific individual. Thus, the site is recommended as not eligible for listing on the NRHP under Criteria A or B and the CRHR under Criteria 1 or 2. The refuse does not represent a distinctive characteristic of a type, period, or method of construction and does not represent the work of a master. Nor does it possess high artistic value or represent a significant and distinguishable entity whose components lack individual distinction. Thus, this site is recommended as not eligible for listing on the NRHP under Criterion C and the CRHR under Criterion 3.

The refuse deposit is a surface scatter, and there is no evidence to suggest that it is associated with a buried deposit of cultural resources. The refuse deposit artifact inventory and archival research has essentially exhausted the data potential for the site to address research questions associated with the settlement or agriculture/ranching research theme. As such, the road is recommended as not eligible to the NRHP under Criterion D and the CRHR under Criterion 4.

8.0 SUMMARY AND MANAGEMENT RECOMMENDATIONS

Stantec conducted a Cultural Resources Inventory and Evaluation for the Project. Between August 16 and September 13, 2019, Stantec archaeologists conducted a pedestrian field survey of the Project area. The Project area encompassed 1,955 acres of private property. Stantec's intensive pedestrian field survey of the Project area resulted in the recordation of 29 new isolated artifacts and 26 new sites: 11 prehistoric resources and 15 and historic-era resources. Stantec archaeologists also revisited and updated 11 previously recorded resources.

These resources were evaluated for eligibility for listing on the NRHP and CRHR. Isolates are not considered a prehistoric or historic site because of their inability to provide useful data beyond their identification and documentation and therefore considered not eligible Of the 37 recorded sites located within the Project area, none are considered eligible for listing on the NRHP or CRHR. The proposed Project will not impact any known resources.

Therefore, Stantec recommends a finding of No Effect and less than significant impact for cultural resources.

8.1 INADVERTANT DISCOVERY

There is a possibility that subsurface archaeological deposits exist in the Project area, since archaeological sites may be buried and show no surface manifestation. Prehistoric resources include, but are not limited to, chert or obsidian flakes; projectile points; mortars; pestles; and dark friable soil containing bone dietary debris, heat-affected rock, or human burials. Historic resources may include stone or adobe foundations or walls; structures and remains with square nails; and refuse deposits or bottle dumps, which are often located on the surface or in old wells or privies.

Stantec recommends that if previously unidentified cultural resources are encountered during Project implementation, altering the materials and their context shall be avoided. A professional archaeologist shall be contacted to evaluate the nature of the find within 24 hours of the discovery. A 50-foot buffer shall be put around the discovery until the assessment can be made. Project personnel should not collect, move, or touch cultural resources.

An inadvertent discovery plan should be drafted prior to Project implementation.

8.2 HUMAN REMAINS

Section 7050 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial. Although unlikely, if human remains are encountered, all work must stop in the immediate vicinity of the discovered remains. The Kern County Coroner and a qualified archaeologist must be notified immediately so that an evaluation can be performed (PRC 7050). If the remains are deemed to be Native American and prehistoric, the NAHC must be contacted by the Coroner so that a "Most Likely Descendant" can be designated and further recommendations regarding treatment of the remains provided.

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9.0 REFERENCES

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Appendix A DPRS Confidential

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Appendix A

Privileged and

Confidential

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Appendix B RECORD SEARCH

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Appendix B

Privileged and

Confidential

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Appendix C NAHC

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NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691 Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov

September 13, 2019

Erin Sherlock
Stantec Consulting Services Inc.

VIA Email to: Erin.Sherlock@stantec.com

RE: Kudu Solar Project, Kern County

Dear Ms. Sherlock:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Staff Services Analyst

Attachment

Native American Heritage Commission
Native American Contacts List
9/13/2019

Big Pine Paiute Tribe of the Owens Valley
James Rambeau, Sr., Chairperson
P.O. Box 700
Big Pine ,CA 93513
j.rambeau@bigpinepaiute.org
(760) 938-2003
(976) 938-2942 Fax
Paiute - Shoshone

Big Pine Paiute Tribe of Owens Valley
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P.O. Box 700
Big Pine ,CA 93513
s.manning@bigpinepaiute.org
(760) 938-2003
(760) 938-2942 Fax
Paiute

Big Pine Paiute Tribe of the Owens Valley
Danelle Gutierrez THPO
P.O. Box 700
Big Pine ,CA 93513
d.gutierrez@bigpinepaiute.org
(760) 938-2003, ext. 228
(760) 938-2942 Fax
Paiute

Chumash Council of Bakersfield
Julio Quair, Chairperson
729 Texas Street
Bakersfield ,CA 93307
chumashtribe@sbcglobal.net
(661) 322-0121
Chumash

Kern Valley Indian Community
Julie Turner, Secretary
P.O. Box 1010
Lake Isabella ,CA 93240
(661) 340-0032 Cell
Kawaiisu
Tubatulabal

Kern Valley Indian Community
Robert Robinson, Chairperson
P.O. Box 1010
Lake Isabella ,CA 93240
bbutterbredt@gmail.com
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Tubatulabal
Kawaiisu

Kern Valley Indian Community
Brandy Kendricks
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Tehachapi ,CA 93561
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(661) 821-1733
(661) 972-0445
Kawaiisu
Tubatulabal

Kitanemuk & Yowlumne Tejon Indians
Delia Dominguez, Chairperson
115 Radio Street
Bakersfield ,CA 93305
2deedominguez@gmail.com
(626) 339-6785
Yowlumne
Kitanemuk

San Manuel Band of Mission Indians
Lee Clauss, Director-CRM Dept.
26569 Community Center Drive
Highland ,CA 92346
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(909) 864-8933
(909) 864-3370 Fax
Serrano

San Manuel Band of Mission Indians
Lynn Valbuena, Chairwoman
26569 Community Center Dr.
Highland ,CA 92346
(909) 864-8933
Serrano

This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code,Section 5097.94 of the Public Resources Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans Tribes for the proposed:
Kudu Solar Project, Kern County.

Native American Heritage Commission
Native American Contacts List
9/13/2019

Santa Rosa Rancheria Tachi Yokut Tribe
Rueben Barrios Sr., Chairperson
P.O. Box 8 — Tache
Lemoore ,CA 93245 — Tachi
(559) 924-1278 — Yokut
(559) 924-3583 Fax

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct. — Foothill Yokuts
Salinas ,CA 93906 — Mono
kwood8934@aol.com — Wuksache
(831) 443-9702

Tejon Indian Tribe
Octavio Escobedo, Chairperson
1731 Hasti-acres Drive, Suite 108 — Kitanemuk
Bakersfield ,CA 93309
oescobedo@tejonindiantribe-nsn.gov
(661) 834-8566
(661) 834-8564 Fax

Tejon Indian Tribe
Colin Rambo, Cultural Resources Management
1731 Hasti-Acres Drive, Suite 108 — Kitanemuk
Bakersfield ,CA 93309
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(661) 834-8566
(484) 515-4790 Cell

Tubatulabals of Kern Valley
Robert L. Gomez, Jr., Tribal Chairperson
P.O. Box 226 — Tubatulabal
Lake Isabella ,CA 93240
(760) 379-4590
(760) 379-4592 Fax

Tule River Indian Tribe
Neil Peyron, Chairperson
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Porterville ,CA 93258
neil.peyron@tulerivertribe-nsn.gov
(559) 781-4271
(559) 781-4610 Fax

This list is current as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code,Section 5097.94 of the Public Resources Code, or Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans Tribes for the proposed:
Kudu Solar Project, Kern County.

September 23, 2019
File: 185704635

Attention: Rueben Barrios, Chairperson
Santa Rosa Rancheria Tachi Yokut Tribe
P.O. Box 8
Lemoore, CA 93245

Dear Chairperson Barrios,

Reference: Kudu Solar Project

8minutenergy (8ME) is proposing to construct a photovoltaic energy generation facility within an approximately 1,900-acre project area located on private parcels in California City and unincorporated Kern County, California. The project is located north of the California City Municipal Airport where it is bisected by Washburn Boulevard at Neuralia Road. The project area can be found on the California City North and Mojave NE, CA United States Geological Survey 7.5-minute quadrangle maps (see attached Location Map). The project would consist of the 500-megawatt facility, an operations and maintenance building, and transmission equipment that may be connected to adjacent planned and existing solar facilities.

The proposed solar panel arrays and inverters would be arranged in blocks. Each module within a block would be placed on a mounting structure. Mounting structure foundations can extend up to ten feet below ground and, depending on the structure, soil conditions, and wind loads, may be encased in concrete or supported by small concrete footings.

Stantec is assisting 8ME in the identification of any cultural resources that may be affected by the proposed project. A search of the Sacred Lands File performed by the NAHC was negative for sacred sites within the Project area. However, the NAHC identified you as possibly having additional specific knowledge of this location.

In order to verify that all potential resources of concern to Native American communities are identified and considered in the planning and implementation of the project, we respectfully request any information you can provide regarding the location and nature of cultural resources that may be located within or immediately adjacent to the project area. Specifically, we are seeking you input for the following types of resources:

- Prehistoric archaeological sites and features;
- Sacred lands or locations that are important in Native American culture;
- Places that the Native American community continues to use for ongoing cultural practices, and;
- Historic-period resources.

Reference: Kudu Solar Project

Please also let us know if you have any specific questions or concerns regarding this project so that we can incorporate them into the cultural resources study currently being prepared. We understand that the nature and location of these resources is highly sensitive. Any information you provide will be handled accordingly.

Regards,

Leven Kraushaar, M.A.
Archaeologist
Phone: (707) 318-8233
leven.kraushaar@stantec.com

Attachment: Project Location Map

September 23, 2019
File: 185704635

Attention: Lee Clauss, Director, CRM Department
San Manuel Band of Mission Indians
26569 Community Center Drive
Highland, CA 92346

Dear Director Clauss,

Reference: Kudu Solar Project

8minutenergy (8ME) is proposing to construct a photovoltaic energy generation facility within an approximately 1,900-acre project area located on private parcels in California City and unincorporated Kern County, California. The project is located north of the California City Municipal Airport where it is bisected by Washburn Boulevard at Neuralia Road. The project area can be found on the California City North and Mojave NE, CA United States Geological Survey 7.5-minute quadrangle maps (see attached Location Map). The project would consist of the 500-megawatt facility, an operations and maintenance building, and transmission equipment that may be connected to adjacent planned and existing solar facilities.

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Reference: Kudu Solar Project

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Archaeologist
Phone: (707) 318-8233
leven.kraushaar@stantec.com

Attachment: Project Location Map

September 23, 2019
File: 185704635

Attention: Delia Dominguez, Chairperson
Kitanemuk and Yowlumne Tejon Indians
115 Radio Street
Bakersfield, CA 93305

Dear Chairperson Dominguez,

Reference: Kudu Solar Project

8minutenergy (8ME) is proposing to construct a photovoltaic energy generation facility within an approximately 1,900-acre project area located on private parcels in California City and unincorporated Kern County, California. The project is located north of the California City Municipal Airport where it is bisected by Washburn Boulevard at Neuralia Road. The project area can be found on the California City North and Mojave NE, CA United States Geological Survey 7.5-minute quadrangle maps (see attached Location Map). The project would consist of the 500-megawatt facility, an operations and maintenance building, and transmission equipment that may be connected to adjacent planned and existing solar facilities.

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Reference: Kudu Solar Project

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Phone: (707) 318-8233
leven.kraushaar@stantec.com

Attachment: Project Location Map

September 23, 2019
File: 185704635

Attention: Octavio Escobedo, Chairperson
Tejon Indian Band
1731 Hasti-Acres Drive, Suite 108
Bakersfield, CA 93309

Dear Chairperson Escobedo,

Reference: Kudu Solar Project

8minutenergy (8ME) is proposing to construct a photovoltaic energy generation facility within an approximately 1,900-acre project area located on private parcels in California City and unincorporated Kern County, California. The project is located north of the California City Municipal Airport where it is bisected by Washburn Boulevard at Neuralia Road. The project area can be found on the California City North and Mojave NE, CA United States Geological Survey 7.5-minute quadrangle maps (see attached Location Map). The project would consist of the 500-megawatt facility, an operations and maintenance building, and transmission equipment that may be connected to adjacent planned and existing solar facilities.

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Archaeologist
Phone: (707) 318-8233
leven.kraushaar@stantec.com

Attachment: Project Location Map

September 23, 2019
File: 185704635

Attention: Robert L. Gomez, Jr., Tribal Chairperson
Tubatulabals of Kern Valley
P.O. Box 226
Lake Isabella, CA 93240

Dear Chairperson Gomez,

Reference: Kudu Solar Project

8minutenergy (8ME) is proposing to construct a photovoltaic energy generation facility within an approximately 1,900-acre project area located on private parcels in California City and unincorporated Kern County, California. The project is located north of the California City Municipal Airport where it is bisected by Washburn Boulevard at Neuralia Road. The project area can be found on the California City North and Mojave NE, CA United States Geological Survey 7.5-minute quadrangle maps (see attached Location Map). The project would consist of the 500-megawatt facility, an operations and maintenance building, and transmission equipment that may be connected to adjacent planned and existing solar facilities.

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Archaeologist
Phone: (707) 318-8233
leven.kraushaar@stantec.com

Attachment: Project Location Map

September 23, 2019
File: 185704635

Attention: Danelle Gutierrez, THPO
Big Pine Paiute Tribe of the Owens Valley
P.O. Box 700
Big Pine, CA 93513

Dear Danelle Gutierrez,

Reference: Kudu Solar Project

8minutenergy (8ME) is proposing to construct a photovoltaic energy generation facility within an approximately 1,900-acre project area located on private parcels in California City and unincorporated Kern County, California. The project is located north of the California City Municipal Airport where it is bisected by Washburn Boulevard at Neuralia Road. The project area can be found on the California City North and Mojave NE, CA United States Geological Survey 7.5-minute quadrangle maps (see attached Location Map). The project would consist of the 500-megawatt facility, an operations and maintenance building, and transmission equipment that may be connected to adjacent planned and existing solar facilities.

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Regards,

Leven Kraushaar, M.A.
Archaeologist
Phone: (707) 318-8233
leven.kraushaar@stantec.com

Attachment: Project Location Map

September 23, 2019
File: 185704635

Attention: Brandy Kendricks
Kern Valley Indian Community
30741 Foxridge Court
Tehachapi, CA 93561

Dear Ms. Kendricks,

Reference: Kudu Solar Project

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Reference: Kudu Solar Project

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Regards,

Leven Kraushaar, M.A.
Archaeologist
Phone: (707) 318-8233
leven.kraushaar@stantec.com

Attachment: Project Location Map

September 23, 2019
File: 185704635

Attention: Sally Manning, Environmental Director
Big Pine Paiute Tribe of the Owens Valley
P.O. Box 700
Big Pine, CA 93513

Dear Ms. Manning,

Reference: Kudu Solar Project

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September 23, 2019
File: 185704635

Attention: Neil Peyron, Chairperson
Tule River Indian Tribe
P.O. Box 589
Porterville, CA 93258

Dear Chairperson Peyron,

Reference: Kudu Solar Project

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Attachment: Project Location Map

September 23, 2019
File: 185704635

Attention: Julio Quair, Chairperson
Chumash Council of Bakersfield
729 Texas Street
Bakersfield, CA 93307

Dear Chairperson Quair,

Reference: Kudu Solar Project

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September 23, 2019
File: 185704635

Attention: James Rambeau, Sr., Chairperson
Big Pine Paiute Tribe of the Owens Valley
P.O. Box 700
Big Pine, CA 93513

Dear Chairperson Rambeau,

Reference: Kudu Solar Project

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September 23, 2019
File: 185704635

Attention: Colin Rambo, Cultural Resources Management
Tejon Indian Band
1731 Hasti-Acres Drive, Suite 108
Bakersfield, CA 93309

Dear Mr. Rambo,

Reference: Kudu Solar Project

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Attachment: Project Location Map

September 23, 2019
File: 185704635

Attention: Robert Robinson, Chairperson
Kern Valley Indian Community
P.O. Box 1010
Lake Isabella, CA 93240

Dear Chairperson Robinson,

Reference: Kudu Solar Project

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Attention: Julie Turner, Secretary
Kern Valley Indian Community
P.O. Box 1010
Lake Isabella, CA 93240

Dear Secretary Turner,

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September 23, 2019
File: 185704635

Attention: Lynn Valbuena, Chairwoman
San Manuel Band of Mission Indians
26569 Community Center Drive
Highland, CA 92346

Dear Chairwoman Valbuena,

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Attention: Kenneth Woodrow, Chairperson
Wuksache Indian Tribe/Eshom Valley Band
1179 Rock Haven Court
Salinas, CA 93906

Dear Chairperson Woodrow,

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