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CHAPTER 2. PROJECT DESCRIPTION

2.1 Introduction

Soda Mountain Solar, LLC (applicant), proposes to construct, operate, and maintain a utility-scale solar photovoltaic (PV) electrical generating and storage facility and associated infrastructure to generate and deliver renewable electricity to the statewide electricity transmission grid. The project also includes future decommissioning, which is anticipated to occur after 30 years of operation. This project is known as the Soda Mountain Solar Project (proposed project or project).

The project is located on approximately 2,670 acres of land administered by the U.S. Department of Interior, Bureau of Land Management (BLM), California Desert District, within the jurisdiction of the Barstow Field Office in San Bernardino County. As described in Section 2.1, the BLM performed a separate review of the project under the National Environmental Policy Act (NEPA).

The project would disturb approximately 2,081 acres overall. The project would generate up to 300 megawatts (MW) of renewable energy and include up to 300 MW of battery storage. The power produced by the project would be conveyed to the regional electrical grid through an interconnection with the existing Mead-Adelanto 500-kilovolt (kV) transmission line operated by the Los Angeles Department of Water and Power (LADWP).

2.2 Description of the Proposed Project

2.3 Project Location

The project is located entirely on federally owned land managed by the BLM. The 2,670-acre project site is located approximately 7 miles southwest of the community of Baker in unincorporated San Bernardino County, California (Figures 2-3, 2-4, and 2-5), approximately 50 miles northeast of Barstow. The project site is located in portions of Sections 1 and 11–14, Township 12 North, Range 7 East; Sections 25 and 36, Township 13 North, Range 7 East; Sections 6, 7, 8, and 18, Township 13 North, Range 8 East, San Bernardino Meridian, California.

The project is bounded directly to the east by the Mojave National Preserve (administered by the National Park Service) and BLM lands, including the Rasor Off-Highway Vehicle (OHV) Recreation Area at the southeast corner. Interstate 15 (I-15), the former Arrowhead Trail Highway, runs along the western boundary of the project site. The Rasor Road Services Shell Oil gas station is located off I-15 southwest of the project site, along the access road to the project site. A residence is next to the gas station, roughly 260 feet southwest of the proposed boundary. Approximately four storm drain culverts run under I-15 adjacent to the project site. Primary access to the project site is from a north-bound exit off I-15.

There are no other sensitive receptors within 1,500 feet of the project site, and actual construction occurs more than 3,500 feet from this standalone home.

2.3.1.1 EXISTING CONDITIONS

The project would occupy the alluvial valley dividing the northern and southern portions of the Soda Mountains in the Mojave Desert. The project site is composed of rural desert land and is almost entirely undeveloped. Rasor Road, an unimproved BLM public access road, runs from the southwest corner of the site and splits into two forks after approximately 1.4 miles. The Rasor Road fork continues from west to east, to the Rasor OHV recreation area. Arrowhead Trail, the other fork, continues northward through the project site.

Based on a review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, unnamed tributaries are located east of the project site and flow from west to east (FEMA 2023). On-site runoff primarily drains to the southeast side of the project site. FEMA Zone D floodplains, which represent areas of undetermined flood hazards, are located within the project site. Additionally, the project is not located within the California Department of Water Resources (DWR) 100-year DWR Awareness floodplain. The project site is located in the Mojave Desert Air Basin and within a sub-basin of the Soda Lake Valley Groundwater Basin.

There are no existing overhead or underground transmission lines on the project site that would be affected by the proposed project. Infrastructure surrounding the site includes the four-lane I-15, two high-voltage electric transmission lines, an electrical distribution line, wireless cellular telephone towers, two fiber-optic cables, and two fuel pipelines. The two high-voltage electrical transmission lines to the west of I-15 are a 115-kV sub-transmission line owned by Southern California Edison (SCE) and the Mead-Adelanto 500-kilovolt (kV) transmission line operated by the Los Angeles Department of Public Works (LADWP), as shown on Figure 2-2. The project would utilize one of the existing culverts under I-15 to connect the gen-tie to the Mead-Adelanto transmission line. The Mead-Adelanto Transmission Project is a 202-mile long, 500 kV alternating current transmission line that extends between a southwest terminus at the Adelanto substation in Southern California and a northeast terminus at Marketplace Substation approximately 17 miles southwest of Boulder City, Nevada.

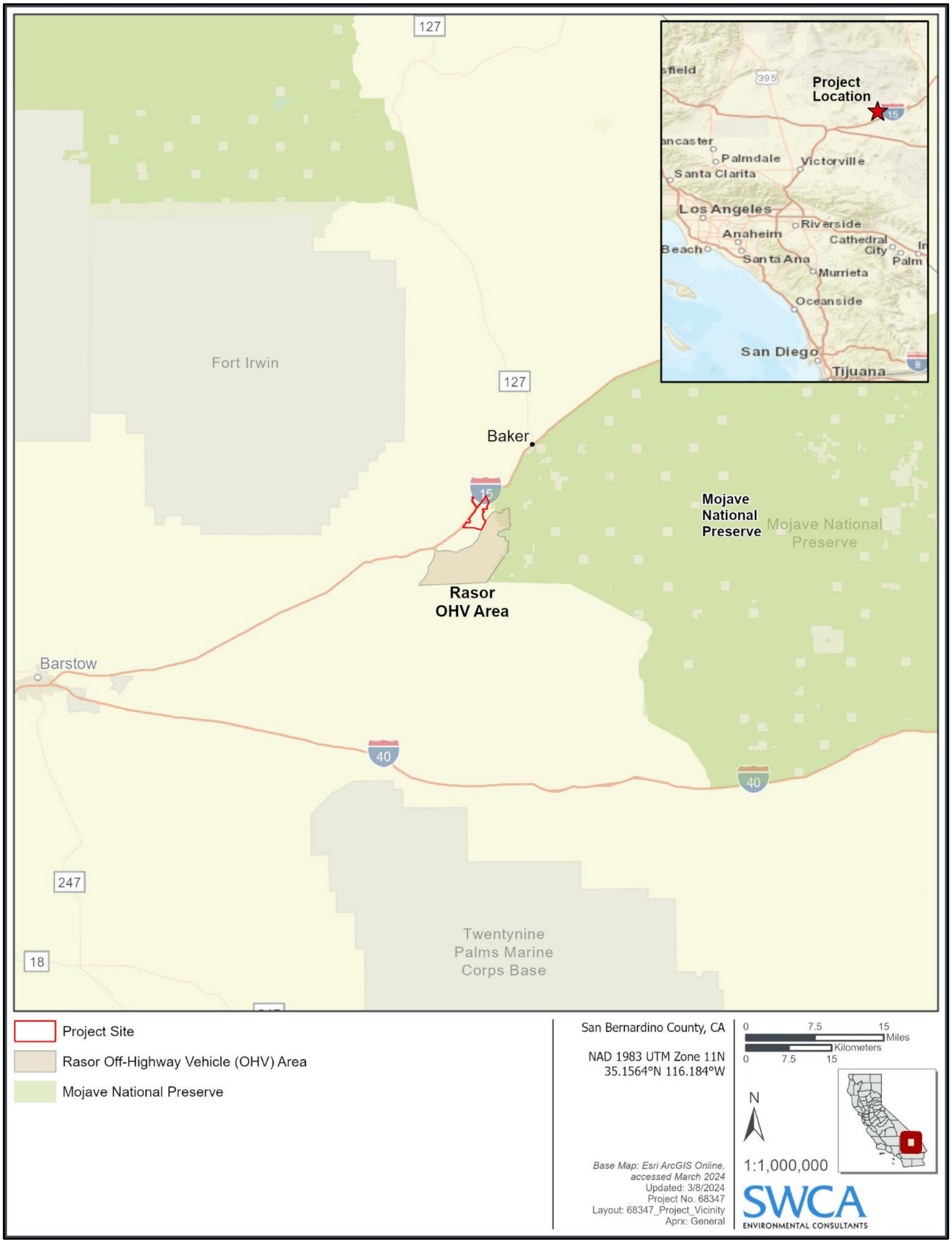

Figure 2-1. Project site vicinity.

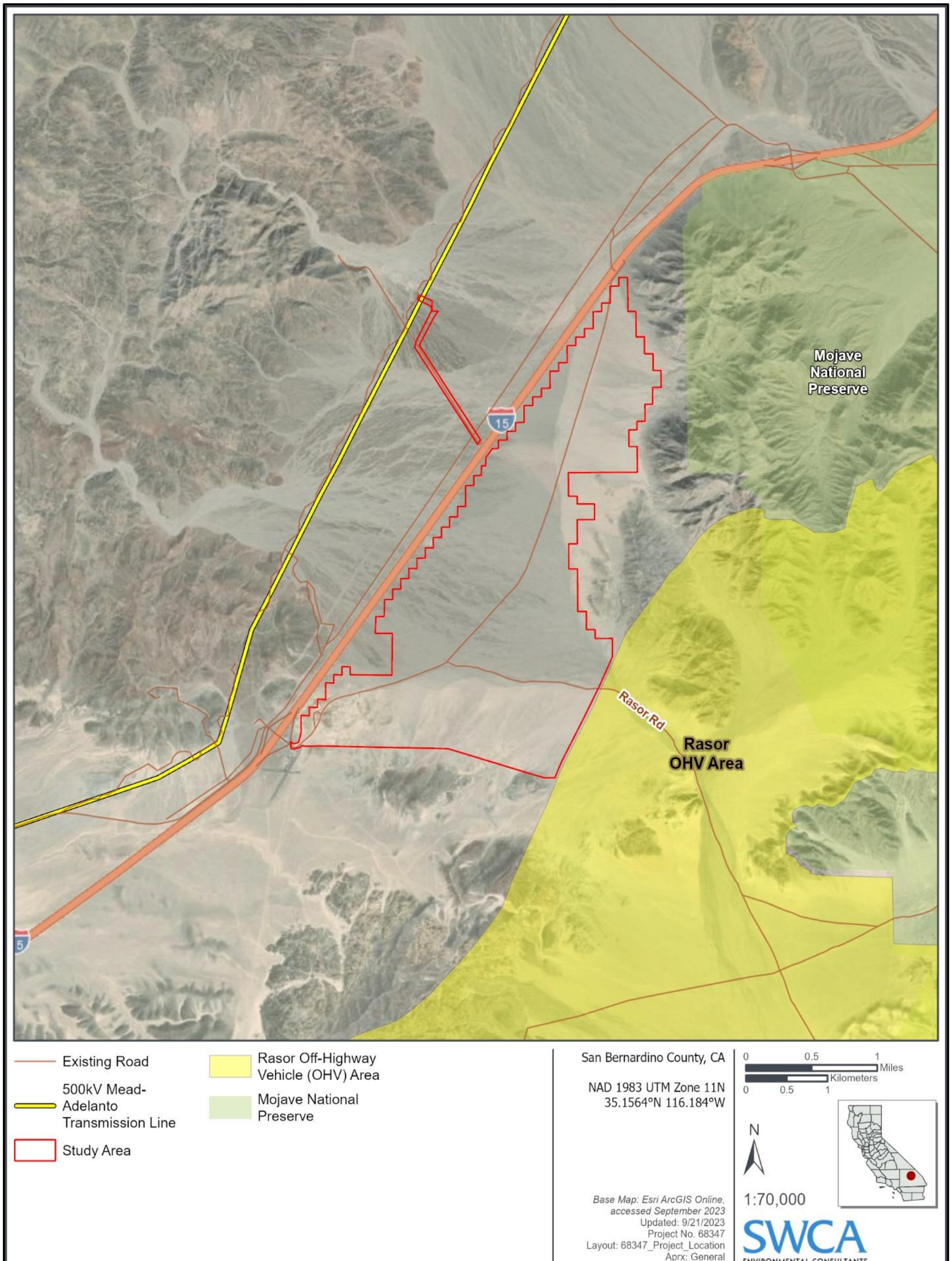

Figure 2-2. Project site location.

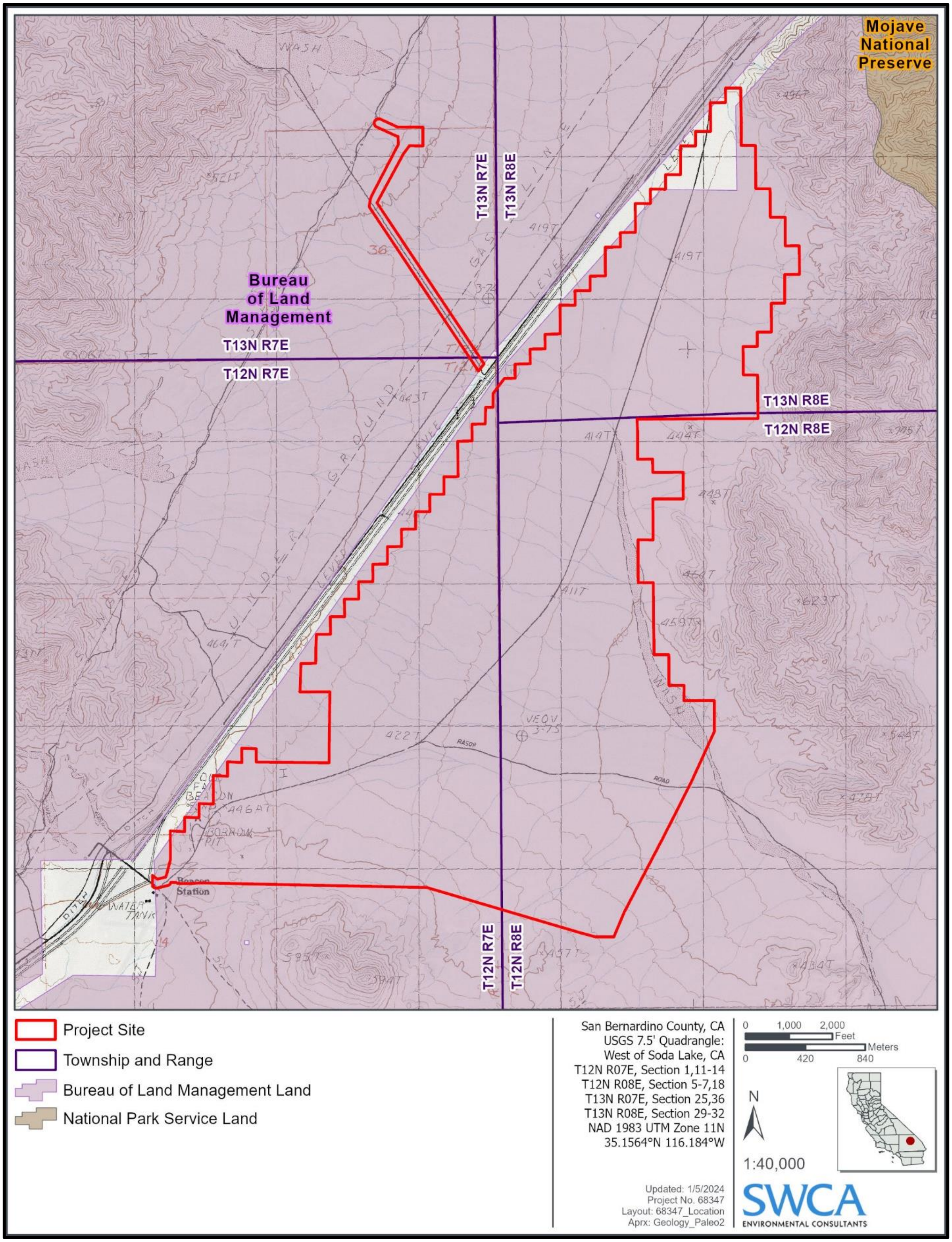

Figure 2-3. Public Land Survey location.

Figure 2-4. Existing view from west looking east at I-15 and project site.

2.3.1.2 LAND USE AND ZONING

As shown in Figure 2-5, the project site is located within the BLM's California Desert District, within the jurisdiction of the Barstow Field Office, and the planning boundary of the California Desert Conservation Area (CDCA) Plan and the Desert Renewable Energy Conservation Plan (DRECP). The BLM signed its ROD approving the DRECP Land Use Plan Amendment (LUPA) to the CDCA Plan in September 2016 (BLM 2016). The DRECP is a landscape-level plan established by the California Energy Commission, the BLM, the CDFW, and the U.S. Fish and Wildlife Service (USFWS) which plan covers 22.5 million acres of public land in seven California counties. The DRECP Land Use Plan Amendment includes land use allocations to replace the multiple-use classes established in the CDCA Plan. The project is within lands classified as General Public Land for management. However, given the BLM signed the ROD for the project in March 2016, before the BLM approved the DRECP LUPA, neither the BLM process for project review and approval nor the Conservation and Management Actions (CMAs) outlined in the DRECP are applicable to this project.

The generation-tie line (gen-tie line) west of I-15 would be located within an Area of Critical Environmental Concern and a designated federal Section 368 Energy Corridor adjacent to I-15 (corridor number 27-225).

2.3.1.3 SITE SELECTION

The project site was selected given the BLM's issuance of a Record of Decision (ROD) and associated amendment to the CDCA Plan in March 2016. The site is located within a designated federal Section 368 Energy Corridor adjacent to I-15 (Corridor number 27-225). Additionally, an existing Southern California Edison (SCE)-owned 115 kV sub transmission line and an LADWP-operated 500 kV transmission line run parallel to and adjacent to the western perimeter of the project site. The project site is located immediately adjacent to existing roadways that provides readily available access for construction and operations. The project site was selected based on consideration of the project objectives, engineering constraints, site geology, environmental impacts, water, waste and fuel constraints, and electric transmission constraints, among other factors.

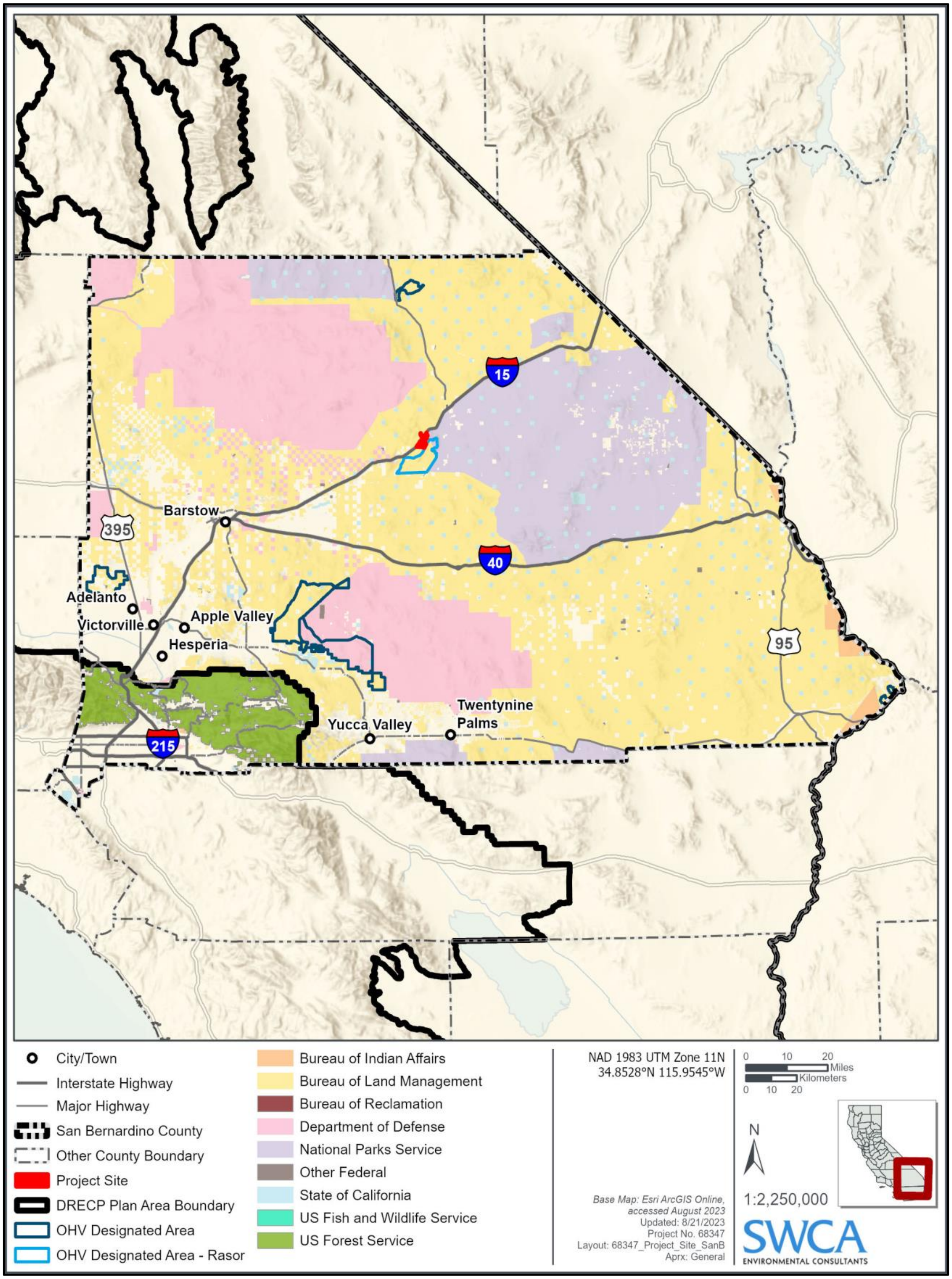

Figure 2-5. Land use management in San Bernardino County.

2.4 Generating Facility Description and Design

The project proposes to construct, operate, maintain, and decommission a proposed 300-MW PV solar facility located on approximately 2,670 acres. The approximate disturbance acreage for the project would be 2,081 acres. As shown in Figures 2-6 through 2-8, the project components are as follows:

1. The solar plant site (i.e., all facilities that create a footprint in and around the field of solar panels, including the solar field consisting of solar power arrays identified as the East Array and South Arrays 1, 2, and 3), operation and maintenance buildings and structures, stormwater infrastructure, and related infrastructure and improvements.
2. A substation and switchyard for interconnection to the existing transmission system.
3. Approximately 300 MW of battery energy storage system (BESS) across 18 acres.

The project would operate 24 hours per day year-round and would generate electricity during daylight hours when the sun is shining. The project would generate and deliver solar-generated power to the regional electrical grid through an interconnection with the existing Mead-Adelanto 500-kV transmission line operated by LADWP.

The following description of project components and infrastructure is based on the project's preliminary site design. During final design, the configuration and number of components may vary as a result of micro-siting but would occur within the project footprint analyzed within this EIR.

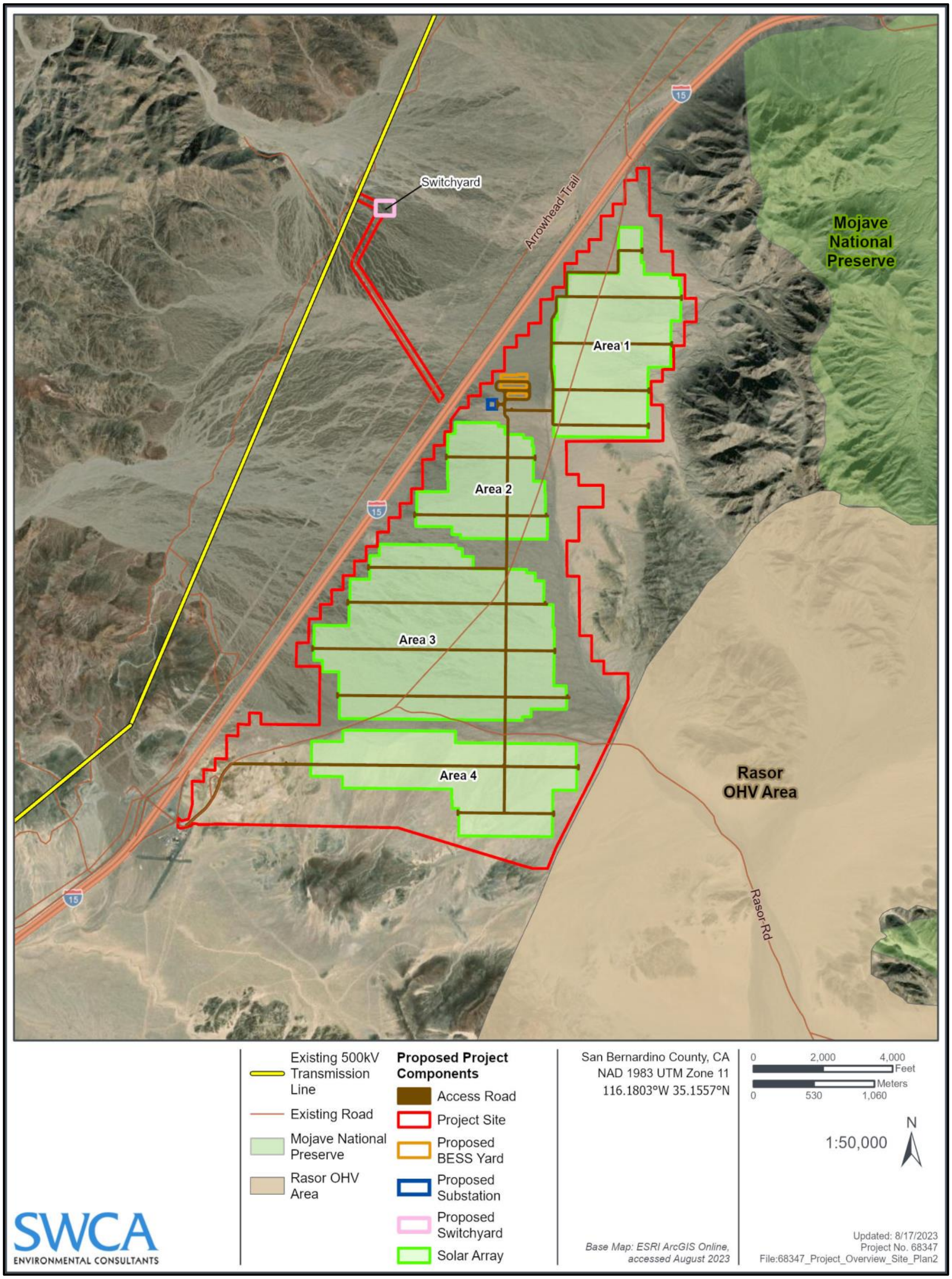

Figure 2-6. Project overview site plan.

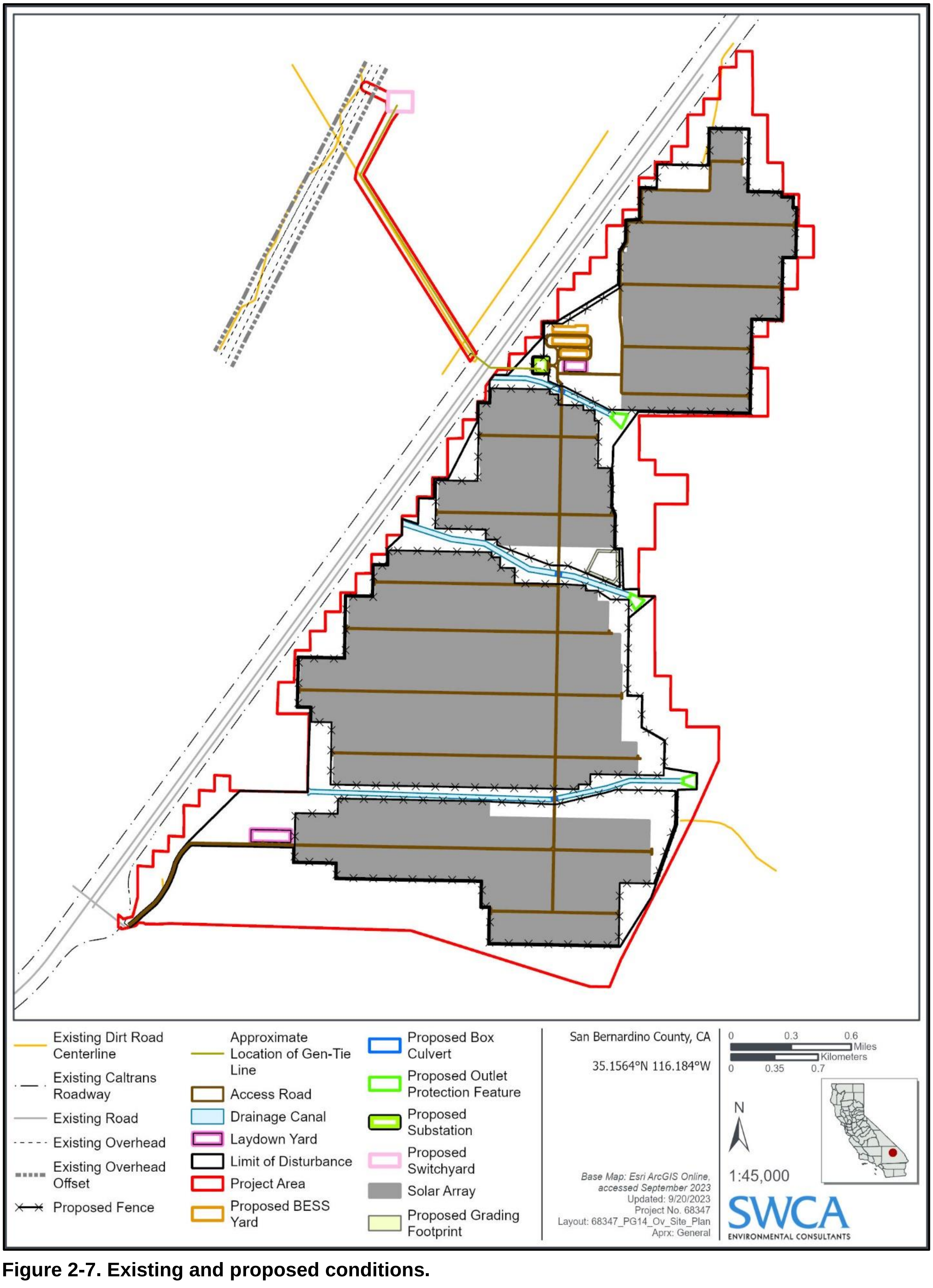

Figure 2-7. Existing and proposed conditions.

Figure 2-8. Simulated view from west looking east at I-15 and constructed project.

2.4.1 *Solar Panel Arrays and Support Structures*

2.4.1.1 SOLAR PANEL ARRAYS

Solar cells, also called photovoltaic (PV) cells, convert sunlight directly into electricity (voltage), which is called the "PV effect." PV cells are located on panels; rows of solar panels form an array. The PV modules are uniformly dark in color, non-reflective, and designed to be highly absorptive of all light that strikes their glass surfaces. Arrays controlled by a single motor create a system called a single-axis solar tracker, which rotates throughout the day to increase total solar exposure. For the project, hundreds of solar trackers would be interconnected to form a utility-scale PV system. The solar panel arrays would be organized into Area 1, Area 2, Area 3, and Area 4 on the southeast side of I-15, as shown in Figure 2-6.

2.4.1.2 SUPPORT AND MOUNTING STRUCTURES

The single-axis solar tracker would be mounted on structures supported by steel piles (e.g., cylindrical pipes, H-beams, or similar), which would be driven into the soil using pile/vibratory/rotary driving technique. Driven pier foundations are a "concrete-free" foundation solution that would result in minimal site disturbance and facilitate site reclamation during decommissioning. Most pier foundations would be driven to approximate depths of 8 to 12 feet deep depending upon the required embedment depth. The piles would be spaced 10 to 15 feet apart. The support structure would be elevated at least 1 foot above the base flood elevation and approximately 6 to 12 feet tall, depending on site topography.

2.4.1.3 ELECTRICAL CONNECTION SYSTEM

Solar panels would be electrically connected using string wiring secured to the panel support system. String wiring terminates at PV array combiner boxes, which are lockable electrical boxes mounted on or near an array's support structure. Output wires from combiner boxes would be routed along an underground trench system approximately 3 to 4 feet deep and 1 to 3 feet wide, including trench and disturbed area, to the inverters and transformer pads. Inverters are a key component of solar PV power-generating facilities because they convert the direct current (DC) power generated by the solar panel into alternating current (AC) power that is compatible for use with the transmission network. The output voltage of the inverters would be stepped up to 34.5- to 60-kV AC power and transmitted by underground collection lines to the project substation.

2.4.2 *Substation and Switchyard*

The 90,000-square-foot high-voltage substation would be located adjacent to Area 1 and Area 2 on a concrete ground foundation (see Figures 2-6 and 2-7). The substation would include transformers, breakers, switches, meters, and related equipment. The substation is where all of the underground 34.5-kV collection lines are combined, and the voltage is then stepped up to 500 kV via a transformer. All interconnection equipment, including the control room if required, would be installed aboveground and within the footprint of the substation.

The gen-tie line would connect the collector lines from the substation to the project switchyard by boring under I-15. The gen-tie would be located within an existing Caltrans culvert. The switchyard would be 0.8-mile northwest of I-15, adjacent to the LADWP Mead-Adelanto 500-kV transmission line ROW. The switchyard would permanently occupy approximately 5 acres on a concrete ground foundation. A permanently gated, 8-foot-high chain-link fence with three-strand barbed wire meeting National Electric Safety Code requirements would be constructed around both the substation and switchyard.

2.4.3 *Battery Energy Storage System*

A BESS absorbs, holds, and then reinjects electricity into the electrical grid. The project is anticipated to include up to 300 MW of BESS for dispatch into the local electrical grid via the same point of interconnection as the solar arrays. The BESS would be located adjacent to the substation and Area 1. Up to 18 acres may be utilized for the BESS throughout the project site at full buildout.

2.4.3.1 BATTERIES

Individual lithium-ion cells form the core of the BESS and are assembled in sealed battery modules. The battery modules would be installed in self-supporting racks electrically connected either in series or parallel to each other. The operating rack-level DC voltage currently ranges between 700 and 1,500 volts (V). The individual battery racks are connected in series or a parallel configuration to deliver the BESS energy and power rating.

2.4.3.2 BATTERY ENERGY STORAGE SYSTEM ENCLOSURE AND CONTROLLER

The BESS containers would house the batteries described above, as well as the BESS controller. The BESS controller is a multilevel control system for the battery modules, power conversion system, medium-voltage system, and up to the point of connection with the electrical grid. The controllers ensure that the BESS effectively mimics conventional turbine generators when responding to grid emergency conditions. The BESS enclosure would also house required heating, ventilation, and air conditioning (HVAC) and fire protection systems. The battery storage containers would be built using standard International Organization for Standardization (ISO) shipping containers, and each would measure approximately 20 feet in length, 6 feet in width, and 8 feet in height, although other smaller form-factor structures exist that may be used.

The safety system would include a fire detection and suppression control system that would be triggered automatically when the system senses imminent fire danger. A fire suppression control system would be provided within each on-site battery enclosure. If necessary, the safety system would use either a waterless evaporating fluid, a sustainable clean agent (not a hydrofluorocarbon clean agent), or an alternative suppression agent, such as an inert gas.

2.4.4 *Operation and Maintenance Area Facilities*

2.4.4.1 BUILDINGS

The following permanent buildings would be constructed as part of the project:

1. Operation and maintenance building (approximate dimensions: 5,000 square feet, 30 feet high)
2. Maintenance facility (approximate dimensions: 2,400 square feet, 35 feet high)
3. Warehouse facility (approximate dimensions: 6,000 square feet, 35 feet high)
4. Substation (approximate dimensions: 90,000 square feet)

The operation and maintenance building, maintenance facility, and warehouse facility would all be located at the southwest corner of the site. The operation and maintenance building may consist of offices, a restroom, and a storage area and would include a heating, ventilating, and air conditioning system. All of these facilities would be monitored by on-site operation and maintenance personnel and/or remotely. A septic system would be constructed adjacent to the permanent project buildings to serve the sanitary wastewater treatment needs.

One 500-horsepower emergency diesel generator would be located on site to supply emergency power, as needed.

2.4.4.2 PARKING AREAS

Parking areas would be located adjacent to the buildings described above, in the southwest corner of the site. The parking areas are not expected to exceed approximately 0.33 acre, or 13,200 square feet. Parking would be provided for the anticipated regular employees during project operation, for visitors, and for other equipment anticipated to be on-site at any time.

2.4.4.3 ACCESS ROADS

Primary operational access to the project site would be provided via the existing Rasor Road, that runs from I-15 eastward to the Rasor OHV recreation area. The portion of Rasor Road that would serve as the entrance and primary access road within the site is approximately 0.4 mile in length and oriented north-south. The project would maintain and improve this portion of Rasor Road to be 20 feet wide and include a gated entrance to the project site which can be accessed approximately 250 feet southeast from the I-15 northbound off-ramp. North of I-15, the existing LADWP/SCE transmission maintenance road would be upgraded for access to the LADWP switchyard. A Caltrans access road may also be used for construction of the gen-tie line.

Internal access roads would be developed between the arrays. These internal access roads would be 16 feet wide and include a 35-foot turning radius at the project boundary. The Rasor Road primary access road will intersect with an internal access road which leads to the substation. The existing Rasor Road that continues past the internal access road will continue to serve as the main access to Rasor OHV recreation area. The proposed project does not include any improvements to the remainder of Rasor Road.

These roads would consist of compacted native material and would be graded as necessary but would generally follow the existing terrain. Larger boulders that could impede vehicle access would be removed. These permanent access roads would be compacted to meet load requirements for vehicle traffic over the life of the project.

2.4.4.4 SITE SECURITY AND FENCING

All project components would be surrounded by warning signage, perimeter security fencing, desert tortoise exclusionary fencing, and perimeter security cameras. Combined security and desert tortoise fencing would be installed surrounding each individual array field and extend to include the substation and BESS area. The security fencing would be an 8-foot-high chain-link fence with an additional 1 foot of barbed wire. The line posts and terminal posts of the fence would be buried up to 3.5 feet deep, and the distance between posts would not exceed 10 feet. All permanent tortoise exclusionary fencing would be constructed in accordance with Chapter 8, Desert Tortoise Exclusion Fence, of the USFWS’s 2009 Desert Tortoise Field Manual (USFWS 2009).

2.4.4.5 LIGHTING

Lighting would be provided at the Rasor Road site entrance, operation and maintenance building, substation, and switchyard. Exterior security lighting would be installed to provide safe access to project facilities as well as visual surveillance. Some portable lighting also could be required for essential nighttime maintenance activities. All lighting would be kept to the minimum required for safety and security; sensors, motion detectors, and switches would be used to keep lighting turned off when not required. All lights would be downward, shielded, and directed so as to minimize light exposure.

2.4.5 *Landscaping*

The project would plant a variety of native and drought tolerant trees and shrubs along the western boundary of the project site. There would be approximately 30 acres of landscaped areas on site, including 5 acres of irrigated landscaped areas.

2.4.6 *Drainage and Erosion Control*

Grading of up to 2,081 acres and other types of ground treatment would be conducted outside of existing major drainage channels and would not involve substantial changes to site topography. Once construction is complete, the topography beneath the solar panels would generally be the same as the baseline condition except in areas where soil has been compacted or rocks and isolated surface undulations have been removed by grading. Native vegetation would be allowed to reestablish naturally and would be trimmed during operation as necessary.

Security fencing would not be used in the major drainage channels in between the array fields to minimize impacts to wildlife corridors and stormwater flow. If needed along larger drainages, breakaway fencing would consist of a driven post with detachable connections just above ground level, which allow the fencing to yield to the force of a storm event without damage to the embedded portion of the post. Following such an event, the fence would be reattached to the post. The entrance to each access road along the perimeter would include a security gate.

The design of the array fields would avoid placing solar panels within the stormwater flow corridors downstream of the existing culverts under I-15 so that flows from the culverts would continue to follow existing braided flow channels. Three drainage channels would be constructed between the array fields. Each channel would be approximately 3 feet below grade and vary in width and length. Ten temporary sediment basins of varying sizes and depths would be constructed adjacent to the drainage channels and throughout the site and removed at the conclusion of construction.

Development within the channels would be limited to access road crossings and potential subsurface collector lines. Twelve box culverts and eight low-water crossings would be installed at the intersection of access roads and drainage channels, and permanent protection berms would be constructed along the edges of the arrays near these flow corridors to prevent occasional side channel flows from entering the array fields. Temporary and permanent fiber rolls would also be installed on slopes before they transition into steeper slopes to control runoff.

2.4.7 *Solid Waste and Hazardous Materials Management*

Construction would generate solid waste. All waste generated during construction would be stored in wind-proof and wildlife-proof containers that periodically would be transported to an off-site disposal facility authorized to accept the waste. During construction, portable sanitary facilities would be located in the project area and maintained by a local contractor. Concurrently, a septic system would be designed and constructed adjacent to the project buildings to support operation and maintenance employee’s sanitary needs. An approximately 2,500-gallon septic tank and adjacent leaching area would be installed.

During operation and maintenance, some PV panels would require replacement due to breakage or other damage or to take advantage of new technologies. Removed PV panels would be recycled or disposed of in accordance with applicable local, state, and federal standards and regulations.

Hazardous materials that may be used and stored during construction and/or operation and maintenance could include gasoline and diesel fuel paints, thinners, solvents, sealants, lubricants, hydraulic fluids, herbicides. Facility transformers would contain non-polychlorinated biphenyl (PCB)-rated dielectric fluid.

Hazardous materials would be stored within secondary containment to control any potential leaks of oils, grease, fuels, and other hazardous materials stored at the project site. All potential contaminants would be stored and used at least 50 feet from any defined or constructed channels or basins at all times. If quantities exceed regulatory thresholds, a spill prevention control and countermeasure (SPCC) plan would be developed prior to project construction in accordance with applicable regulations and would include a facility diagram that would identify the location and contents of hazardous materials containers; potential equipment failures; containment and diversionary structures; facility drainage; personnel, training, and spill prevention procedures; and emergency contact information. Diversionary structures meeting the requirements of the SPCC plan would be provided for oil-containing equipment, including transformers, at the project site. Transformers would be inspected on a regular basis to detect and respond to any leakage.

All use, storage, transport, and disposal of hazardous materials associated with the project would be done in strict accordance with federal, state, and local regulations and guidelines. Employees would be trained in the appropriate protocol for notification and cleanup of hazardous materials. Additionally, the site would be supplied with adequate spill containment kits and personal protective equipment in case of a release.

2.5 Construction

The following sections provide details about the timeline and process for construction of the project. Once construction is complete, the project would operate for approximately 30 years.

2.5.1 *Construction Schedule and Workforce*

Construction of the project is anticipated to begin in 2025 and occur over an approximately 18-month period and consist of overlapping construction stages. Stage 1 would include mobilization, site preparation, fencing, preparation of laydown areas, and trenching. Stage 2 would include installation of solar array structural components including cables, piles, racking systems, inverters, and modules. Stage 3 would include installation of solar panels, battery storage systems, commissioning, and testing. Stage 1 would be from months 1 to 8, Stage 2 would be from months 4 to 12, and Stage 3 would occur during months 10 to 18. An average of 200 construction workers would operate daily on-site, with an anticipated 300 construction workers during peak construction activities.

The typical construction work schedule is expected to be from 6:00 a.m. to 6:00 p.m., Monday through Friday. However, to meet schedule demands or to reduce impacts, it may be necessary to work early mornings, evenings, or nights and on weekends during certain construction phases. The work schedule may be modified throughout the year to account for changing weather conditions (e.g., starting the workday earlier in the summer months to avoid work during the hottest part of the day for health and safety reasons). If construction work takes place outside these typical hours, activities would comply with San Bernardino County standards for construction noise levels. For safety reasons, certain construction tasks, including final electrical terminations, must be performed after dark when no energy is being produced. The project would use restricted nighttime task lighting during construction. Lighting would include only what is needed to provide a safe workplace, and lights would be focused downward, shielded, and directed toward the interior of the site to minimize light exposure outside the construction area.

2.5.2 *Preconstruction Activities (Stage 1)*

Prior to construction, all contractors, subcontractors, and other on-site personnel would receive Worker Environmental Awareness Program (WEAP) training regarding the appropriate work practices necessary to effectively understand and implement the biological commitments in the project description, implement the mitigation measures, comply with applicable environmental laws and regulations, avoid and minimize impacts, and understand the importance of these resources and the purpose and necessity of protecting them.

Qualified biologists would conduct preconstruction surveys for sensitive species. Sensitive resource areas would be flagged so they are avoided or appropriately managed during construction. Preconstruction field survey work would include identifying precise locations of the project site boundary and desert tortoise and security fencing. Construction staging areas would be established for storing materials, construction equipment, and vehicles. These features would be subsequently staked in the field. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate survey or construction limits. All off-road vehicle travel, fence installation, and staging area establishment would be surveyed and/or monitored by qualified biologists, archaeologists, and tribal monitors, as appropriate. The preconstruction field surveys would be conducted during daylight hours, and vary in length and timing, depending on the species found on-site. The proposed WEAP training would be required before a worker would be allowed to work on the site. These trainings would also occur on a continuous basis during construction.

2.5.3 *Site Preparation (Stage 1)*

As shown in Figure 2-9, approximately 2,081 acres throughout the site would be disturbed. Grubbing and grading would be required across a majority of the site to level rough or undulating areas of the site and to prepare soils for concrete foundations for substation equipment, inverters, energy storage systems, and the operations and maintenance buildings. Grubbing would involve the removal of vegetation from the construction site, while grading would include earthwork to achieve a certain base or slope. There would be approximately 630,000 cubic yards of cut and 180,100 cubic yards of fill, thus requiring approximately 449,900 cubic yards of cut on site. The 449,900 cubic yards of net cut will be transported to the nearest Class II or Class III landfill with the capacity to receive it.

Per Mojave Desert Air Quality Management District Rule 403, as part of project construction, the applicant would develop a Dust Control Plan that describes all applicable dust control measures to address construction-related dust (Mojave Desert Air Quality Management District 2020). Further, a Stormwater Pollution Prevention Plan (SWPPP) or SWPPP-equivalent document required by the Lahontan RWQCB would be prepared by a qualified engineer or erosion control specialist and would be implemented before construction. The SWPPP would be designed to reduce potential impacts related to erosion and surface water quality during construction activities and throughout the life of the project. It would include project information and best management practices (BMPs). The BMPs would include dewatering procedures, stormwater runoff quality control measures, concrete waste management, stormwater detention, watering for dust control, and construction of perimeter silt fences, as needed.

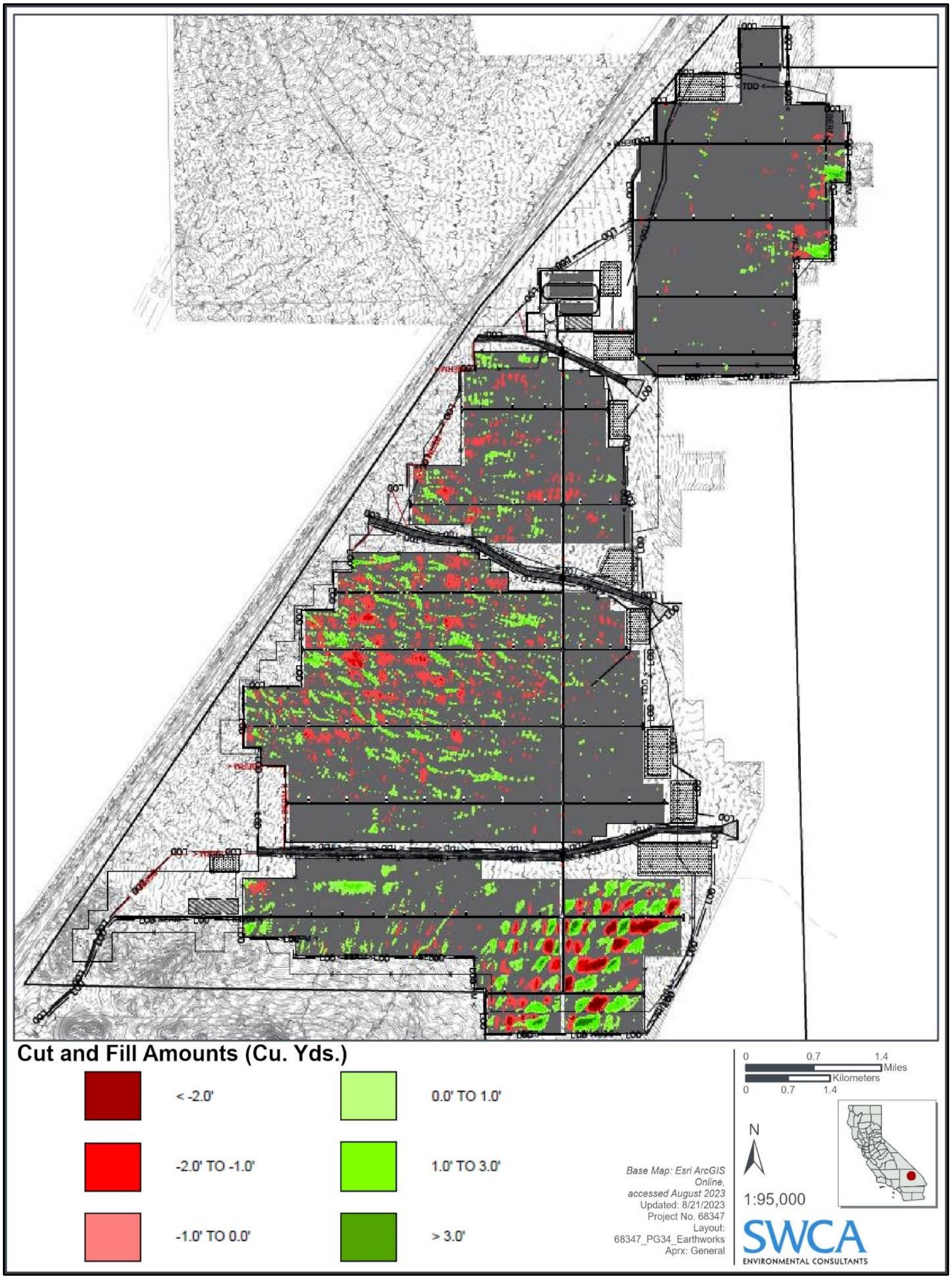

Figure 2-9. Proposed earthwork.

2.5.4 *Solar Array Assembly and Construction (Stage 2)*

Construction of the solar arrays would begin with the installation of array support posts, which would be driven into the soil using a pile/vibratory/rotary driving technique to a depth of approximately 8 to 12 feet. Once the support structures are in place, solar panels would be attached to the support frame. The assembled groups of solar panels would be wired together into strings through connectors on the back of the modules. Assembled panel sections would then be connected to combiner boxes located throughout the arrays that would deliver power to the inverter. Output wires from combiner boxes would be routed along an underground trench system approximately 3 to 4 feet deep and 1 to 3 feet wide, to the inverters and transformer pads. Inverters would be mounted on concrete pads or driven piles. Inverters and transformers would be brought in by tractor-trailers through the Rasor Road site entrance and delivered directly to the mounting pad sites.

2.5.5 *Substation and Switchyard Construction (Stage 3)*

Construction of the project substation, switchyard, and interconnection to the 500-kV transmission line would occur concurrently with the construction of the solar arrays. One tower would be removed from the existing line and two turning structures would be constructed adjacent to the removed tower. The turning structures would direct the 500-kV transmission line into and out of the new switchyard. The substation and switchyard would be graded and compacted to an approximately level grade.

A substation and switchyard grounding grid would be installed as required. Multiple concrete pads and/or piers would be constructed as foundations for substation equipment and the remaining area would be graveled. Concrete piers and footings would be installed to support the transmission towers, switchyard, and substation buswork. Electrical transformers, switchgear, and related substation facilities would be designed and installed/constructed to transform the 34.5-kV power on the collection lines to the transmission line voltage.

2.5.6 *Electrical Construction Activities (Stage 3)*

Buried electrical lines for DC array wiring and AC wiring between inverters and transformers would then be installed using trenching machines. The trenches would be approximately 3 to 4 feet deep and 1 to 3 feet wide. The trenched areas would be filled once the cables are buried. After this work is complete, and depending on the level of ground preparation chosen, the surveyors, vegetation cutters, graders, and trenchers would move on to the next block. It is anticipated that the solar panels would require one washing during the construction phase prior to energizing and performance testing of the arrays in order to remove the dust that has accumulated on the panels during construction.

The medium-voltage collection cables would be trenched at depths up to 4 feet using a trenching machine. The trenches would be approximately 12 to 24 inches wide. Multiple trenches may be placed adjacent to each other, depending on the number of collector circuits in a particular location. The cables would be manually placed within the trenches in layers (as necessary) followed by a backfill and compaction operation. Alternatively, a cable lay box would be used to automate the cable placement and backfill process. The main trenching operations would be for installation of DC cables from the combiner boxes to the inverter skids and installation of AC collector circuits between inverter skids and the substation. The collector cable would be installed by circuit in conduits, with each circuit contained in a single 6-inch-diameter conduit (typical) spaced approximately 10 feet on center. The exact locations would be determined during detailed design.

The gen-tie line would be routed to the project switchyard by boring under I-15. The boring operation would be accomplished by constructing a boring pit on each side of I-15 to initiate and terminate the bore.

The gen-tie line would cross I-15 through bores in a 200-foot-wide corridor at a 90-degree angle and would be installed per Caltrans requirements. Alternative design concepts for boring design, including through an existing culvert, may be considered based on project requirements. No overhead generation tie lines crossing I-15 are proposed.

2.5.7 *Construction Equipment and Materials*

Standard construction equipment would be used during construction, including earth-moving equipment (e.g., bulldozers, excavators, backhoes) and road-building equipment (e.g., compactors, scrapers, graders). Construction equipment would include air compressors, all-terrain passenger vehicles, backhoes, cranes, a drill rig, tractor-trailers, flat-bed trucks, front-end loaders, pick-up trucks, pile drivers, trenchers, and water trucks. Construction equipment and maintenance trucks would be maintained at all times to minimize leaks of motor oils, hydraulic fluids, and fuels. No extremely hazardous materials are currently anticipated to be produced, used, stored, or disposed of as a result of the project.

Most of the fuel required by construction and operation staff vehicles and engines would be procured at commercial gas stations in the local area, such as at the service station at Rasor Road or in Baker. To fuel construction equipment, mobile fueling and maintenance vehicles would be brought on a daily basis as needed. A limited amount of #2 diesel and gasoline petroleum fuels (approximately 500 gallons each) would be stored in the staging areas in above-grade steel tanks with secondary containment.

Concrete would be required for building or structure footings and foundations and pads for inverters, transformers, water tank footings, and substation equipment. In areas where driven support posts are not practical for the solar arrays, precast concrete ballasted supports may be used.

2.5.8 *Construction Vehicle Access and Traffic*

All construction materials would be delivered by truck. Most truck traffic would occur on designated truck routes and major streets. Construction traffic would include periodic truck deliveries of materials and supplies, recyclables, trash, and other truck shipments, and construction worker commuting vehicles. Most construction equipment and vehicles would be brought to the site at the beginning of the construction process during construction mobilization and remain on-site throughout the duration of the construction activities for which they were needed. Generally, the equipment and vehicles would not be driven on public roads while in use for the project.

Over the approximately 18-month construction period, the project would require approximately 5,000 truckloads of construction materials per month for delivery of components and construction materials, including concrete. Up to 90,000 truckloads would result over the total construction period, excluding travel by construction workers. As water is obtained from an off-site source during construction, an estimated 17 water transport truck trips per day would also be required. Average truck traffic would be approximately 80 trucks per day, 25 days per month. The project would use a just-in-time delivery system with supplies and components delivered on a schedule to minimize on-site storage needs.

The project would prepare a Construction Traffic Management Plan, to provide construction vehicle information, facilitate traffic control methods, and provide a designated contact for addressing complaints.

2.5.9 *Construction Water Supply and Use*

Project construction would take place over approximately 18 months. Water would be needed primarily for dust control and soil compaction during the first 90 days of grading activities, with small amounts used for sanitary and other purposes. During Stage 1 and Stage 2 of construction, which includes the 90-day grading period, the project would require approximately 196,500 gpd, or approximately 220 af/yr. Water requirements in the second year of construction are expected to be less than 110 af/yr, or half of the requirement of the first year of construction. Five temporary water tanks of 100,000 gallons would be brought on-site by truck to store water in anticipation of construction water needs. The tanks would be housed on trailers located along access roads or within areas that have been cleared for installation of project components. The tanks may be moved around the site as construction progresses and would be used to fill on-site water trucks. The temporary water storage tanks would be removed after construction. Water used for construction would be supplied by two existing private groundwater wells in Newbury Springs, San Bernardino County.

2.6 Operation and Maintenance

The project would begin operation in 2027 and operate 7 days a week, 365 days a year, with an approximately 35-year anticipated lifespan. Operational needs at the site include monitoring and optimizing the power generated by the solar arrays and interconnection with the transmission lines, operating the Supervisory Control and Data Acquisition (SCADA) system, troubleshooting the collector lines and repairing damaged cables, and conducting panel-washing activities periodically through the year. Additional maintenance would be required to maintain the administrative buildings, fencing and signage, roadways, and other ancillary facilities at the site.

2.6.1 *Operation and Maintenance Workforce*

The project substation would be uncrewed during operation; however, a workforce of approximately 25 to 40 personnel would visit the substation on an as needed basis for maintenance, equipment operation, and/or security. The project would be remotely controlled, eliminating the need for permanent on-site employees. Final staffing levels and configuration would be based on the final site configuration and early operating and maintenance experience. The facility would not be accessible to the public, and access will be infrequent and limited to authorized personnel.

2.6.2 *Automated Facility Control and Monitoring System*

The project would be operated and monitored by means of a SCADA system located in the control building. Sensors located at each inverter/tracker combiner would report operational parameters. Data access and inverters are controlled, either on-site or remotely, through a high-security system. The non-conductive fiber-optic communications cable would be co-located with the low-voltage DC and AC wiring to reduce environmental impacts.

Personnel communication would use two-way radio/receptor stations, which would require a Federal Communications Commission (FCC) license.

2.6.3 *Operational Water Supply and Use*

Project operation would require water for potable use, dust control, panel washing, and fire protection. The water for the project would be supplied by two existing private groundwater wells located in Newberry Springs, San Bernardino County. This water would be trucked in from these wells and installed in three permanent water storage tanks to support project operations.

An approximately 36,000-gallon water tank would be installed on a high point near the operation and maintenance building to provide storage of panel-washing water. Water would be used to clean the PV panels; dust and dirt build-up reduces the amount of incoming solar radiation striking the active PV layer within the panel. To reduce this effect, panel washing with water stored in the 36,000-gallon water tank would be conducted two or three times per year over a 3-week period during operations, or additionally as necessitated. The water would drain by gravity to panel-washing trucks for use. The project estimates that each panel washing, including additional miscellaneous operational water needs, would require a total of 1,200 gallons per day (gpd) or 1.3 acre-feet per year (af/yr). Based on these project assumptions, the average annual water usage for panel washing would be approximately 3,600 gpd or 3.9 af/yr. In total, an estimated 5.6 af/yr of water would be used for panel washing, dust control and suppression during operation.

Another approximately 22,500-gallon tank would be located near the operation and maintenance building to provide storage of fire suppression water. The tank would not require a regular supply of water because the water would be withdrawn only in the event of a fire. The tank would be monitored periodically and refilled as needed to replace evaporative losses. For fire suppression water supply, the project would conform to County requirements, which incorporate National Fire Protection Association (NFPA) Standards 1142 and 13 by reference and provide minimum requirements for fire suppression water supply where no public water supply is available (Standard 1142) and sprinkler systems (Standard 13).

2.7 Decommissioning and Site Reclamation

The solar ROW grant is authorized for a 30-year term and would be subject to renewal at that time. When the project reaches the end of its useful life, structures and equipment would be removed for reuse or sold as scrap, and the land surface would be reclaimed. A Decommissioning and Site Reclamation Plan has been prepared for the project. Because site conditions are likely to change over the life of the project, and to ensure that the decommissioning and site reclamation plan addresses all necessary conditions, the draft will be finalized and approved by the BLM and/or CDFW before decommissioning and reclamation activities begin.

Upon decommissioning, aboveground structures would be dismantled and removed from the site. Where required by the BLM and/or CDFW, concrete pads or foundations would be demolished, and rubble would be removed to an off-site disposal facility authorized to accept the waste. Belowground facilities may be disconnected at the surface and left in place in conformance with guidance and approval from the BLM. New project access roads and corridors would be closed, with the exception of Rasor Road, which would remain accessible.

Decommissioning of the substation and switchyard would involve deconstruction of structures. Salvaged materials would be recycled to the extent possible. Material that cannot be recycled would be transported for disposal in authorized landfills. Underground cabling and conduit may be left in place. The substation and office/storage areas would be graded to approximate the natural contour.

The applicant would prepare and implement a final closure and reclamation plan addressing removal of structures and site restoration in conformance with BLM and/or CDFW requirements at the time of decommissioning. Construction hours and site cleanliness practices would be approximately the same during decommissioning as during construction.