Solar Panel Arrays and Support Structures

The Modified Project would convert sunlight into direct current (DC) electrical energy using solar PV modules (also referred to as "panels"). PV modules can be mounted together in different configurations (also referred to "arrays") depending on the equipment selected. The proposed arrays primarily would be organized into approximately 2 MW blocks, with some additional arrays configured in smaller capacity blocks to utilize land space efficiently. Although the acreage of each block would depend on the technology, spacing, mounting equipment, and other design criteria subject to change in detailed engineering, each block is expected to cover approximately 15 acres. Each block would consist of PV modules and a power conversion station (PCS) that includes inverters and transformers to convert the DC electricity to alternating current (AC) electricity for transmission across the grid.

Solar energy PV technologies are continuing to advance at a rapid rate, and the Grant Holder is continuing to evaluate the evolving benefits of various options at this time. Each option is described below, and the associated impacts are evaluated in this EIS assuming a "worst case" scenario for purposes of analyzing impacts (i.e., the specific PV technology with the greatest impact depending on resource area). In this way, the best information available during final design can inform decisions about the exact technology, arrangement and nature of the PV system to be used if the requested Level 3 variance is approved.

Different materials display different energy generation efficiencies; higher efficiency panels produce more electricity per given area, but generally cost more per panel area. Materials commonly used for PV solar cells include monocrystalline silicon, polycrystalline silicon, amorphous silicon, cadmium telluride (CdTe), and copper indium selenide/sulfide. Several of the PV cells currently available are manufactured from bulk materials that are cut into very thin wafers, i.e., between 180 to 240 micrometers thick. Others are constructed from thin-film layers. The Grant Holder is considering the installation of both polycrystalline silicon and CdTe solar cells. Both technologies are proven and viable for utility-scale PV plants.

Solar Panels

The system would incorporate high-efficiency commercially available solar PV panels that are Underwriters Laboratory (UL)-listed or approved by another nationally recognized testing laboratory. By design, the solar PV panels would absorb sunlight to maximize electrical output and use anti-reflective glass. These panels would be protected from impact by tempered glass, and would have factory-applied ultraviolet (UV) and weather-resistant "quick connect" wire connectors.

A CdTe solar panel uses solar cells constructed in a thin semiconductor layer (also known as a "thin film") to absorb and convert sunlight into electricity. The Grant Holder is considering the use of thin-film CdTe panels as one of its technology options. If thin-film CdTe panels are used, the Grant Holder would ensure that the vendor offers a PV module recycling program through which any module may be returned for recycling.

Silicon is the traditional material choice for PV solar cells, and the Grant Holder is considering polycrystalline silicon PV modules for use at the Modified Project.

Since the electrical ratings for the panels, inverters, and other PV equipment vary based on the manufacturer, the DC collection design also varies depending on the chosen technology. The PV modules would be electrically connected in series, and groups of these series-connected modules would be connected by wire harnesses to the combiner boxes. The combiner boxes in turn would feed an inverter in the PCS via DC cables. The PCS would be located within each block, and would be on concrete vaults, slabs, or pier foundations. The PCS would include the inverters and step-up transformers (SUTs) required for converting the low-voltage DC electricity to medium-voltage AC electricity.

The transformers in the PCS step up the voltage from the inverter AC output to that required by the on-site AC collection system. The AC collection system would conduct the electricity from each PCS at 34.5 kV to the feeder circuit breakers and the 34.5/230 kV unit SUTs for each 125 MW or 110MW unit. Overhead or underground lines would then conduct the electricity from the SUTs to the on-site switchyard. The electricity would then be routed to the CRS via the gen-tie line.

Support and Mounting Structures

The Grant Holder plans to use either a fixed-tilt ground mount or a single-axis tracking system for the structures that support the PV modules.

If the Grant Holder chooses a fixed-tilt system, it would utilize a metal framework structure or support table ("rack") on which the PV modules would be mounted in a permanent "fixed" position tilted towards the south at approximately 30 degrees to optimize production throughout the year without any mechanical movement. A fixed-tilt system can generally follow the slope of the terrain, which reduces grading requirements. The support posts may vary in height above the ground surface to accommodate the variations in terrain. The total height of the structures, including panels, would be approximately 9 feet depending on the racking system configuration and tilt angle selected.

Another option, a single-axis tracking system, optimizes production by rotating the panels to follow the path of the sun throughout the day. The central axis of the tracking structure would be oriented north to south and would rotate the panels from east to west while limiting self-shading between rows. The system would utilize a method called "back-tracking," which consists of rotating the panels back toward a more horizontal position to avoid shadowing between the adjacent panels in the early morning and late afternoon hours of operation.

Each tracking assembly would consist of one or two steel torque tubes, supported by posts, on which the frames for the PV panels would rest. Each tracker would hold 30 to 90 PV panels mounted on this metal framework structure; the wide range is due to the variation in tracker and module technology. The steel structure would be able to withstand high-wind conditions (up to 90 miles per hour), site-specific wind gust and aerodynamic pressure effects, and seismic events.

Either of two types of single-axis tracker systems could be selected for the Modified Project. Tracker Option 1 is a "ganged system" that would use one motor to control multiple rows of PV modules through a series of mechanical linkages and gearboxes. By comparison, Tracker Option 2,

a stand-alone tracker system, would use a single motor and gearbox for each row of PV modules. A single-axis tracking system optimizes production by rotating the panels to follow the path of the sun throughout the day. The central axis of the tracking structure is oriented north to south and is constructed to rotate the panels east to west while limiting self shading between rows.

The drive unit typically consists of a bi-directional AC motor or a hydraulic system utilizing biodegradable fluid. The drive unit would be connected to an industrial-grade variable-frequency drive that translates commands from the control computer.

The tracker controller is a self-contained industrial-grade control computer that would incorporate all of the software needed to operate the system. The controller would include a liquid crystal display monitor that displays a combination of calibration parameters and status values, providing field personnel with a user-friendly configuration and diagnostic interface. The monitor would enable field adjustment, calibration, and testing.

Both trackers and fixed-tilt mounting systems are supported by steel posts spaced at approximately 10 feet apart and installed in a variety of ways. The most prevalent foundation design uses vibration-driven posts inserted into the ground to a typical depth of 8 to 10 feet below grade. Typical installations of this type are constructed using steel piles or concrete foundations. Steel piles may be driven, screwed, or grouted. Driven steel pile foundations typically are galvanized and used where high load bearing capacities are required. The pile is driven using a hydraulic ram where up to two workers are required. Screw piles, if used, would be driven into the ground with a truck-mounted auger requiring two or three workers.

The choice of foundation design is dependent on geotechnical information about the soil and the mounting structural design. Although some geotechnical investigation already has been conducted for the Approved Project, additional geotechnical work would be required for the Modified Project in order to collect data for finalization of foundation designs. This work would be performed prior to site mobilization in order to provide data in time for detailed design work to commence. The additional work would consist of up to 200 borings and test pits scattered throughout the site. Access to these locations would be via temporary two-track paths. Total expected surface disturbance would be approximately 30 acres with soil disturbance due to the pits and bores of approximately 300 cubic yards. Impacts of this drilling and test pit work, which constitutes the geotechnical work, are considered in Chapter 3 as part of the overall project. A full geotechnical work plan addressing any environmental impacts or issues that may be identified in the analysis would be developed for and approved by the BLM prior to the work being conducted.

Once mounted on a foundation, the bottom of each solar module array would be approximately 1.5 to 2 feet above ground at a minimum, while the top would be at approximately 6 to 10 feet above grade at a maximum. As the solar modules move throughout the day for the tracking option, these heights would vary slightly during the course of a typical day.

Panel Access

The spacing between the rows of tracking units or fixed mounts is dependent on site-specific features and would be identified in the final design. The Grant Holder's preliminary configuration indicates the spacing allows for at least 10 feet of clearance for maintenance vehicles and panel access.

In addition, 24-foot and 16-foot-wide internal roads would provide access to and among the solar panel arrays. This road surface would be scarified, moisture-conditioned, covered with aggregate base, and compacted. Parking would be available at points along these internal roads and at the PCS locations. These roads would be used only as necessary during operation and maintenance activities.

Anemometers

Depending on the final design of the equipment, the solar arrays may be installed with tracker anemometer towers, which measure and communicate wind speed data to the tracker controllers for solar array panel tracker positioning in the event of high winds. Each tower would measure approximately 30 feet in height, and would be installed within the solar plant arrays. There would be approximately two anemometer towers for every 125 MW unit.

Solar Field DC Distribution and Power Conversion

DC Distribution

The PV modules would be electrically connected in series by wire harnesses that conduct DC electricity to combiner boxes. Each combiner box would collect power from several rows of modules and feed a PCS via cables placed in covered underground trenches (or within aboveground cable trays or conduits in limited circumstances where underground trenching is determined not to be practical). The DC trenches would be approximately 3 feet deep and from 1.5 to 2.5 feet wide. The bottom of each trench would be filled with clean fill surrounding the DC cables and the remainder of the trench would be back-filled with native soil and compacted to 90 percent (95 percent when crossing under roadways). Power screeners could be used on site for a limited period of time (less than 1 year) to extract the required clean fill from native soils for use as bedding material in the trenches. A power screener is a motorized piece of equipment that uses moving screens to filter soils to a particular granularity.

AC Collection

Each PCS comprises an inverter package consisting of multiple inverters connected to adjacent transformers. An overhead shade would cover the inverters or a common equipment enclosure would include multiple inverters. The individual inverter packages would be approximately 7 feet tall, and the transformer exterior to the enclosure would be approximately 6.5 feet tall. The overhead shade would be 10 to 12 feet tall. The equipment enclosure, if utilized, would be up to approximately 35 feet long by 10 feet wide by 10 feet tall. In the PCS, the inverters would change the DC output from the combiner boxes to AC electricity. Integrated with the inverter, a data acquisition system (DAS) would utilize a data logger and sensors to record AC power output. Other integrated components would include equipment to record weather conditions, including ambient temperature measured in degrees Celsius (°C), incoming solar radiation measured in

watts per square meter (W/m^2), and wind speed measured in meters per second (m/s). The DAS would enable system data transfer and performance monitoring via the proposed O&M facility.

The resulting AC current from each individual inverter would be routed through underground AC cables (or within above ground conduits in limited circumstances where underground trenching is determined not to be practical) to an oil-filled, medium voltage, step-up transformer positioned within secondary containment. Based on preliminary design, the 265 volt output from an inverter would be stepped up (increased) to the desired AC collection system voltage of 34.5 kV by the transformer. The medium-voltage transformer would be placed on a pre-cast concrete pad delivered by flatbed truck during construction.

Multiple PCS blocks (approximately 10 MW total) would form a lateral configuration and transmit the AC power at 34.5 kV via aboveground double circuit monopoles or underground lines in covered trenches (or within above ground conduits in limited circumstances where underground trenching is determined not to be practical). Lateral conductors would be combined into an aboveground or underground feeder line (24 to 26 MW) that would transmit the AC power to the feeder circuit breakers and step-up transformers. Each transformer would step up the voltage to 230 kV before transmitting the power to the on-site switchyard in either aboveground or underground lines. As applicable, AC trenches would be approximately 3 feet deep and from 8 inches to 6.5 feet wide and also would be used to house fiber optic cables for communication. The bottoms of the trenches would be filled with sand surrounding the fiber optic cables, and the remainder of the trench would be back-filled with native soil and compacted.

The on-site electrical collection system is designed to minimize electrical losses within the solar plant site prior to delivery to the on-site switchyard.

Switchyard

The 2010 PA/FEIS describes a central, internal, 250,000-square-foot (5.74-acre) switchyard that would include a series of switches and circuit breakers that switch or provide disconnect service for the electricity before it is routed to the CRS via the gen-tie line (see, e.g., Appendix A, pp. 2-2, 2-4, 2-5). The Modified Project would modify the switchyard to accommodate the change in technology and relocate it to an area between Unit 1 and Unit 4, adjacent to the modified gen-tie alignment within the solar plant site. The Modified Project switchyard would be 6.9 acres in area.

Operation and Maintenance Facility

The 2010 PA/FEIS for the Approved Project describes an approximately 10,000 square foot administration building that would be shared among all units within the solar plant site (see, e.g., Appendix A, p. 2-5) and analyzes related environmental consequences throughout its Chapter 4. The Modified Project would reduce the square footage of a structure (referred to by the Grant Holder as an "operation and maintenance facility") that would provide the same functions as the approved administration building.

As described in Section 2.5.2 of the POD Supplement (NextEra Blythe Solar, 2013a), an approximately 3,000-square-foot operation and maintenance building would be located near the center of the site and would be shared for services to all units. The building would provide an

administration area, a work area for performing minor repairs, and a storage area for spare parts, transformer oil, and other incidental chemicals. The administration area would be air conditioned and include offices, conference rooms, a break room, rest rooms, and locker rooms with showers.

The building would be supported on reinforced concrete mat foundations or individual spread footings as determined during detailed design. Excavation for the footings would be approximately 2 feet deep. Excavation within the perimeter of the building would be approximately 1 foot deep. An aggregate or stone base would be laid after excavation. The floor would consist of a 6-inch reinforced concrete slab. Concrete for this slab would come from the Blythe area.

The operation and maintenance building would be a pre-engineered metal building approximately 17 feet high at its peak with a neutral-colored metal siding and roof consistent with BLM color treatment requirements. The building's maintenance area would include roll-up doors to provide equipment access as well as personnel access doors. An approximately 10,000-square-foot parking area would be provided at the operation and maintenance building.

Other Site Improvements

Weather Station

The 2010 PA/FEIS describes structures and facilities that would be included in the solar plant site for the Approved Project, including a weather station in each of the approved power blocks, in Section 2.2.2 (p. 2-3) and analyzes related environmental consequences throughout its Chapter 4. The approved weather station is not affected by the Modified Project (NextEra Blythe Solar, 2013a). No changes to the Approved Project are requested in the Level 3 variance request regarding this infrastructure.

Temporary Construction Workspace, Yards, and Staging Areas

Temporary construction facilities would be located on site during construction for materials storage, equipment storage, and field fabrication facilities; a temporary construction office complex also would be built. As described in Section 2.5.6 of the Grant Holder's POD Supplement (NextEra Blythe Solar, 2013a), these facilities would be consistent with the Approved Project. See, for example, Appendix A, pages 2-4, 2-5, 4.16-3, 4.16-4 and 4.16-6, which describe and analyze impacts associated with areas required for the staging and laydown of equipment, materials, and supplies as well as related parking. See also 2010 PA/FEIS Section 4.18 (Appendix A, p. 4.18-6), which analyzes impacts associated with construction lighting.

Drainage Improvements

The 2010 PA/FEIS describes the approved drainage control improvements, which include engineered drainage channels and associated diffusers to intercept off-site flows and redirect them around the site and accept directed on-site flows for diffusion and discharge in a manner intended to mimic existing sheet flow conditions downstream of the site; a berm; and roadway dips (also known as "Arizona crossings") (see, e.g., Appendix A, pp. 4.19-7, 4.19-10). The Modified Project would eliminate the major drainage channels, but may require smaller drainage features (NextEra Blythe Solar, 2013a).

Instead of intercepting, capturing, and redirecting surface flows around the site, the Modified Project would use site preparation techniques that allow water to sheet flow across the site. The final site plan would be based on a detailed topographic survey of the site, as well as detailed hydrologic and topographic studies that would be performed as a part of the permitting and engineering design process. Based on a preliminary grading plan, the Grant Holder commissioned a hydraulic evaluation. The final design would implement site design and protective erosion and drainage control design measures during construction and operation that would minimize dust and erosion. Stormwater flow would be managed to prevent downstream erosion and channelization. While the final grading design has not been completed for the Modified Project, the amount of grading would be considerably less than for the Approved Project, which would have completely eliminated all existing washes and floodplains within the site boundary by grading approximately 7,000 acres (Appendix A, p. 4.19-8). Additionally, erosion control design features (such as stabilization of the heavily used construction entrance area and installation of silt fences to control erosion along neighboring properties) and other protective measures (including minimizing disturbance and compaction to the extent feasible) proposed as part of the Modified Project would enable existing drainage patterns to be maintained at the project site and in off-site downstream areas. A fraction of 1 percent of the total surface area of the site would be covered with impervious surfaces.

2.2.1.2 Linear and Other Structures and Facilities

As summarized in Table 2-2, the Modified Project proposes no revisions to the approved means of site access or the approved gen-tie line, interconnection at Southern California Edison's Colorado River Substation, telemetry and telecommunications infrastructure, distribution power line, or removal of the existing natural gas line that has been abandoned in place on a portion of the solar plant site. The Modified Project would not construct, operate, or maintain the approved new natural gas line because this component would not be necessary to the operation and maintenance of a PV facility.

2.2.1.3 Water Supply and Use

Water Supply

The Modified Project would reduce the number of groundwater wells to be constructed on-site from 10 to 3, one of which was drilled as part of initial construction activities in connection with the Approved Project. No other changes are proposed to the approved groundwater wells: groundwater would be sampled, tested, and monitored in accordance with applicable law and approvals. As indicated in Table 2-2, the Level 3 variance request does not affect the approved sources of potable water during construction.

Construction-related Water Use

The Modified Project would reduce the total amount of water used for construction from approximately 4,100 AF as approved (Appendix A, p. 3.20-33) to approximately 1,200 as modified by the Level 3 variance request. No other changes to overall construction-related water use are proposed. Primary uses of water during construction would be the same for the Modified Project as for the Approved Project: compaction and dust control, with smaller quantities for preparation of

the concrete required for building foundations, sanitary needs, and other minor uses. Water would be stored on-site during construction using either temporary construction ponds or tanks.

The Modified Project also would reduce the amount of potable water needed during construction to approximately 10,000 gallons per month (approximately 0.5 AFY), varying seasonally and by work activities. Based on the reduction in required workforce, this is anticipated to be approximately half of the potable water that would be required to construct the Approved Project.

Operation and Maintenance-related Water Needs

The Modified Project would reduce the amount of water needed during operation and maintenance from approximately 600 AFY as approved (Appendix A, p. 2-18) to a maximum of 1,200 AF over 30 years (an average of 40 AFY). Operation and maintenance-related water use for the Modified Project is anticipated to be needed for the purposes and in the amounts indicated in Table 2-3, including water use for panel washing and dust control (the proposed PV technology requires no water for the generation of electricity).

TABLE 2-3
OPERATION AND MAINTENANCE-RELATED WATER USE

Water Use		PV Module Cleaning[a]				Misc O&M Total[b]	Potable Total[c]
		Per Unit		Total Plant			
		Min	Max	Min	Max		
Annualized Average	Rate (gpd)	7,000	7,800	28,000	32,000	3,500	450
Estimated Peak	Rate (gpd)	24,000	26,900	58,400	64,900	20,000	500-600
Estimated Annual	Use (AFY)	7.5	9.0	25	35	4.5	0.5

NOTES:

[a] Water consumption based on the volume of water required to wash the panels approximately twice per year
[b] Miscellaneous O&M activities include fire water, dust suppression, etc.
[c] Potable water used based on 7-day work week with 20 on-site personnel

SOURCE: NextEra Blythe Solar, 2013a (Table 2-2)

The Level 3 variance request does not propose to revise the existing approval for on-site treatment of groundwater for potable and other uses. See, for example, 2010 PA/FEIS Chapter 2 (Appendix A, pp. 2-4, 2-15), which identifies reverse osmosis (RO) and demineralized water system components as well as a water filter and clarifier system as "major" components of the Approved Project. The water treatment area for the Modified Project would be constructed on up to 3 acres (excluding any necessary evaporation ponds) near the middle of the solar plant site. An enclosure, if used, would be a pre-fabricated steel building on a concrete foundation with a maximum height of 17 feet. Wastewater discharge from the treatment facility would be non-hazardous, have a maximum quantity of up to 60 gallons per minute (gpm), and be produced primarily from the RO reject. Treatment of the wastewater discharge is discussed below in Section 2.3.1.3.

There would be three tanks on-site for the storage of the raw and fire water, potable water, and demineralized water for the Modified Project. The raw water tank storage capacity also would

provide the fire water supply. This tank would hold approximately 20,000 gallons for the Modified Project, which is 880,000 gallons less capacity than the approved 1,000,000-gallon service/fire water storage tank (Appendix A, p. 2-16). It would be constructed of bolted or welded steel and painted with a non-reflective coating to blend with the surrounding environment. The potable water tank would be of similar construction with a maximum volume of 7,500 gallons. The demineralized water tanks would have a total capacity of up to 100,000 gallons (20,000 gallons less than the Approved Project as described on page 2-16 of Appendix A); they would store water to be used for panel washing and be of stainless steel construction painted with a non-reflective coating.

The Level 3 variance request does not propose to revise the existing approval for the use of a BLM-approved dust suppressant and/or water to control dust (see, e.g., Appendix A, pp. 2-16, 3.20-24).

Decommissioning and Site Reclamation-related Water Needs

The Level 3 variance request does not propose to revise the fact that decommissioning and reclamation plans will be prepared and put into effect when permanent closure of the BSPP occurs to ensure compliance with applicable laws, public health and safety, and protection of the environment (see Appendix A, p. 2-12). For example, Best Management Practices (BMPs) would be followed to prevent erosion and sedimentation, non-stormwater discharges, and contact between stormwater and potentially polluting substances as well as to control dust during demolition and grading activities in accordance with the requirements of the Mojave Desert Air Quality Management District (MDAQMD). It is anticipated that the decommissioning and site reclamation would be staged in phases, allowing for a minimal amount of disturbance and requiring minimal dust control and water usage. Water usage during decommissioning and site reclamation would not exceed operational water usage.

2.2.1.4 Waste and Hazardous Materials Management

Wastewater Treatment

Two separate wastewater collection systems would be provided for the Modified Project: one for sanitary wastes, and another for the collection of wastewater from panel wash water treatment operations.

The Grant Holder proposes no changes to the approved methods of treatment of sanitary wastewater. 2010 PA/FEIS Section 2.4 (Appendix A, p. 2-19) estimated that 11,000 gallons of sanitary wastewater would be produced per day by the Approved Project. It is anticipated that the Modified Project would generate considerably less volume than the Approved Project due to the reduced duration of construction (when on-site employment levels are highest) as well as the reduced number of construction workers and permanent employees (see Table 2-2).

The industrial processes required for the Modified Project also are expected to generate less wastewater than would be generated by the Approved Project. As a result, the Modified Project would reduce the number and maximum capacity of the approved on-site evaporation ponds required for disposal of the wastewater from eight 4-acre ponds (up to 32 acres total) (Appendix A, p. 2-20) to two 6-acre evaporation ponds (up to 12 acres total). The Level 3

variance request does not propose to change the proposed design, construction, or operation and maintenance of the evaporation ponds, including the fact that, as approved, they would be netted and monitored to the extent required by the regulatory agencies (Appendix A, p. 4.11-38).

Waste Management and Hazardous Materials

The Modified Project would not add new or increase the volume of approved non-hazardous solid, hazardous solid, or liquid waste streams relative to the Approved Project. See Appendix A, p. 2-8; see also, McCoy Solar LLC, 2011a.

The Modified Project would, however, eliminate the approved use of HTF, HTF system components (e.g., the HTF heat exchanger, HTF expansion vessel and overflow vessel, HTF ullage system, and related piping), as well as the Land Treatment Unit that was approved to bioremediate HTF-contaminated soil (see, e.g., Appendix A, pp. 2-11, 2-15, 2-20). As described and analyzed in the 2010 PA/FEIS, the approved HTF is highly flammable (Appendix A, p. 4.11-9) and anticipated to cause toxic emissions including benzene, toluene, and phenol, among others (Appendix A, pp. 4.11-11, 4.11-14).

The Modified Project also would reduce the volume of sanitary wastewater, non-hazardous wastes, and hazardous wastes relative to the approved levels due to the reduced overall size of (and materials required for) the project and fewer numbers of construction workers and employees (see generally, Table 2-2). The Modified Project would not change any potential Class III landfill or permitted Class I hazardous waste landfill destinations relative to the Approved Project.

2.2.1.5 Vegetation Management and Fire Protection

Vegetation Management

The approved weed management plan would continue to be implemented as approved; the Grant Holder and the BLM will review the approved weed management plan prior to construction to determine if changes are warranted. To decrease the risk of fire during operation and maintenance of the Modified Project, all vegetation underneath the solar panels would be managed consistent with CDCA Plan multiple use class requirements applicable to the approved site, which may include use of a BLM-approved herbicide in accordance with guidance provided in the *Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement* (Herbicide FPEIS) and the *Final Vegetation Treatments on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Report* (BLM, 2007).[3]

[3] The ROD associated with the Herbicide FPEIS (72 FR 57065-01), published October 5, 2007, outlines the herbicides that are approved for use on public lands, including 14 herbicides with the following USEPA registered active ingredients: 2, 4-D, bromacil, chlorsulfuron, clopyralid, dicamba, diuron, glyphosate, hexazinone, imazapyr, metsulfuron methyl, picloram, sulfometuron methyl, tebuthiuron, and triclopyr. The ROD also identifies the states where the active ingredients are approved for use based on state registration requirements. It also identified six herbicide active ingredients that are not permitted for use BLM lands unless a need is shown by the BLM and updated risk assessments for human health and ecological risks are assessed. The six precluded active ingredients are: 2, 4-DP, asulam, atrazine, fosamine, mefluidide, and simazine.

Fire Protection

The Modified Project proposes several changes to the approved fire protection and emergency response systems and controls (see, e.g., Appendix A p. 2-18). The fire protection piping networks, as well as the foam generators described for the Approved Project would be eliminated under the Modified Project.

During construction, a water truck or other portable, trailer-mounted water tank would be kept on-site and available to workers for use in extinguishing small man-made fires. Fire watches would be required during hot work on-site. An Emergency Action Plan (EAP) would designate responsibilities and actions to be taken in the event of a fire or other emergency during construction. The EAP, including fire prevention and suppression, and a worker safety plan would be provided to BLM and local fire departments for approval before the receipt of a Notice to Proceed. During operation and maintenance, fire protection systems for the solar plant site would include a fire protection water system for protection of the operation and maintenance building, including portable fire extinguishers and possibly hydrants. The fire protection water system would be supplied from an approximately 20,000 gallon raw and fire water storage tank located on the solar plant site near the operation and maintenance area.

Adherence to all applicable codes and standards such as the California Building Code (CBC), National Fire Protection Association (NFPA), and the Solar Photovoltaic Installation Guideline by the California Department of Forestry and Fire Protection (CAL FIRE) would ensure that the most current standards for fire protection equipment and materials are met; water would be stored on site for fire protection purposes; the operation and maintenance building and other structures would be equipped with standard fire protection systems and shutoff capabilities in the event of a fire; and fire hydrants could be placed at intervals throughout the project site. Circuit breakers, surge arresters, and lightning protection also would be provided. Further, a Data Acquisition System (DAS) would provide system monitoring and access to system information in case of an emergency, and the marking and labeling of the equipment would provide warning and emergency guidance, particularly for the disconnect switches, conduits, raceways, enclosures, cable assemblies, combiner boxes, and junction boxes.

2.2.2 Construction

2.2.2.1 Site Preparation

Vegetation would be cleared from roadways, access ways, and where concrete foundations are used for inverter equipment, substations, and the operation and maintenance building. Vegetation also would be cleared for construction of any required drainage controls. Organic matter would be mulched and redistributed within the construction area (except in trenches and under equipment foundations). Plant root systems would be left in place to provide soil stability except where grading and trenching are required for placement of solar module foundations, underground electric lines, inverter and transformer pads, road and access ways, and other facilities. During the site clearing process, the site would also be cleared of refuse, as necessary. Refuse materials encountered would be recycled or disposed.

Cut and fill depths across the site would be minimized, and it is expected that no import or export of soil material would be required. Any excess cut would be dispersed on site at any localized low spots within the solar field so that the total amount of cut and fill would be balanced on site. The Grant Holder's grading estimates are presented in Table 2-4.

TABLE 2-4
MODIFIED PROJECT CUT AND FILL VOLUMES

Unit	Cut (cy)	Fill (cy)
1	181,400	129,400
2	113,700	91,000
3	114,000	91,200
4	99,400	79,500
Total	**508,500**	**391,100**

NOTE:

[a] Excess cut would be dispersed on site at any localized low spots within the solar field that do not significantly impact surface hydrology.

[b] The cut volumes include the soil that would be over excavated, scarified and left in place for all roads per our interpretation of the Kleinfelder Preliminary Geotechnical Investigation dated September 23, 2009. The volume of cut that would be scarified and left in place accounts for 334,400 cubic yards of the total 508,500 cubic yards of cut volume.

SOURCE: NextEra Blythe Solar, 2013

Select locations with local areas of highly variable terrain may be prepared using conventional farming equipment including tractors with discing equipment and vibratory rollers. This technique is referred to as "disc and roll." With this approach, rubber-tired farming tractors towing disc harrow equipment would disc the top 2 to 3 inches of soil. A water truck would follow closely alongside the tractor to moisten the soil to minimize fugitive dust emissions. The tractor may make several passes to fully disc the vegetation into the topsoil, preserving the underground root structure, topsoil nutrients, and seed base; however, once the soil has been wetted on the first pass, additional water would not be needed for subsequent passes. A drum roller would then be used to flatten the surface and return the soil to a compaction level similar to the preconstruction stage. In dispersed sections of the solar array field, there would be limited use of scrapers to perform micrograding. This technique is referred to as "isolated cut/fill." This technique would only be utilized in areas where existing grade cannot accommodate perimeter fencing, roads, or other equipment or structures. In general, portions of the site would be contoured to a smooth grade; the macro-level topography and storm water drainage would remain unchanged.

Grading of an area would take place shortly before trenching and post installation are ready to begin in order to minimize the area of open, uncovered ground present at any one time during construction.

2.2.2.2 Solar Array Assembly and Construction

Depending on the final PV technology and vendor selected, the design of the tracker support structures could vary. Typical installations of this type are constructed using steel piles or concrete

foundations. Steel piles may be driven, screwed, or grouted. Driven steel pile foundations typically are galvanized and are used where high load-bearing capacities are required. The pile is driven using a hydraulic ram with up to two workers required. Soil disturbance would be restricted to the pile insertion location with temporary disturbance from the hydraulic ram machinery, which is about the size of a small tractor. Screw piles, if used, would be driven into the ground with a truck-mounted auger requiring two or three personnel. Screw piles create a soil disturbance footprint similar to driven piles. Grouted steel piles, if used, would require pre-drilling with auger equipment so that the pile could be inserted into the cleaned hole. The pile then would be grouted into place from bottom to top until grout flows out of the top of the hole. Soil disturbance would be the same as the previous steel pile descriptions with additional disturbance from the soil removal and insertion of grout at the pile location. Concrete foundations avoid ground penetration by withstanding the design loads from the weight of the concrete itself. Concrete requires time to cure and can be pre-cast and transported to the site or poured in place for installation. Concrete foundations reduce the ground penetration, but increase the permanent disturbance.

The design method and installation time of the support structures would depend on the support structure and block design with driven piles being the fastest installation method. Final construction and installation details would be determined in the detailed design of the Modified Project.

Solar PV panels would be manufactured off-site and shipped to the site ready for installation. Concrete pads for the drive motors would be pre-cast and brought to the site via flatbed truck. Once most of the components have been placed on their respective foundations, the electricians and instrumentation installers would run the electrical cabling throughout the solar field. After the equipment is connected, electrical service would be verified, motors checked, and control logic verified. The various hydraulic systems would be charged with their appropriate fluids and startup testing would proceed. As the solar arrays are installed, the balance of the plant would continue to be constructed and installed and the electrical power and instrumentation would be placed. Once all of the individual systems have been tested, integrated testing of the Modified Project would occur.

2.2.2.3 Construction Schedule and Work Force

Work would be completed in phased stages, as shown in Figure 2-5. Construction of all phases is anticipated to take approximately 48 months from the commencement of the construction process to its completion, 21 months shorter than the Approved Project construction period. Because the construction may proceed in phases, construction of the units may proceed simultaneously or, alternatively, consecutively with or without a hiatus between phases.

During construction, the workforce is expected to average approximately 340 employees, with a peak workforce of approximately 500 employees during Months 19 through 22 of the construction period. The construction workforce would be recruited from within Riverside County and elsewhere in the surrounding region to the extent practicable.

2.2.2.4 Construction Equipment and Vehicles

Most construction equipment and vehicles would be brought to the Project site at the beginning of the construction process during construction mobilization and would remain on site throughout

the duration of the construction activities for which they would be used. Generally, the equipment and vehicles would not be driven on public roads while in use for the project.

In addition to construction worker commuting vehicles, as discussed above, construction traffic would include periodic truck deliveries of materials and supplies, recyclables, trash, and other truck shipments. Truck access to the site would be from I-10 and then via Mesa Drive Road to Black Rock Road. Construction truck deliveries and shipments would typically avoid the peak traffic hours in the morning and evening, so it is unlikely that deliveries would represent a substantial increase in traffic volumes during peak commuting hours. Materials would typically be delivered starting two weeks before the start of the associated task with the exception of electrical gear (PCSs, polyvinyl chloride, etc.), which would be drop-shipped just prior to installation.

2.2.3 Operation and Maintenance

2.2.3.1 Operation and Maintenance Workforce

As summarized in Table 2-2, the Modified Project proposes no change to the approved 30-year duration of the operation and maintenance period but would require far fewer workers during this timeframe: whereas approximately 221 workers would be required to operate and maintain the Approved Project (2010 PA/FEIS Section 2.2.4; Appendix A, p. 2-9), only 15 to 20 permanent, full-time personnel would be required for the Modified Project with additional temporary personnel to be employed, as needed, during seasonal periods when panel washing is required.

Similar operation and maintenance tasks would be required for the Approved Project and Modified Project, including monthly visual inspections and performance of annual (minimum) preventive maintenance. In accordance with United States Department of Labor, Occupational Safety and Health Administration (OSHA) safety regulations, at least two qualified personnel would be present during all energized electrical maintenance activities at the facility. Site security systems would be monitored regularly by on-site personnel and an off-site 24-hour Remote Operations Center.

2.2.3.2 Automated Facility Control and Monitoring System

Like the approved data control system (see Appendix A, p. 2-9), the Modified Project would have a facility control and monitoring system. The Modified Project's system would have two primary components: an on-site SCADA system and the accompanying sensor network. The on-site SCADA system would offer near real-time readings of the monitored devices, as well as control capabilities for the devices where applicable. Off-site monitoring/data trending systems would collect historical data for remote monitoring and analysis. For example, personnel at the Remote Operations Center would provide continuous 24/7/365 monitoring coverage of project facilities and would respond to real-time alerts and system upsets using advanced monitoring applications that reside on the servers in their network.

2.2.3.3 Panel Washing

PV panel washing would be performed by seasonal maintenance crews in the fall and spring, taking approximately 20 to 40 days to complete each unit. The exact panel washing system has

not been determined; several types of systems are currently available. Most involve spraying filtered water onto the modules from a portable tank mounted in the bed of a pickup truck; brushes, rods, or circular cleaning heads may also be used to remove debris. Surfactants would not be used in these procedures. The process water would be allowed to run off the modules and evaporate or percolate into the ground.

2.2.3.4 Road Maintenance

Paved roads would be maintained to preserve the asphalt surface from degradation. Maintenance would include seal coating the asphalt surface every 2 to 5 years to prevent decay and oxidization. Potholes or other damage would be repaired as soon as practical.

Unpaved roads would be maintained regularly to control the flow of water on and around the road, remove obstacles, and maintain a solid surface. Maintenance would be completed by conducting regular surveys to inspect the conditions of the road surfaces; blading, grading or compacting the road surfaces to preserve a minimally sloped and smooth planed surface; and applying dust palliatives or aggregate base as needed to reduce dust and erosion.

2.2.4 Decommissioning and Site Reclamation

The Modified Project proposes no revision of the approved ROW grant's 30-year term (with the potential for extensions). At that time, facilities and infrastructure would be decommissioned and dismantled and the site restored.

The principal materials incorporated into the PV arrays include glass, steel, and various semiconductor metals. The module production process is designed to minimize waste manufacturers employ the compound CdTe as the semiconductor material. CdTe is a stable compound consisting of cadmium (Cd) and tellurium (Te). Cd, produced primarily as a byproduct of zinc refining, is a known human carcinogen as an independent element; however, in module manufacturing the CdTe is safely sequestered for the over 30-year lifetime of the module, after which it is recycled for use in new solar modules or other new products. If the Grant Holder selects panels that incorporate CdTe, it would participate in the manufacturer's recycling program.

2.3 Alternative 2 - Denial of the Modified Project (the No Action Alternative)

Under this Alternative, the Level 3 variance request would be denied by the BLM and the Grant Holder would remain able to develop the Approved Project as modified by the March 7, 2013 voluntary relinquishment that left approximately 4,433 acres of the original ROW grant, which, as scaled, would be sufficient to develop approximately 650 MW of the approved 1,000 MW of energy using solar thermal parabolic trough technology. The existing ROW approval as modified by the March 7, 2013 relinquishment represents approximately 65 percent of the Approved Project from the 2010 PA/FEIS and 2010 ROD. All other aspects of the project with the partial relinquishment would be the same as the Approved Project (see Section 2.4.1). The CDCA Plan and the NECO Amendment to the CDCA Plan would remain as amended by the 2010 ROD for the

Approved Project. No further analysis or approvals would be required for BLM to issue a Notice to Proceed for this alternative.

2.4 Previously Considered Alternatives

The following alternatives were considered in the 2010 PA/FEIS (Appendix A). None of the alternatives or land use plan decisions analyzed in the 2010 PA/FEIS are being revisited for purposes of the Level 3 variance now under consideration; these summaries are provided for informational purposes only in order to facilitate comparison with previous BLM analysis of the BSPP.

2.4.1 Approved Project

As part of the 2010 PA/FEIS and 2010 ROD, the BLM analyzed and approved the construction, operation, maintenance, and decommissioning of a 1,000 MW solar thermal parabolic trough project on approximately 6,800 acres of BLM-administered lands (see Appendices A and B). The description and detailed analysis of the Approved Project are not repeated in this EIS; however, to provide context for the Modified Project, the impacts of the Approved Project are provided where relevant for purposes of comparison. The analysis of the Approved Project from the 2010 PA/FEIS is also used as the basis for the analysis in this Draft EIS of the effects of denying the Proposed Modification (Alternative 2).

2.4.2 No Project

As part of the 2010 PA/FEIS (Appendix A), the BLM analyzed a No Project/No Action Alternative that contemplated a scenario in which no solar development would occur on the BSPP site. There is potential that denial of the Level 3 variance request for a Modified Project could result in the Grant Holder relinquishing the existing ROW grant associated with the BSPP site. The impact analysis associated with the No Project Alternative in the 2010 PA/FEIS provides an analysis of the impacts associated with such an outcome, and has been incorporated by reference into this Draft EIS. Under that No Project scenario, the site would remain subject to the CDCA Plan and the NECO Plan amendments made through the 2010 ROD for the Approved Project (Appendix B) as further amended by the ROD for the Solar PEIS. Under the Solar PEIS ROD amendments, the site would be part of the Riverside East Solar Energy Zone where the BLM would prioritize the development of utility-scale solar energy development.

2.5 Agency Preferred Alternative

The BLM tentatively has identified the Modified Project as the Agency Preferred Alternative based on the analysis documented in Chapter 3 and summarized in Table 2-5. Briefly, the Modified Project would avoid or reduce impacts to vegetation and wildlife resources, cultural resources, soils, surface water resources, and other resources present within the areas not proposed for development compared to the Approved Project and Alternative 2. Additionally, it would reduce impacts on recreation, visual resources, and groundwater withdrawal.

TABLE 2-5
COMPARISON OF ENVIRONMENTAL AND OTHER EFFECTS OF ALTERNATIVES 1 AND 2

Resource or BLM Program Area	Current BLM Action (Impacts Analyzed in this EIS)		Prior BLM Action (Impacts Analyzed in the 2010 PA/FEIS, Summarized in this EIS for Comparison)	
	Approve Proposed Modification	Deny Proposed Modification	Approved Project	No Project
Air Resources				
Construction and Decommissioning Emissions	Potential exceedances of state and federal AAQSs for PM10; Emissions would be decreased compared to the Approved Project	Potential exceedances of state and federal AAQSs for PM10; Emissions would be increased compared to the Modified Project but decreased compared to the Approved Project	Potential exceedances of state and federal AAQSs for PM10	None
Operation and Maintenance Emissions	Potential exceedances of state AAQSs for PM10; Emissions would be decreased compared to the Approved Project	Potential exceedances of state and federal AAQSs for PM10; Emissions would be increased compared to the Modified Project but decreased compared to the Approved Project	Potential exceedances of state and federal AAQSs for PM10	None
Biological Resources – Vegetation				
Vegetation Community				
Desert dry wash woodland	26 acres	31 acres	213 acres	0 acres
Unvegetated ephemeral dry washes	3.3 acres	4.1 acres	8.7 acres	0 acres
Vegetated ephemeral streams[a]	265 acres	276 acres	371 acres	0 acres
Subtotal ephemeral drainages	*295 acres*	*312 acres*	*592 acres*	0 *acres*
Stabilized and partially stabilized dunes	0 acres	0 acres	58 acres	0 acres
Sonoran creosote bush scrub[b]	3,847 acres	4,123 acres	6,365 acres	0 acres
Disturbed habitat	0 acres	0 acres	0 acres	0 acres
Agriculture[c]	0 acres	0 acres	4.4 acres	0 acres
Developed	0 acres	0 acres	4.9 acres	0 acres
TOTAL	4,142 acres	4,435 acres	7,025 acres	0 acres
Special-Status Plants[d]				
Harwood's milk-vetch	248 individuals	248 individuals	637 individuals	0 individuals

TABLE 2-5 (Continued)
COMPARISON OF ENVIRONMENTAL AND OTHER EFFECTS OF ALTERNATIVES 1 AND 2

Resource or BLM Program Area	Current BLM Action (Impacts Analyzed in this EIS)		Prior BLM Action (Impacts Analyzed in the 2010 PA/FEIS, Summarized in this EIS for Comparison)	
	Approve Proposed Modification	Deny Proposed Modification	Approved Project	No Project
Biological Resources – Vegetation (cont.)				
Las Animas colubrine	0 individuals	10 individuals	55 individuals	0 individuals
Harwood's eriastrum	0 individuals	0 individuals	13 individuals	0 individuals
Abrams' spurge	2,185 individuals	2,185 individuals	0 individuals	0 individuals
ribbed cryptantha	0 acres/individuals	0 acres/individuals	58 acres (1.5 million individuals)	0 acres/individuals
winged cryptantha	0 individuals	0 individuals	0 individuals	0 individuals
Utah milkvine	62 individuals	87 individuals	621 individuals	0 individuals
desert unicorn plant	1,091 individuals	1,093 individuals	9 individuals	0 individuals
Biological Resources – Wildlife				
Wildlife Species or Species Group (habitat affected)				
Desert tortoise	4,070 acres	4,433 acres	7,027 acres	0 acres
Mojave fringe-toed lizard	0 acres	0 acres	50 acres	0 acres
Couch's spadefoot toad	0.13 acre	0.13 acre	0.13 acre	0 acres
Migratory birds	4,070 acres	4,433 acres	7,027 acres	0 acres
Golden eagle	4,070 acres	4,433 acres	7,027 acres	0 acres
Burrowing owl	4,070 acres	4,433 acres	7,027 acres	0 acres
Desert kit fox	4,070 acres	4,433 acres	7,027 acres	0 acres
American badger	4,070 acres	4,433 acres	7,027 acres	0 acres
Nelson's bighorn sheep	0 acres	0 acres	922 acres	0 acres
Desert tortoise	4,070 acres	4,433 acres	7,027 acres	0 acres
Mojave fringe-toed lizard	0 acres	0 acres	50 acres	0 acres
Couch's spadefoot toad	0.13 acre	0.13 acre	0.13 acre	0 acres
Migratory birds	4,070 acres	4,433 acres	7,027 acres	0 acres
Golden eagle	4,070 acres	4,433 acres	7,027 acres	0 acres
Burrowing owl	4,070 acres	4,433 acres	7,027 acres	0 acres

TABLE 2-5 (Continued)
COMPARISON OF ENVIRONMENTAL AND OTHER EFFECTS OF ALTERNATIVES 1 AND 2

Resource or BLM Program Area	Current BLM Action (Impacts Analyzed in this EIS)		Prior BLM Action (Impacts Analyzed in the 2010 PA/FEIS, Summarized in this EIS for Comparison)	
	Approve Proposed Modification	Deny Proposed Modification	Approved Project	No Project
Climate Change				
Construction total CO2e	54,615 metric tons	67,535 metric tons	103,900 metric tons	none
Operation annual CO2e	126 metric tons	9,613 metric tons	14,789 metric tons	none
Annual electricity generated	1,104,636 MWh	1,365,000 MWh	2,100,000 MWh	none
Operational CO2e per MWh	0.0001	0.0070	0.0070	none
Loss of Carbon Uptake (CO2e/year)	3,785 metric tons	4,123 metric tons	8,806 metric tons	none
Net Reduction in CO2e per year	395,924 metric tons	480,341 metric tons	736,524 metric tons	none
Cultural Resources				
Archaeological resources impacted	99 archaeological sites (solar site only)	103 archaeological sites (solar site only)	189 archaeological sites (solar site only)	No cultural resources impacted
Hazards and Hazardous Materials				
Minimum Amount of Hazardous Material Stored On-Site (Gas/Liquid/Solid)	262,670 ft^3 / 264,765 gallons / 4050 lbs.	Less than but similar to Approved Project	366,433 ft^3 / 1,345,510 gallons / n/a	None
Non-Hazardous Solid Waste Generated During Construction	41 cubic yards/week	Less than but similar to Approved Project	70 cubic yards/week	None
Hazardous Materials Specific to Technology	Cadmium telluride (if thin-film panels used)	Heat transfer fluid	Heat transfer fluid	None
Aviation Safety Hazards	Potential glint and glare from PV panels	Potential glint and glare from mirrored troughs	Potential glint and glare from mirrored troughs	None
Geologic Hazards	Minor risk from seismic hazards, subsidence and settlement, and hydrocompaction. Mitigated risk from corrosive soils	Minor risk from seismic hazards, subsidence and settlement, and hydrocompaction. Mitigated risk from corrosive soils	Minor risk from seismic hazards, subsidence and settlement, and hydrocompaction. Mitigated risk from corrosive soils	None
Site Security	Mitigated minor security risks; "low vulnerability" site	Mitigated minor security risks; "low vulnerability" site	Mitigated minor security risks; "low vulnerability" site	No impact

TABLE 2-5 (Continued)
COMPARISON OF ENVIRONMENTAL AND OTHER EFFECTS OF ALTERNATIVES 1 AND 2

Resource or BLM Program Area	Current BLM Action (Impacts Analyzed in this EIS)		Prior BLM Action (Impacts Analyzed in the 2010 PA/FEIS, Summarized in this EIS for Comparison)	
	Approve Proposed Modification	Deny Proposed Modification	Approved Project	No Project
Lands and Realty				
Impacts to existing authorized uses	None	None	None	None
Nonconformance with the CDCA Plan	None	None	None	None
Nonconformance with CDCA Plan MUC L guidelines	None	None	None	None
MUC L lands with use opportunities restricted	4,138 acres	4,433 acres	6,831 acres	0 acres
Mineral Resources				
Area unavailable for mineral resource extraction	4,138 acres	4,433 acres	6,831 acres	0 acres
Noise				
Construction and Decommissioning Noise	The worst-case daytime hourly construction L_{eq} could be distinguishable at the nearby residences, but would not be expected to cause an adverse reaction at the closest residence. This impact would be less severe than construction-related impacts that would be associated with the Approved Project.	The worst-case daytime hourly construction L_{eq} could be distinguishable at the nearby residences, but would not be expected to cause an adverse reaction at the closest residence. The impact would be essentially the same as for Modified Project, which would be less severe than construction-related impacts that would be associated with the Approved Project.	Construction noise would elevate the existing ambient noise level at the nearest residential receptor by 16 dBA, a considerable increase.	No impacts would occur.
Operation and Maintenance Noise	The worst-case daytime hourly operation and maintenance L_{eq} would be slightly lower than the Approved Project and Alternative 2, and would not be distinguishable at the nearby residences.	The worst-case daytime hourly operation and maintenance L_{eq} would be slightly higher than the Modified Project, but would not be distinguishable at the nearby residences.	The worst-case daytime hourly operation and maintenance L_{eq} would not likely be distinguishable at the nearby residences.	No impacts would occur.
Paleontological Resources				
Cut and Fill	0.9 million cubic yards	5.4 million cubic yards	8.3 million cubic yards	None

TABLE 2-5 (Continued)
COMPARISON OF ENVIRONMENTAL AND OTHER EFFECTS OF ALTERNATIVES 1 AND 2

Resource or BLM Program Area	Current BLM Action (Impacts Analyzed in this EIS)		Prior BLM Action (Impacts Analyzed in the 2010 PA/FEIS, Summarized in this EIS for Comparison)	
	Approve Proposed Modification	Deny Proposed Modification	Approved Project	No Project
Recreation				
Direct impacts on recreational resources	4,070 acres unavailable, access through the site would be maintained	4,433 acres unavailable, access through the solar plant site would not be allowed	6,831 acres unavailable, access through the solar plant site would not be allowed	None
Construction noise impacts on recreation	Less noise compared to Approved Project	Same as Approved Project	Construction noise would be temporary and not likely to affect recreational users	None
Construction dust impacts on recreation	Less dust would be generated than assessed for the Approved Project	Less dust would be generated than assessed for the Approved Project	Construction dust may temporarily affect the visual quality of the area and thereby degrade recreational experiences in the area	None
Construction traffic impacts on recreation	Less construction traffic would be generated than assessed for the Approved Project	Less construction traffic would be generated than assessed for the Approved Project	Construction traffic may temporarily degrade recreational experiences in the area	None
Visual impacts on recreation	Lower visual profile than Alternative 2 and the Approved Project, and therefore reduced impacts to recreational experiences in the area	Lower visual profile than the Approved Project, but greater visual profile than Alternative 2. Therefore, greater impacts to recreational experiences in the area when compared to Alternative 1 and reduced impacts when compared to the Approved Project	Construction and operation of the solar plant would adversely affect the visual quality of the area and thereby degrade recreational experiences in the area	None
Socioeconomics and Environmental Justice				
Construction Jobs (direct, indirect, and induced)	628	640	1,066	0
Operation and Maintenance Jobs (direct, indirect, and induced)	24	177	295	0
Construction Annual Economic Benefit plus Tax Payments	$60,458,000	$120,885,000	$140,120,000	$0
Operation Annual Economic Benefit plus Tax Payments	$2,200,791	$18,120,000	$30,200,000	$0
Environmental Justice effects	No disproportionate effects	No disproportionate effects	No disproportionate effects	No effect

TABLE 2-5 (Continued)
COMPARISON OF ENVIRONMENTAL AND OTHER EFFECTS OF ALTERNATIVES 1 AND 2

Resource or BLM Program Area	Current BLM Action (Impacts Analyzed in this EIS)		Prior BLM Action (Impacts Analyzed in the 2010 PA/FEIS, Summarized in this EIS for Comparison)	
	Approve Proposed Modification	Deny Proposed Modification	Approved Project	No Project
Soil Resources				
Approximate acres disturbed, by soil unit	Rillito-Gunsight: 440 Vaiva-Quilotosa-Hyder-Cipriano-Cherioni: 2,310 Rositas-Orita-Carrizo-Aco: 1,360	Rillito-Gunsight: 800 Vaiva-Quilotosa-Hyder-Cipriano-Cherioni: 2,310 Rositas-Orita-Carrizo-Aco: 1,360	Rillito-Gunsight: 2,446 Vaiva-Quilotosa-Hyder-Cipriano-Cherioni: 3,058 Rositas-Orita-Carrizo-Aco: 1,490	0
Special Designations				
Impacts to Wilderness Areas and lands with wilderness characteristics	Visual impacts due to dust and the conversion of 4,070 acres of open space to solar field	Visual impacts due to dust and the conversion of 4,433 acres of open space	Visual impacts due to dust and the conversion of 6,831 acres of open space	None
Impacts to ACECs	None	None	None	None
Impacts to Wilderness Areas and lands with wilderness characteristics	Visual impacts due to dust and the conversion of 4,070 acres of open space to solar field	Visual impacts due to dust and the conversion of 4,433 acres of open space	Visual impacts due to dust and the conversion of 6,831 acres of open space	None
Transportation and Travel Management				
Construction traffic impacts on traffic flow	Less construction traffic would be generated than assessed for the Approved Project	Less construction traffic would be generated than assessed for the Approved Project	Construction traffic may temporarily increase delays on area roads and at area intersections	None
Operation and Maintenance traffic impacts on traffic flow	Less construction traffic would be generated than assessed for the Approved Project	Less construction traffic would be generated than assessed for the Approved Project	Construction traffic may temporarily increase delays on area roads and at area intersections	None
Impacts of oversized or overweight trucks	Same as Approved Project	Same as Approved Project	Roadways could be damaged	None
Impacts of parking demand during construction	Same as Approved Project	Same as Approved Project	Parking demand would be accommodated on-site	None
Impacts of parking demand during operation and maintenance	Same as Approved Project	Same as Approved Project	Parking demand would be accommodated on-site	None

TABLE 2-5 (Continued)
COMPARISON OF ENVIRONMENTAL AND OTHER EFFECTS OF ALTERNATIVES 1 AND 2

Resource or BLM Program Area	Current BLM Action (Impacts Analyzed in this EIS)		Prior BLM Action (Impacts Analyzed in the 2010 PA/FEIS, Summarized in this EIS for Comparison)	
	Approve Proposed Modification	Deny Proposed Modification	Approved Project	No Project
Visual Resources				
Construction airborne dust	Less dust would be generated than assessed for the Approved Project	Less dust would be generated than assessed for the Approved Project	Construction dust may temporarily affect the visual quality of the area	None
Construction equipment and activities	Less equipment would be needed and the construction period would be shorter than assessed for the Approved Project	Less equipment would be needed and the construction period would be shorter than assessed for the Approved Project	Construction operations, including equipment and associated activities would contrast with the existing natural scenery	None
Nighttime construction lighting	Less lighting would be needed than assessed for the Approved Project	Less lighting would be needed than assessed for the Approved Project	Nighttime construction lighting would attract attention and create adverse visual effects by adding a glow effect to the night sky	None
Vegetation clearing creating visual contrast by exposing geometric lines of earth adjacent to the random pattern and texture of existing vegetation	Up to 4,138 acres of vegetation trimmed, vegetation cleared on graded areas	Up to 4,433 acres of vegetation cleared	Up to 6,831 acres of vegetation cleared	None
Nighttime operational lighting	Less lighting would be needed than assessed for the Approved Project	Less lighting would be needed than assessed for the Approved Project	Nighttime construction lighting could attract attention and create adverse visual effects by adding a glow effect to the night sky	None
Glare and glint	Less glare and glint would be experienced than assessed for the Approved Project due to the use of PV technology	Glare and glint from solar thermal parabolic trough technology, though reduced from the amount assessed for Approved Project, would be present	Glint from the solar arrays could be distracting or nuisance-causing, glare produced by the Approved Project would increase the visual contrast of the project in the landscape	None
Visual contrast in form, line, color, and texture	Overall, less visual contrast would be experienced than assessed for the Approved Project due to the reduction in area and structures. The project would create moderate-weak visual contrast with the landscape from the majority of the KOPs assessed for the Modified Project. The degree of contrast in	Less visual contrast would be experienced than assessed for the Approved Project due to the reduction in area, more visual contrast would be experienced than assessed for the Modified Project due to the amount of equipment and structures required for solar thermal parabolic trough technology	The project would create strong-moderate visual contrast with the landscape from the majority of the KOPs assessed for the Approved Project	None

TABLE 2-5 (Continued)
COMPARISON OF ENVIRONMENTAL AND OTHER EFFECTS OF ALTERNATIVES 1 AND 2

Resource or BLM Program Area	Current BLM Action (Impacts Analyzed in this EIS)		Prior BLM Action (Impacts Analyzed in the 2010 PA/FEIS, Summarized in this EIS for Comparison)	
	Approve Proposed Modification	Deny Proposed Modification	Approved Project	No Project
Visual Resources (cont.)				
Visual contrast in form, line, color, and texture (cont.)	form would be reduced from Strong/Moderate to Moderate/Weak. The degree of contrast in color would be reduced from Strong/Moderate to Moderate. The degree of contrast in line and texture would remain about equal.			
Water Resources				
Erosion and drainage	Disturbance of 4,138 acres within the ROW	Disturbance of 4,433 acres within the ROW	Disturbance of 6,831 acres	No disturbance
State jurisdictional waters	247 acres	264 acres	592 acres	None
Effect on groundwater levels and supply from project water usage	1,200 AF during construction	2,665 AF during construction	4,100 AF during construction	None
	40 AFY during operation and maintenance and decommissioning	390 AFY during operation and maintenance and decommissioning	600 AFY during operation and maintenance	None
Total groundwater consumption (construction, operation and maintenance, and decommissioning)	2,480 AF	15,145 AF	22,100 AF	None
Water quality effects of heat transfer fluid (HTF)	No use of HTF	Impact associated with use of HTF	Impact associated with use of HTF	No use of HTF
Water quality effects of land treatment units (LTUs)	No use of LTUs	Impact associated with LTUs	Impact associated with LTUs	No use of LTUs
RO Water Evaporation Pond area	Two 6-acre ponds (total of up to 12 acres)	Five to six 4-acre ponds (total of up to 24 acres)	Eight 4-acre ponds (total of up to 32 acres)	None
Effect from sanitary waste treatment during construction	Peak of 500 workers	Peak of 650 workers	Peak of 1,004 workers	None
Effect from process wastewater during construction	No concrete batch plant	Impacts from concrete batch plant operations	Impacts from concrete batch plant operations	None

TABLE 2-5 (Continued)
COMPARISON OF ENVIRONMENTAL AND OTHER EFFECTS OF ALTERNATIVES 1 AND 2

Resource or BLM Program Area	Current BLM Action (Impacts Analyzed in this EIS)		Prior BLM Action (Impacts Analyzed in the 2010 PA/FEIS, Summarized in this EIS for Comparison)	
	Approve Proposed Modification	Deny Proposed Modification	Approved Project	No Project
Wildland Fire Ecology				
Impacts on fire regime	Less impacts to fire regime than Approved Project due to decreased vehicle traffic/human presence and smaller disturbance footprint	Less impacts to fire regime than Approved Project due to decreased vehicle traffic/human presence and smaller disturbance footprint	Increased vehicle traffic/human presence may directly result in fire. Disturbance of soil will result in increased spread of invasive species	None

2.6 Alternatives Considered but Eliminated from Detailed Analysis

Potential alternatives to the Modified Project were screened for NEPA purposes using the criteria set forth in regulations of the Council on Environmental Quality (CEQ) (40 CFR §1502.14(a)), BLM Instruction Memorandum (IM) 2011-059, and BLM NEPA Handbook Section 6.6.3. These authorities provide that an action alternative may be eliminated from detailed analysis if:

1. It is ineffective (it would not respond to the BLM's purpose and need);
2. It is technically or economically infeasible;
3. It is inconsistent with the basic policy objectives for the management of the area (e.g., as set forth in the applicable land use plan – here, the CDCA Plan);
4. Its implementation is remote or speculative;
5. It is substantially similar in design to an alternative that is analyzed; or
6. It would have substantially similar effects to an alternative that is analyzed.

The BLM worked closely with the Grant Holder before the Level 3 variance request was submitted regarding the location and configuration of the Modified Project to encourage that it be proposed within that portion of the ROW for the Approved Project where impacts could be further reduced relative to the Approved Project. As discussed below, alternative sites, renewable energy technologies, configurations, and approaches, including those alternatives raised during scoping (see Appendix D, section 2.14) were considered but eliminated from detailed analysis based on one or more of the screening factors as described below.

2.6.1 Site Alternatives

Potential site alternatives to the Modified Project outside the original area of the Approved Project were raised during scoping, including alternatives on "brownfields" or degraded or contaminated lands or on other alternative project sites, but these were rejected from detailed consideration because they would not meet the BLM's purpose and need to respond to the Grant Holder's request for a Level 3 variance associated with the current Approved Project under Title V of the Federal Land Policy and Management Act of 1976 (FLPMA) (43 U.S.C. §1701 et seq.) and modification of the existing ROW grant. Additionally, BLM already deemed the site suitable for solar energy development when it approved the Approved Project and Plan Amendment in the 2010 ROD. For this reason, this EIS does not analyze in detail potential alternatives on other BLM-administered public land, private land, "brownfields," other degraded or previously disturbed lands, or other specific project sites.

2.6.2 Other Types of Energy Projects and Approaches

Other types of renewable energy projects including wind, geothermal, and other solar technologies were rejected from detailed consideration because they would not meet the BLM's purpose and need to respond to the Grant Holder's request for a Level 3 variance and modification of the existing ROW grant for a solar thermal development to construct, operate,

maintain, and decommission a solar PV facility within the ROW of the Approved Project. Distributed generation solar and conservation and demand side management, as raised in scoping, were rejected from detailed consideration for the same reason.

2.6.3 Other Configurations within the Approved Project's ROW

The BLM and the Grant Holder have proposed a footprint for the Modified Project that avoids and minimizes impacts to the extent possible while accommodating the Grant Holder's project objectives. When developing the Modified Project, the Grant Holder reviewed the analysis in the 2010 PA/FEIS and eliminated areas with desert dry wash woodland in the southwest portion of the approved site. It also avoided some known cultural resources in the eastern and southern portions of the site. These proposed changes address concerns raised during scoping regarding site alternatives that would reduce the acreage of the solar plant site and/or avoid or reduce impacts to desert or ephemeral washes. The 4,138 acres that make up the Modified Project site represent the areas with the fewest potential resource conflicts associated within the larger Approved Project area.

2.7 Proposed Design Features

The Project Owner has proposed to incorporate facility design and other measures into the Proposed Modification as design features (DFs) to reduce or avoid potential environmental impacts that could result from the Modified Project. These DFs are substantially the same as the Conditions of Certification included in the CEC's Final Commission Decision (CEC, 2014). These DFs would be implemented as features of project design, and are not "mitigation measures" as the term is used in the NEPA context. The proposed DFs are listed in Table 2-6; attachments referenced in the DFs are provided in the CEC's Final Commission Decision (CEC, 2014). Several of the proposed DFs address the approved gen-tie line; because the gen-tie line is not re-analyzed in this Draft EIS, these DFs are not discussed in Chapter 3, *Environmental Analysis*.

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October 23, 2013

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Re: Review of Staff Assessment for Amendment to Blythe Solar Power Project (09-AFC-6C)

Dear Mr. Lozeau,

Per your request, I have reviewed the Staff Assessment ("SA") for the Amendment to the Blythe Solar Power Project ("BSPP") published by the California Energy Commission ("CEC")[1] as the lead agency under the California Environmental Quality Act ("CEQA"). The BSPP was licensed by the CEC in 2010 as a 1,000-megawatt ("MW") solar thermal power-generating facility on 7,043 acres utilizing parabolic trough technology.[2] The owner of BSPP, NextEra Blythe Solar Energy Center, LLC ("Applicant"), proposes to change the solar thermal power-generating technology of the previously certified BSPP ("Approved BSPP") to photovoltaic ("PV") technology (reduce the physical size to 4,070 acre, and reduce the amount of electricity generated to a maximum of 485 MW (to be built in four phases)[3] ("Modified BSPP"). The SA provides an assessment of this proposed technology change.[4]

CEC staff concludes that "with the adoption of proposed conditions of certification, the proposed modified BSPP would comply with all applicable laws,

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[1] CEC, Blythe Solar Power Project, Amendment to the Blythe Solar Power Project, Staff Assessment – Part A, CEC-700-2013-004-FSA-PTA, Docket No. 09-AFC-6C, September 2013; available at http://docketpublic.energy.ca.gov/PublicDocuments/09-AFC-06C/TN200629_20130927T120253_Blythe_Solar_Power_Project_Staff_Assessment__Part_A_Corrected.pdf.

[2] SA, p. 2-1.

[3] SA, p. 2-1 and 2-2.

[4] SA, p. 1-2.

ordinances, regulations, and standards and would not result in any significant CEQA air quality impacts."[5] I respectfully disagree.

1. Modeled Impacts on Air Quality

Construction of the Modified BSPP over a 48-month period would result in combustion emissions from off-road construction equipment and on-road vehicles including haul trucks and construction worker vehicles used for site grading, excavation, and construction of on-site and off-site structures and linears (new transmission line, water pipeline and access road) as well as fugitive dust emissions associated with these activities.[6] The SA presents the percentage decrease in on-site "mitigated maximum annual daily construction emission estimates" for the Modified BSPP compared to the Approved BSPP. The SA finds that emissions of nitrogen oxides ("NOx"), sulfur oxides ("SOx"), carbon monoxide ("CO"), and volatile organic compounds ("VOCs") would decrease by more than 80 percent or on a daily basis and more than 50 percent on an annual basis. Emissions of particulate matter equal to or smaller than 10 and 2.5 micrometers ("PM10" and "PM2.5") would decrease by more than 25 percent and 50 percent, respectively.[7]

The SA evaluates the significance of project construction impacts assuming the ambient air quality modeling conducted for the Approved BSPP remains equally applicable to the Modified BSPP stating that since "the same earth grading techniques and types of construction equipment would be used in both cases, the modeling scenarios would be essentially the same, but with lower emissions." The SA summarizes that for the Approved BSPP, "the modeling analysis demonstrated compliance with applicable air quality standards for all pollutants except PM10, which was exceeded because the background value was already well over the California standards. Since the Applicant is not proposing changes to any PM10-related mitigation measures, staff agrees that PM10 modeling is not necessary for the modified project." Further, the SA summarizes that "NO_2 and PM2.5 impacts for the Approved BSPP project were close (ninety-nine percent) to the applicable short-term (1-hour and 24-hour, respectively) standards." The SA finds that since "the maximum daily emissions for the Modified BSPP project of NOx and PM2.5 reflect a decrease of eighty percent and fifty three percent, respectively ... compared to the Approved BSPP project, it is safe to assume that the modeling analyses using the same conservative assumptions would show the Modified BSPP project to be in compliance with these standards by a wider margin. Therefore, impacts would remain less than significant with

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[5] SA, p. 1-6.

[6] SA, p. 4.1-15.

[7] SA, p. 4.1-15 and Air Quality Tables 6 and 7.

implementation of the mitigation measures as required by Energy Commission Conditions of Certification AQ-SC1 through AQ-SC5. Since the Applicant is not proposing changes to any NOx or PM2.5 related mitigation measures, staff agrees that NO_2 modeling is not necessary."[8] I disagree with the SA's assumptions and approach to determining the significance of construction emissions for the Modified BSPP.

While all estimated pollutant emissions for construction of the Modified BSPP are estimated to be lower than those for the Approved BSPP, impacts of these emissions on air quality must be assessed in the context of the current air quality at the project site, *i.e.*, by comparing the sum of modeled project impacts plus the existing background concentration of pollutants to current ambient air quality standards. While no ambient air quality standards have been promulgated that are more stringent than those assumed in CEC's certification of the Approved BSPP, it cannot be assumed that pollutant background concentrations in the area have remained the same since evaluation of the Approved BSPP. The conclusions regarding impacts on air quality for construction of the Approved BSPP relied on background concentrations for 2004 to 2009.[9] The SA presents updated background concentrations for 2008 to 2012[10] for the Modified BSPP but fails to take the logical step of assessing modeled concentrations in light of these updated background concentrations. Comparison of these CEC staff-recommended background concentrations for the Approved BSPP and Modified BSPP shows that, while some pollutant background concentrations decreased, others substantially increased, as summarized in attached Table A-1. For example, 1-hour CO concentrations increased from 2,645 to 3,450 micrograms per cubic meter ("$\mu g/m^3$"), 24-hour PM10 increased from 83 to 133 $\mu g/m^3$, 24-hour PM2.5 increased from 20.5 to 26.3 $\mu g/m^3$, 1-hour sulfur dioxide ("SO_2") increased from 23.6 to 28.7 $\mu g/m^3$, and 24-hour SO_2 increased from 13.1 to 18.4 $\mu g/m^3$.

I computed total impacts for the Modified BSPP for each pollutant by reducing the respective modeled project impacts for the Approved BSPP by accounting for the percent decrease in on-site construction emissions calculated by the SA and adding CEC staff-recommended updated background concentrations for 2008 to 2012. The results are shown in attached Table A-1.

The results indicate that the total **1-hour NO_2** impact (Modified BSPP plus background) would indeed be well below (17 percent) the most stringent ambient air

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[8] SA, p. 4.1-20.

[9] CEC, Blythe Solar Power Project, Revised Staff Assessment, June 2010, CEC-700-2010-004 REV1, Docket No. 09-AFC-6, (hereinafter "2010 RSA"), Air Quality Table 4, p. C.1-11; available at http://energy.ca.gov/2010publications/CEC-700-2010-004/CEC-700-2010-004-REV1.PDF.

[10] SA, Air Quality Table 4, p. 4.1-10, and Air Quality Table 5, p. 4.1-13.

quality standard for this pollutant, a safe margin for concluding that emissions from construction of the Modified BSPP would not result in an exceedance of the short-term standard for NO_2. Thus, CEC staff's conclusion with respect to total NO_2 impacts, while relying on an incorrect approach, is correct.

However, for demonstrating compliance with the most stringent **24-hour PM2.5** standard, the results are not as clear-cut. While project impacts are estimated to decrease from 14.4 to 6.8 $\mu g/m^3$, background concentrations in the area increased from 20.5 to 26.3 $\mu g/m^3$. As a result, total 24-hour PM2.5 impacts are computed at 94 percent of the most stringent ambient air quality standard, not quite as wide a margin of safety as that for 1-hour NO_2. Thus, while CEC staff's conclusion that 24-hour PM2.5 impacts would likely remain below the most stringent ambient air quality standard turns out to be correct, the impacts from construction of the Modified BSPP are only marginally (5 percent) lower than those estimated for the Approved BSPP (99 percent of standard).

While construction emissions of PM10 would be 26 percent lower on a short-term basis, total **24-hour PM10** impacts resulting from construction of the Modified BSPP (165 $\mu g/m^3$) increase substantially compared to the Approved BSPP (126 $\mu g/m^3$) because of substantially increased background concentrations (133 compared to 83 $\mu g/m^3$). Project impacts (32 $\mu g/m^3$) would continue to contribute significantly to existing exceedances of the most stringent annual ambient air quality standard of 50 $\mu g/m^3$ with resulting maximum total concentrations estimated at more than three times (330 percent) the standard. On an **annual PM10** basis, while emissions would be 32 percent lower and background concentrations decreased from 30.5 to 23.2 $\mu g/m^3$, project impacts (2.7 $\mu g/m^3$) would contribute substantially to total impacts (25.9 $\mu g/m^3$) and existing exceedances of the most stringent ambient air quality standard for this pollutant (20 $\mu g/m^3$) resulting in total maximum annual PM10 concentrations of 129 percent of the standard.

2. Impacts after Implementation of Proposed Conditions of Certification

The SA recognizes that PM10 emissions from construction would contribute to existing exceedances of ambient air quality standards.[11] However, in assessing the CEQA significance of PM10 impacts, the SA commits the same error as the 2010 RSA in that it assumes that its proposed conditions of certification would reduce impacts to a level below significance. Similarly, CEC staff considers NOx and VOC construction emissions to be potentially significant in light of the existing ozone nonattainment status for the project site area but concludes that with implementation of proposed mitigation measures construction impacts would not contribute substantially to

[11] SA, p. 4.1-20.

exceedances of ozone standards. Specifically, the SA states that "[if] left unmitigated, the Modified BSPP projects construction activities would likely contribute to significant CEQA adverse PM10 and ozone impacts. Staff recommends AQ-SC1 to AQ-SC5 to mitigate these potential impacts."[12] I disagree that implementation of the proposed conditions of certification AQ-SC1 to AQ-SC5 would reduce the adverse PM10 and ozone impacts during construction to less than significance.

Like the 2010 RSA, the SA contains no quantitative demonstration of the effectiveness of the proposed conditions of certification in mitigating estimated emissions. In other words, neither document contains a comparison of emissions "before" and "after" implementation of the proposed conditions of certification. The estimates presented in both documents are "mitigated" emissions which incorporate all of the Applicant's proposed mitigation measures.[13] Review of these mitigation measures shows that they incorporate virtually all of CEC staff's proposed conditions of certification for fugitive dust control and neither addresses the substantial amounts of ozone precursor emissions from on-road vehicles. Therefore, the SA's conclusions regarding significance of emissions and impacts "after" implementation of its proposed conditions of certification are unsupported.

a) Fugitive Dust Emissions

Specifically, the Applicant's mitigated emission estimates for construction of the Modified BSPP presented in the SA assume:

- A combined control efficiency of 81 percent for fugitive dust PM10 and PM2.5 emissions from paved and unpaved roads as a result of limiting vehicle speeds to 25 miles per hour ("mph") and watering roads twice per day.[14]
- A 50 percent control efficiency for fugitive dust emissions of PM10 and PM2.5 from wind erosion of storage piles due to watering twice per day.[15]

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[12] SA, p. 4.1-29.

[13] SA, p. 4.1-15, and 2010 RSA, p. C.1-17.

[14] NextEra Blythe Solar Energy Center, LLC, Blythe Solar Power Project, Revised Petition for Amendment, Appendix E, Air Quality and Greenhouse Gas Construction and Operations and Maintenance Emissions and Screening Health Risk Assessment Results and Construction Schedule and Equipment Use Information, April 2013 (hereinafter "Revised PFA Appx. E"); available at http://energy.ca.gov/sitingcases/blythe_solar/pv_amendment/rev-amendment/BSPP_Revised_PTA_Appendices.pdf. (*See* Table 4 "Emission Factors for Fugitive Dust Particulate Matter Emissions from On-Site Motor Vehicles on Unpaved Surfaces." (*See* heading "Control Efficiency" and Footnote c "Combined control efficiency for limiting vehicle speed to 15 mph (57%, from SCAQMD CEQA mitigation measures, Table XI-A) and watering twice per day (54%, from SCAQMD CEQA mitigation measures, Table XI-A)...".)

- A moisture content of 15 percent for frequently watering exposed surfaces during soil handling and bulldozing, scraping and grading to reduce emissions of fugitive dust emissions of PM10 and PM2.5.[16]

The SA provides several conditions of certification intended to reduce fugitive dust particulate matter emissions that were not quantified by the Applicant including tire washing and installation of gravel ramps to reduce trackout and covering or wetting materials and maintaining at least one foot of freeboard on haul trucks. In addition, daily sweeping of on-site paved roads may reduce emissions to some extent. The only requirement that is more stringent than assumed by the Applicant is to stabilize unpaved roads with a non-toxic soil stabilizer or soil weighting agent as they are being constructed[17] instead of watering twice daily. Based on the same recommendations by the South Coast Air Quality Management District ("SCAQMD") that the Applicant relied on, the combined control efficiency of limiting vehicle speeds to 15 mph and road stabilization can be estimated at 93 percent[18], a 12 percent reduction over the Applicant's combined control efficiency of 81 percent. However, because fugitive dust PM10 emissions from on-site motor vehicle travel, both on paved and unpaved roads, account for less than 10 percent of total PM10 emissions, this emission reduction would not substantially reduce impacts on air quality. The major contributor to fugitive dust particulate matter emissions, *i.e.*, earth work including soil handling, storage pile wind erosion, and bulldozing, scraping, and grading cannot be further reduced short of shutdown measures because increased watering would make the site and materials unworkable. Thus, PM10 fugitive dust emissions would likely remain significant after implementation of all conditions of certification.

Recommendations for Enhancing Fugitive Dust Mitigation

The SA identifies Rules 401 (Visible Emissions), 402 (Nuisance), and 403 (Fugitive Dust) promulgated by the Mojave Desert Air Quality Management District ("MDAQMD") as applicable to the construction period of the Modified BSPP.[19]

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[15] Revised PFA Appx. E. (*See* Table 6 "Earthwork Fugitive PM Emission Factors." (*See* reduction from watering of 50% for "Storage Pile Wind Erosion" and Footnote b "For daily water applicati[o]n rate of 1,703 gallons/acre....")

[16] Revised PFA Appx. E. ("*See* Table 6 "Earthwork Fugitive PM Emission Factors." (*See* Moisture content of 15% in tables for "Soil Handling" and "Bulldozing, Scraping, and Grading" and footnotes "The assumed moisture content is based on frequent watering of exposed surfaces. Assumed no control efficiency for watering so as to not double c[ount].")

[17] SA, Condition of Certification AQ-S3.b.

[18] 1-(1-0.57)(1-0.84) = 0.93.

[19] SA, p. 4.1-3.

These rules contain several requirements that are not reflected by the SA's proposed conditions of certification. In order to assure implementation and compliance with MDAQMD rules, I recommend that the SA incorporate these requirements as conditions of certification. Further, in light of the significant emissions of fugitive dust PM10 emissions that would occur during the four-year construction period of the Modified BSPP, I recommend the following revisions and amendments to the SA's proposed conditions of certification.

MDAQMD Rule 403(a) stipulates that fugitive dust emissions from any transport, handling, construction or storage activity may not remain visible in the atmosphere beyond the property line of the emission source. Yet, condition of certification AQ-SC4 (Dust Plume Response Requirement) specifies measures when observations indicate that "visible dust plumes ... have the potential to be transported ... off the project site and within 400 feet upwind of any regularly occupied structures not owned by the project owner..." This condition appears to substantially relax the requirements of MDAQMD Rule 403, which explicitly requires compliance at the property line. Given that the nearest resident may be as far as a half mile away from the nearest Project boundary[20], this condition does not guarantee compliance with Rule 403(a) and may interfere with condition of certification WORKER SAFETY-8(2), which requires that PM10 concentrations determined as the difference between upwind and downwind samples collected on high volume samplers "as close to the property line as feasible" may not exceed 50 $\mu g/m^3$.

Condition of certification AQ-SC4, Step 3, requires temporary shutdown of construction activities in case intensified application of existing mitigation measures or additional dust suppression methods would not result in abatement of visible dust plumes within one hour. MDAQMD Rule 403(e) provides relief from the above discussed requirements when the wind speed instantaneously exceeds 25 miles per hour ("mph") or when the wind speed averaged over 15 minutes exceeds 15 mph. The logical corollary to this requirement appears to be that construction and vehicle activity at the site should cease during high wind events so as not to add to adverse conditions. MDAQMD Rule 403(e) appears to provide an objective standard for determining when winds are likely to result in adverse impacts on air quality and when construction activity should be suspended. Thus, I recommend that CEC staff consider amending condition of certification AQ-SC4 (Dust Plume Response Requirement), to specify that the dust abatement and temporary shutdown requirements laid out in Step 1 through 3 of this measure apply at the wind speeds specified in MDAQMD Rule 403(e) and also when PM10 concentrations per WORKER SAFETY-8(2) exceed 50 $\mu g/m^3$.

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[20] *See* SA, p. 4.6-6. ("... a mobile home located approximately 2,500 feet west of the nearest project site boundary.")

b) Combustion Exhaust Emissions

For combustion emissions, the Applicant's mitigated emission estimates for construction of the Modified BSPP presented in the SA assume:

- Use of construction equipment complying with U.S. Environmental Protection Agency Tier 3 exhaust emission standards.[21]

The SA finds that construction activities would likely contribute to significant adverse ozone impacts and proposes condition of certification AQ-SC5 to reduce exhaust emissions from construction equipment.[22] While this condition is extensive and would likely reduce equipment exhaust emissions substantially compared to a typical unrestricted construction fleet in California, it would not restrict Project emissions to less than significant levels for CEQA purposes.

First, and most importantly, the proposed condition of certification addresses only emissions from diesel-fueled construction equipment. However, on-road vehicles including haul trucks and construction worker vehicles would also emit substantial amounts of ozone precursors, especially NOx, estimated at up to 333.3 pounds per day ("lb/day") and 39.7 tons per year ("ton/year"). These emissions would not be reduced by the proposed condition for off-road construction equipment. One way to assess the significance of emissions is to model resulting concentrations in air; however, because ozone is a regional pollutant, emissions cannot be easily modeled on a project basis. The other way to assess significance is to compare emissions to quantitative significance thresholds established by the local air district. As indicators to assess whether construction emissions would contribute significantly to ozone concentrations, the Mojave Desert Air Quality Management District ("MDAQMD") provides daily and annual CEQA significance thresholds for NOx emissions of 137 lb/day and 25 tons/year, respectively.[23] On-road vehicle exhaust emissions, which are not (and cannot reasonably be) mitigated by the proposed conditions of certification, would exceed the MDAQMD's daily NOx significance threshold by a factor of almost two and a half[24] and the annual NOx significance threshold by a factor of more than one and a

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[21] Revised PFA Appx. E. (*See* Table 1 "Construction Equipment Emission Factors." (*See* heading "Model Year" and Footnote a "Earliest model year required to meet at least Tier 3 emission standards.")

[22] SA, p. 4.1-29.

[23] MDAQMD, California Environmental Quality Act (CEQA) and Federal Conformity Guidelines, Table 6, p. 10; available at http://www.mdaqmd.ca.gov/Modules/ShowDocument.aspx?documentid=1806.

[24] (333.3 lb/day) / (137 lb/day) = 2.43.

half.[25] Mitigated exhaust emissions from construction equipment would further contribute to this exceedance. Thus, contrary to the SA's conclusion, ozone precursor emissions would contribute substantially to existing exceedances of the ozone standards even after implementation of the proposed conditions of certification.

Second, the proposed condition of certification exempts all off-road construction equipment with a rating of 50 hp or less and all equipment on site for a less than 10 days (considered "not practical"). The Applicant's emission estimates assume U.S. Environmental Protection Agency ("EPA") Tier 3 emission factors for all equipment regardless of horsepower. Thus, emissions for equipment with 50 hp or less may be substantially underestimated. Further, equipment on site for less than 10 days may include equipment such as graders or scrapers which may be very old. A study of construction equipment in California found that the average useful life, *i.e., the age at which half of the equipment of a given model year has been retired,* varies from 10 to 32 years.[26] Older equipment may have very high emissions which would disproportionally contribute to project construction emissions and which are not accounted for in the SA's assessment of short-term impacts on air quality. I recommend that CEC staff eliminate these exemptions or prepare revised emission estimates.

Recommendations for Additional Feasible Mitigation

Construction worker commuter vehicles contribute a substantial portion of total VOC emissions during construction. For example, during the month with estimated maximum VOC emissions from power block on-road equipment (40.4 lb/day[27] or 887.9 lb/month[28]), Month 22, construction worker vehicles contribute 75 percent.[29] These emissions by far exceed those of the estimated maximum on-site construction equipment VOC emissions, also during Month 22, of 14.9 lb/day or 328.5 lb/month.[30] To reduce emissions of these ozone precursors, I suggest that CEC staff require the

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[25] (39.7 ton/year) / (25 ton/year) = 1.59.

[26] Union of Concerned Scientists, Digging up Trouble, The Health Risk of Construction Pollution in California, November 2006, p. 4; available http://www.ucsusa.org/assets/documents/clean_vehicles/digging-up-trouble.pdf.

[27] SA, Air Quality Table 6, p. 4.1-16.

[28] *Ibid* and Revised PFA Appx. E. (*See* Table 18-b "Off-site Construction ROG Emissions Sum[mary]" for "Month 22.")

[29] [off-site worker commute car VOC emissions: (fence mobilization: 0.00) + (civil improvements – grading: 76.2) + (PV panel construction: 420.7) + (substation building water tank construction: 52.5) + (testing & commissioning: 118.1) lb/month] /(total off-site motor vehicle VOC emissions: 887.9 lb/month) = 0.752.

[30] Revised PFA Appx. E. (*See* Table 15-b "On-site Construction ROG Emissions Sum[mary]" for "Month 22.")

Applicant to establish natural-gas powered shuttle buses with pick-up locations in the three towns where construction workers will likely lodge or reside, *i.e.*, Blythe and Indio in California and Ehrenberg in Arizona.[31] This requirement could substantially reduce VOC emissions from construction worker commuter vehicles.

Further, to reduce combustion exhaust emissions from other on-road vehicles during construction of the Modified BSPP such as concrete rucks, delivery trucks, cabling trucks, electrical trucks, structural steel trucks, etc., I suggest that CEC staff evaluate the feasibility of requiring a) that ninety percent of the truck carriers contracted by the Applicant be EPA SmartWay partners[32] or b) that the Applicant contract with truck carriers whose on-road diesel powered vehicles are equipped with California Air Resources Board ("CARB")-certified Tier 3 pollution control equipment, capable of achieving at least 85 percent reduction in particulate matter and 25 percent reduction in nitrogen oxide emissions.[33]

If you have any questions regarding the above comments, please give me a call at (415) 492-2131 or e-mail at petra.pless@gmail.com.

With best regards,

Petra Pless, D.Env.

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[31] *See* SA, p. 4.8-15.

[3232] EPA, SmartWay; http://www.epa.gov/smartway/.

[33] CARB, Diesel Certifications, Verification Procedure - Currently Verified; http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm.

Table A-1: Comparison of maximum total impacts on air quality during Approved BSPP construction as presented in the 2010 RSA and based on updated background concentrations and percent emission reduction as presented in the SA for the Modified BSPP

Pollutant		Most Stringent Ambient Air Quality Standard ($\mu g/m^3$)	Maximum Approved BSPP Construction Impacts (from 2010 RSA, Table 10, p. C.1-23) Approved BSPP Project Impact ($\mu g/m^3$)	1998-2009 Background ($\mu g/m^3$)	Approved BSPP Total Impact ($\mu g/m^3$)	Percent of Standard	Maximum Modified BSPP Construction Impacts (calculated as indicated in notes below) Emission Reduction[a] Modified BSPP vs. Approved BSPP	Modified BSPP Project Impact[b] ($\mu g/m^3$)	2008-2012 Background[c] ($\mu g/m^3$)	Modified BSPP Total Impact[d] ($\mu g/m^3$)	Revised Percent of Standard[e]
NO_2	1-hour	339	335.9	N/A	335.9	99%	83%	57.1	N/A	57.1	17%
	Annual	57	4.3	19	23.3	41%	86%	0.6	17	17.6	31%
CO	1-hour	23,000	1,068.7	2,645	3,714	16%	88%	128.2	3,450	3,578	16%
	8-hour	10,000	423.6	877	1,301	13%	90%	42.4	744	786	8%
PM10	24-hour	50	43	83	126	**252%**	26%	32	133	165	**330%**
	Annual	20	3.9	30.5	34.4	**172%**	32%	2.7	23.2	25.9	**129%**
PM2.5	24-hour	35	14.4	20.5	34.9	99%	53%	6.8	26.3	33.1	94%
	Annual	12	0.6	8.7	9.3	77%	56%	0.3	7.2	7.5	62%
SO_2	1-hour	665	3.4	23.6	27.0	4%	89%	0.4	28.7	29.1	4%
	3-hour	1,300	2.3	15.6	17.9	1%	89%	0.3	15.6	15.9	1%
	24-hour	105	0.6	13.1	13.7	13%	89%	0.1	18.4	18.5	18%
	Annual	80	0.01	3.5	3.5	4%	54%	0.00	2.9	2.9	4%

Shaded values indicate apparent calculation errors in the 2010 RSA (for 8-hour CO, the 2010 RSA calculates a total impact of 901 $\mu g/m^3$ $\mu g/m^3$ and 9 percent of standard; for 3-hour SO_2, the 2010 FSA calculates a total impact of 17.3 $\mu g/m^3$, resulting in the same percent of standard). **Bolded** percentages indicate exceedance of air quality standards.

a SA, Air Quality Table 6, p. 4.1-16, for short-term ambient air quality standards and Air Quality Table 7, p. 4.-17, for annual ambient air quality standards.

b **Modified BSPP Project Impact** ($\mu g/m^3$) calculated as: **Approved BSPP Project Impact** from 2010 RSA ($\mu g/m^3$) × **Emission Reduction** from SA (%).

c SA, Air Quality Table 5, p. 4.1-13.

d **Modified BSPP Total Impact** ($\mu g/m^3$) calculated as: **Modified BSPP Project Impact** ($\mu g/m^3$) + **2008-2012 Background** from SA ($\mu g/m^3$).

e **Revised Percent of Standard** calculated as: **Modified BSPP Total Impact / Most Stringent Ambient Air Quality Standard.**

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Dr. Pless has over 10 years of experience in environmental engineering and science conducting and managing interdisciplinary environmental research projects and preparing and reviewing environmental permits and other documents for U.S. and European stakeholder groups. This broad-based experience includes air quality and pollution control; water quality, water supply, and water pollution control; noise studies; CEQA review; industrial ecology and risk assessment; and use of a wide range of environmental software.

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REPRESENTATIVE EXPERIENCE

Air Quality and Pollution Control

Experience in all aspects of air quality and pollution control including attainment and non-attainment new source review ("NSR"), prevention of significant deterioration ("PSD") and Title V permitting; BACT, LAER, RACT, BARCT, and MACT analyses; technology evaluations and cost-effectiveness analyses; criteria and toxic pollutant emission inventories; emission offsets; ambient and source monitoring. Some typical projects include:

- Critically reviewed and prepared technical comments on the air quality (biology, noise, water quality, and public health) sections of CEQA documents for numerous commercial, residential, and industrial projects and quarries/mines in California.
- Critically reviewed and prepared technical comments on the air quality and public health sections of the Los Angeles Airport Master Plan (Draft, Supplement, and Final) under NEPA/CEQA for the City of El Segundo. Provided technical comments on the Draft General Conformity Determination for the preferred alternative submitted to the Federal Aviation Administration.

- In conjunction with the permitting of several residential and commercial developments, conducted studies to determine baseline concentrations of diesel exhaust particulate matter using an aethalometer.
- Critically reviewed and prepared technical comments on Draft Title V permits and for several refineries and other industrial facilities in California.
- For several California refineries, evaluated compliance of fired sources with Bay Area Air Quality Management District ("BAAQMD") Rule 9-10. This required evaluation and review of hundreds of source tests to determine if refinery-wide emission caps and compliance monitoring provisions were being met.
- For an Indiana steel mill, evaluated technology to control NOx and CO emissions from fired sources, including electric arc furnaces and reheat furnaces, to establish BACT. This required a comprehensive review of U.S. and European operating experience. The lowest emission levels were being achieved by steel mills using selective catalytic reduction ("SCR") and selective non-catalytic reduction ("SNCR") in Sweden and The Netherlands.
- For a California petroleum coke calciner, evaluated technology to control NOx, CO, VOCs, and PM10 emissions from the kiln and pyroscrubbers to establish BACT and LAER. This required a review of state and federal clearinghouses, working with regulatory agencies and pollution control vendors, and obtaining and reviewing permits and emissions data from other similar facilities. The best-controlled facilities were located in the South Coast Air Quality Management District ("SCAQMD").
- For a Kentucky coal-fired power plant, identified the lowest NOx levels that had been permitted and demonstrated in practice to establish BACT. Reviewed operating experience of European, Japanese, and U.S. facilities and evaluated continuous emission monitoring data. The lowest NOx levels had been permitted and achieved in Denmark and in the U.S. in Texas and New York.
- In support of efforts to lower the CO BACT level for power plant emissions, evaluated the contribution of CO emissions to tropospheric ozone formation and coauthored report on same.
- Critically reviewed and prepared technical comments on applications for certification ("AFCs") for several natural-gas fired and geothermal power plants in California permitted by the California Energy Commission ("CEC"). The comments addressed construction and operational emissions inventories and dispersion modeling, BACT for turbines, etc.
- Critically reviewed and prepared technical comments on draft PSD permits for several natural-gas fired power plants in California, Indiana, and Oregon. The comments addressed emission inventories, BACT, case-by-case MACT, compliance monitoring, cost-effectiveness analyses, and enforceability of permit limits.
- For a California refinery, evaluated technology to control NOx and CO emissions from CO Boilers to establish RACT/BARCT to comply with BAAQMD Rule 9-10. This required a review of BACT/RACT/LAER clearinghouses, working with regulatory agencies across the U.S., and reviewing federal and state regulations and State

Implementation Plans ("SIPs"). The lowest levels were required in a SCAQMD rule and in the Texas SIP.

- In support of several federal lawsuits filed under the Clean Air Act, prepared cost-effectiveness analyses for SCR and oxidation catalysts for simple cycle gas turbines and evaluated opacity data.
- Provided comprehensive environmental and regulatory services for an industrial laundry chain. Facilitated permit process with the SCAQMD. Developed test protocol for VOC emissions, conducted field tests, and used mass balance methods to estimate emissions. Reduced disposal costs for solvent-containing waste streams by identifying alternative disposal options. Performed health risk screening for air toxics emissions. Provided permitting support with SCAQMD. Renegotiated sewer surcharges with wastewater treatment plant. Identified new customers for shop-towel recycling services.
- Designed computer model to predict performance of biological air pollution control (biofilters) as part of a collaborative technology assessment project, co-funded by several major chemical manufacturers.
- Experience using a wide range of environmental software, including air dispersion models, air emission modeling software, database programs, and geographic information systems ("GIS").

Water Quality and Pollution Control

Experience in all phases of water quality and pollution control, including surface water and ground water quality and supply studies, evaluating water and wastewater treatment technologies, and identifying, evaluating and implementing pollution controls. Some typical projects include:

- Evaluated impacts of on-shore oil drilling activities on large-scale coastal erosion in Nigeria. This work is ongoing.
- For a homeowner's association, reviewed a California Coastal Commission staff report on the replacement of 12,000 linear feet of wooden bulkhead with PVC sheet pile armor. Researched and evaluated impact of proposed project on lagoon water quality, including sediment resuspension, leaching of additives and sealants, and long-term stability. Summarized results in letter report.
- For a 500-MW combined-cycle power plant, prepared a study to evaluate the impact of proposed groundwater pumping on local water quality and supply, including a nearby stream, springs, and a spring-fed waterfall. The study was docketed with the CEC and summarized in a journal article.
- For a 500-MW combined-cycle power plant, identified and evaluated methods to reduce water use and water quality impacts. These included the use of zero-liquid-discharge systems and alternative cooling technologies, including dry and parallel wet-dry cooling. Prepared cost analyses and evaluated impact of options on water resources. This work led to a settlement in which parallel wet dry cooling and a crystallizer were selected, replacing 100% groundwater pumping and wastewater disposal to evaporation ponds.

APPENDIX 4
Adopted Mitigation Measures

Introduction

The table that follows presents a compilation of Applicant Proposed Measures (APM) and Mitigation Measures (MM) adopted in the Record of Decision (ROD) for the McCoy Solar Energy Project (Project). The purpose of the table is to provide a single comprehensive list of the measures that will be implemented to avoid or reduce impacts of the McCoy Solar Energy Project on the human environment, the timing for their implementation, and related monitoring and reporting requirements.

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Air Resources						
APM AIR-1: To reduce construction-generated air quality impacts: 1. The main access roads through the facility to the unit substation areas shall be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction in the unit substation areas. 2. All unpaved construction roads and unpaved operation and maintenance site roads, as they are being constructed, shall be stabilized with a non-toxic soil stabilizer or soil weighting agent that can be determined to be both as efficient or more efficient for fugitive dust control as ARB-approved soil stabilizers, and shall not increase any other environmental impacts including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control. All other disturbed areas in the project and linear construction sites shall be watered as frequently as necessary during grading; and after active construction activities shall be stabilized with a nontoxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods. The frequency of watering can be reduced or eliminated during periods of precipitation. 3. No vehicle shall exceed 10 miles per hour on unpaved areas within the site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions. 4. Visible speed limit signs shall be posted at the site entrance(s). 5. All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways. 6. Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station. 7. All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways. 8. All construction vehicles shall enter the construction site through the treated entrance roadways. 9. All paved roads within the construction site shall be swept daily or as needed (less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris. 10. At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads en route from the construction site or construction staging areas shall be swept as needed (less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff resulting from the construction site activities is visible on the public paved roadways. 11. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered, or shall be treated with appropriate dust suppressant compounds. 12. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard. 13. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this measure shall remain in place until the soil is stabilized or permanently covered with vegetation. 14. The disruption of desert pavement shall be minimized to the extent feasible.	Prior to and during construction	BLM	Implement construction related air quality impact reduction procedures			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Air Resources (cont.)						
APM AIR-2: To reduce operation and maintenance-related air emissions: 1. The main access roads through the facility to the unit substation areas shall be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, and delivery areas for operations materials (chemicals, replacement parts, etc.) shall be paved or treated prior to taking initial deliveries. 2. All unpaved operation and maintenance site roads shall be stabilized with a non-toxic soil stabilizer or soil weighting agent that can be determined to be both as efficient or more efficient for fugitive dust control as ARB approved soil stabilizers, and shall not increase any other environmental impacts including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control. After construction activities, all disturbed areas in the project and linear sites shall be stabilized with a nontoxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods. 3. No vehicle shall exceed 10 miles per hour on unpaved areas within the site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions. 4. Visible speed limit signs shall be posted at the site entrance(s). 5. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least one foot of freeboard. 6. The disruption of desert pavement shall be minimized to the extent feasible.	Prior to and during operations and maintenance	BLM	Implement operation and maintenance-related air emissions reduction procedures			
MM AQ-1: The Applicant shall ensure that all areas where desert pavement has been disturbed during construction of the Project shall be applied with a non-toxic soil stabilizer prior to Project operation. The Applicant shall develop, for review and approval by the BLM, a plan that outlines the frequency of non-toxic soil stabilizer applications based on the specifications of the selected soil stabilizer.	After construction	BLM	Review and approve a soil stabilization application plan.			
Biological Resources – Vegetation						
APM BIO-2a. Biological Resources Mitigation and Monitoring Plan (BRMMP). The BRMMP will outline steps to implement the protection measures; document their implementation; and monitor their effectiveness. The BRMMP will identify the terms and conditions of any permits associated with the Project, including, but not limited to, the USFWS §7 Biological Opinion, CDFG §2081 Incidental Take Permit, and CDFG Streambed Alteration Agreement. The BRMMP will be submitted to the BLM and USFWS for approval prior to the start of ground disturbance.	Prior to construction	BLM, USFWS, CDFG	Develop and implement BRMMP			
APM BIO-2c. Worker Environmental Training. The Applicant will prepare and implement site-specific Worker Environmental Training to inform Project personnel about the biological constraints of the Project. The training will be included in the BRMMP and will be developed and presented by a qualified Project biologist prior to the commencement of construction activity. All Project personnel must attend the training. The training will include information regarding the sensitive biological resources, restrictions, protection measures, and individual responsibilities associated with the Project. Special emphasis will be placed on protection measures developed for the desert tortoise and the consequences of non-compliance. Written material will be provided to employees at orientation and participants will sign an attendance sheet documenting their participation.	Prior to construction	BLM	Develop and implement worker environmental training			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
APM BIO-2d. Construction-related Activities. Existing roads will be utilized wherever possible to avoid unnecessary impacts. New and existing roads that are planned for either construction or widening will not extend beyond the planned impact area and will minimize surface disturbance in native habitats, where practical. All vehicles passing or turning around will do so within the planned impact area or in previously disturbed areas. Along the linear facilities, the anticipated impact zones, including staging areas, equipment access, and disposal or temporary placement of spoils, will be delineated with stakes and/or flagging prior to construction to avoid natural resources, where possible. Outside the Project boundaries, personnel will utilize established roadways (paved or unpaved) for traveling to and from the Project Area, including for transmission line construction. No work in unfenced and uncleared habitat will occur except under the direct supervision of a BM. Cross-country vehicle and equipment use outside designated work areas will be prohibited. Best Management Practices will be employed to prevent loss of habitat due to erosion caused by Project-related impacts (i.e., grading or clearing for new roads). All detected erosion will be remedied within 2-days of discovery. Additionally, fueling of equipment will take place within existing paved roads and not within or adjacent to drainages or native desert habitats. Contractor equipment will be checked for leaks prior to operation and repaired as necessary. All vehicles and equipment will be in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The AB and BM will be informed of any hazardous spills within 24 hours. Hazardous spills will be immediately cleaned up and the contaminated soil will be properly disposed of at a licensed facility. Employees and contractors will look under vehicles and equipment for the presence of desert tortoises prior to movement. No equipment will be moved until the animal has left voluntarily or an AB removes it.	During construction	BLM	• Existing roads will be used when possible and road construction will not extended beyond the impact area • BMPs will be implemented to prevent loss of habitat • Fueling of equipment will take place on paved areas and vehicles will be checked for leaks • Hazardous spills will be reported to the AB and BM within 24 hours and immediately cleaned up • Workers will check for tortoises under vehicles			
APM BIO-2n. Weed Management Plan. The Applicant will prepare and implement a Weed Management Plan to prevent the spread of existing weeds and the introduction of new weeds to the Project Area.	Prior to construction	BLM	Develop and implement a Weed Management Plan			
APM BIO-2o. Water Application for Dust Control. The Applicant will ensure water is applied to the construction area, dirt roads, trenches, spoil piles, and other areas where ground disturbance has taken place to minimize dust emissions and topsoil erosion. A BM will patrol these areas to ensure water does not pool for long periods of time and potentially attract desert tortoises, common ravens, and other wildlife.	During construction	BLM	• Water will be applied for dust suppression • A BM will ensure that water does not pool for extended periods and attract wildlife			
APM BIO-2p. Cleanup and Restoration; Revegetation Plan. The Applicant will ensure that all unused material and equipment will be removed upon completion of construction activities or maintenance activities conducted outside the permanently fenced sites (this includes non-emergency and emergency repairs). Upon completion, all construction equipment and refuse, including, but not limited to wrapping material, cables, cords, wire, boxes, rope, broken equipment parts, twine, strapping, buckets, metal or plastic containers will be removed from the site and disposed of properly. Any unused or leftover hazardous products will be properly disposed of off-site. The Applicant will prepare and implement a Revegetation Plan to restore temporarily disturbed areas.	Prior to construction	BLM	Develop and implement Revegetation Plan			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
APM BIO-5. Protection Measures during Decommissioning/Closure. Project Decommissioning: The planned operating life of the Project is 30 years. In the event the Project permanently shuts down, and no other project will occupy the same industrial space, the Applicant will prepare and implement a Decommissioning Plan to ensure that the environment is protected during the decommissioning phase. Prior to decommissioning, a plan will be finalized and approved by the BLM. The Applicant shall retain an AB for the decommissioning phase of the Project to ensure that all environmental protection measures are implemented. The Applicant will submit the names and qualifications of all proposed biologists to the USFWS and BLM for review and approval at least 30 days prior to decommissioning activities and prior to initiation of any tortoise handling. Decommissioning activities will not begin until the ABs are approved by the aforementioned agencies.	Prior to construction	BLM	Develop and Implement a Decommissioning Plan			
MM VEG-1: Qualifications of Designated Biologist. The Applicant shall assign at least one Designated Biologist to the Project. The Applicant shall submit the resume of the proposed Designated Biologist(s), with at least three references and contact information, to the BLM AO for approval in consultation with CDFG and USFWS. The Designated Biologist must meet the following minimum qualifications: 1. Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field; 2. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; 3. Have at least one year of field experience with biological resources found in or near the Project area; 4. Meet the current USFWS Authorized Biologist qualifications criteria (www.fws.gov/ventura/speciesinfo/protocols_guidelines), demonstrate familiarity with protocols and guidelines for the desert tortoise, and be approved by the USFWS; 5. Possess a CESA Memorandum of Understanding pursuant to §2081(a) for desert tortoise. In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the BLM AO, in consultation with CDFG and USFWS, that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the mitigation measures.	Prior to construction	BLM, CDFG, USFWS	Approve qualifications of designated biologist.			
MM VEG-2: Duties of the Designated Biologist. The Applicant shall ensure that the Designated Biologist performs the activities described below during any site mobilization activities, construction-related ground disturbance, grading, boring or trenching activities. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the contact for the Applicant and the BLM AO. The Designated Biologist Duties shall include the following: 1. Advise the Applicant's construction and operation managers on the implementation of the biological resources mitigation measures; 2. Consult on the preparation of the Biological Resources Mitigation, Implementation, and Monitoring Plan (BRMIMP) to be submitted by the Applicant; 3. Be available to supervise, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special-status species or their habitat; 4. Clearly mark sensitive biological resource areas and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions; 5. Inspect active construction areas where animals may have become trapped prior to construction commencing each day. At the end of the day, inspect for the installation of structures that prevent entrapment or allow	During ground disturbing activities	Applicant	Ensure that the designated biologist performs all required activities during any site disturbing activities. Ensure that any non-conformance is reported to the BLM AO.			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
escape during periods of construction inactivity. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way; 6. Notify the Applicant and the BLM AO of any non-compliance with any biological resources mitigation measure; 7. Respond directly to inquiries of the BLM AO regarding biological resource issues; 8. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Report and the Annual Compliance Report; 9. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and USFWS guidelines on desert tortoise surveys and handling procedures[1]; and 10. Maintain the ability to be in regular, direct communication with representatives of CDFG, USFWS, and the BLM AO, including notifying these agencies of dead or injured listed species and reporting special-status species observations to the California Natural Diversity Data Base.						
MM VEG-3: Identification of Biological Monitors. The Designated Biologist shall submit the resume, at least three references, and contact information of the proposed Biological Monitors to the BLM AO. The resume shall demonstrate, to the satisfaction of the BLM AO, the appropriate education and experience to accomplish the assigned biological resource tasks. The Biological Monitor is the equivalent of the USFWS-approved biologist (also "Service-approved biologist"). Biological Monitor(s) training by the Designated Biologist shall include familiarity with the mitigation measures, BRMIMP, WEAP, and USFWS guidelines on desert tortoise surveys and handling procedures.	Prior to construction	BLM	Review and approve the proposed Biological Monitors.			
MM VEG-4: Duties of Biological Monitors. The Biological Monitors shall assist the Designated Biologist in conducting surveys and in monitoring of site mobilization activities, construction-related ground disturbance, grading, boring or trenching. The Designated Biologist shall remain the contact for the Applicant and the BLM AO.	During site disturbing activities	Applicant, BLM	Ensure the Biological Monitors assist the Designated Biologist.			
MM VEG-5: Authority of the Designated Biologist And Biological Monitors. The Applicant's construction/operation manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resources mitigation measures. The Designated Biologist shall have the authority to immediately stop any activity that is not in compliance with these conditions and/or order any reasonable measure to avoid take of an individual of a listed species. If required by the Designated Biologist and Biological Monitor(s) the Applicant's construction/operation manager shall halt all site mobilization, ground disturbance, grading, boring, trenching and operation activities in areas specified by the Designated Biologist. The Designated Biologist shall: 1. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued; 2. Inform the Applicant and the construction/operation manager when to resume activities; and 3. Notify the BLM AO and if there is a halt of any activities and advise them of any corrective actions that have been taken or would be instituted as a result of the work stoppage. If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.	Prior to and during construction	Applicant	Ensure conformance with the biological resources mitigation measures and advice of the Designated Biologist and Biological Monitors.			

[1] Available at: http://www.fws.gov/ventura/species_information/protocols_guidelines/

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
MM VEG-6: Worker Environmental Awareness Program. The Applicant shall develop and implement a Project-specific Worker Environmental Awareness Program (WEAP) and shall secure approval for the WEAP from the AO. The WEAP shall be administered to all on-site personnel including surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors, and delivery personnel. The WEAP shall be implemented during site preconstruction, construction, operation, and closure. The WEAP shall: 1. Be developed by or in consultation with the Designated Biologist and consist of an on-site or training center presentation in which supporting written material and electronic media, including photographs of protected species, is made available to all participants; 2. Discuss the locations and types of sensitive biological resources on the Project site and adjacent areas, and explain the reasons for protecting these resources; provide information to participants that no snakes, reptiles, or other wildlife shall be harmed; 3. Place special emphasis on desert tortoise, including information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures; 4. Include a discussion of fire prevention measures to be implemented by workers during Project activities; request workers dispose of cigarettes and cigars appropriately and not leave them on the ground or buried; 5. Describe the temporary and permanent habitat protection measures to be implemented at the Project site; 6. Identify whom to contact if there are further comments and questions about the material discussed in the program; and 7. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines. The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist and BLM AO.	Prior to construction	BLM	Approve the WEAP.			
MM VEG-7: Biological Resources Mitigation Implementation and Monitoring Plan. The Applicant shall develop a BRMIMP, and shall submit two copies of the proposed BRMIMP to the BLM AO for review and approval. The Applicant shall implement the measures identified in the approved BRMIMP. The BRMIMP shall incorporate avoidance and minimization measures described in final versions of the Invasive Weed Management Plan (Mitigation Measure VEG-9), the Special-Status Plant Species Impact Avoidance and Mitigation Plan (Mitigation Measure VEG-10) and Decommissioning and Reclamation Plan (Mitigation Measure VEG-12), the Desert Tortoise Relocation Translocation Plan (Mitigation Measure WIL-2), the Raven Management Plan (Mitigation Measure WIL-5), the Burrowing Owl Mitigation and Monitoring Plan (Mitigation Measure WIL-9), and all other biological mitigation and/or monitoring plans associated with the Project. The BRMIMP shall be prepared in consultation with the Designated Biologist and shall include accurate and up-to-date maps depicting the location of sensitive biological resources that require temporary or permanent protection during construction and operation. The BRMIMP shall include complete and detailed descriptions of the following: 1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the Applicant;	Prior to construction	BLM	Review and approve the proposed BRMIMP.			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
2. All biological resources mitigation measures identified as necessary to avoid or mitigate impacts; 3. All biological resource mitigation, monitoring and compliance measures required in federal agency terms and conditions, such as those provided in the USFWS Biological Opinion; 4. All sensitive biological resources to be impacted, avoided, or mitigated by Project construction, operation, and closure; 5. All required mitigation measures for each sensitive biological resource; 6. All measures that shall be taken to avoid or mitigate temporary disturbances from construction activities; 7. Duration for each type of monitoring and a description of monitoring methodologies and frequency; 8. Performance standards to be used to help decide if/when proposed mitigation is or is not successful; 9. All performance standards and remedial measures to be implemented if performance standards are not met; 10. Biological resources-related facility closure measures including a description of funding mechanism(s); 11. A process for proposing plan modifications to the BLM AO and appropriate agencies for review and approval; and 12. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the Project site, or during Project surveys, to the CNDDB per CDFG requirements.						
MM VEG-8: The Applicant shall undertake the following measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to biological resources: 1. ***Limit Area of Disturbance.*** The boundaries of all areas to be disturbed (including staging areas, access roads, and sites for temporary placement of spoils) shall be delineated with stakes and flagging prior to construction activities in consultation with the Designated Biologist. Spoils and topsoil shall be stockpiled in disturbed areas lacking native vegetation and which do not provide habitat for special-status species. Parking areas, staging and disposal site locations shall similarly be located in areas without native vegetation or special-status species habitat. All disturbances, Project vehicles and equipment shall be confined to the flagged areas. 2. ***Minimize Road Impacts.*** New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around would do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction. 3. ***Minimize Traffic Impacts.*** Vehicular traffic during Project construction and operation shall be confined to existing routes of travel to and from the Project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit shall not exceed 25 miles per hour within the Project area, on maintenance roads for linear facilities, or on access roads to the Project site, except on paved access roads where the speed limit shall not exceed 45 miles per hour. 4. ***Monitor During Construction.*** In areas that have not been fenced with desert tortoise exclusion fencing and cleared, the Designated Biologist shall be present at the construction site during all Project activities that have potential to disturb soil, vegetation, and wildlife. The Designated Biologist or Biological Monitor shall walk immediately ahead of equipment during brushing and grading activities.	Prior to and during construction	BLM, CDFG, USFWS	Ensure compliance with MM VEG-8			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
5. ***Minimize Impacts of Transmission/Pipeline Alignments, Roads, Staging Areas.*** Staging areas for construction on the plant site shall be within the area that has been fenced with desert tortoise exclusion fencing and cleared. For construction activities outside of the plant site (transmission line, pipeline alignments) access roads, pulling sites, and storage and parking areas shall be designed, installed, and maintained with the goal of minimizing impacts to native plant communities and sensitive biological resources. Transmission lines and all electrical components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) Suggested Practices for Avian Protection on Power Lines (APLIC, 2006) and Mitigating Bird Collisions with Power Lines (APLIC, 1994) to reduce the likelihood of large bird electrocutions and collisions. 6. ***Avoid Use of Toxic Substances.*** Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants. 7. ***Minimize Lighting Impacts.*** Facility lighting shall be designed, installed, and maintained to prevent side casting of light towards wildlife habitat. 8. ***Minimize Noise Impacts.*** Loud construction activities (e.g., unsilenced pile driving) shall be avoided from February 15 to April 15 when it would result in noise levels over 65 dBA in nesting habitat (excluding noise from passing vehicles). Loud construction activities may be permitted from February 15 to April 15 only if: a. the Designated Biologist provides documentation (e.g., nesting bird data collected using methods described in Mitigation Measure WIL-7 and maps depicting location of the nest survey area in relation to noisy construction) to the BLM AO indicating that no active nests would be subject to 65 dBA noise, or b. the Designated Biologist or Biological Monitor monitors active nests within the range of construction-related noise exceeding 65 dBA. The monitoring shall be conducted in accordance with Nesting Bird Monitoring and Management Plan approved by the BLM AO. The Plan shall include adaptive management measures to prevent disturbance to nesting birds from construction related noise. Triggers for adaptive management shall be evidence of Project-related disturbance to nesting birds such as: agitation behavior (displacement, avoidance, and defense); increased vigilance behavior at nest sites; changes in foraging and feeding behavior, or nest site abandonment. The Bird Monitoring and Management Plan shall include a description of adaptive management actions, which shall include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of disturbance to the nesting bird. 9. ***Avoid Vehicle Impacts to Desert Tortoise.*** Parking and storage shall occur within the area enclosed by desert tortoise exclusion fencing to the extent feasible. No vehicles or construction equipment parked outside the fenced area shall be moved prior to an inspection of the ground beneath the vehicle for the presence of desert tortoise. If a desert tortoise is observed, it would be left to move on its own. If it does not move within 15 minutes, a Designated Biologist or Biological Monitor under the Designated Biologist's direct supervision may remove and relocate the animal to a safe location if temperatures are within the range described in the USFWS' 2009 Desert Tortoise Field Manual.[2]						

[2] Available at: http://www.fws.gov/ventura/species_information/protocols_guidelines/

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
10. ***Avoid Wildlife Pitfalls*:** a. Backfill Trenches. At the end of each work day, the Designated Biologist shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) outside the area fenced with desert tortoise exclusion fencing have been backfilled. If backfilling is not feasible, all trenches, bores, and other excavations shall be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, or covered completely to prevent wildlife access, or fully enclosed with desert tortoise-exclusion fencing. All trenches, bores, and other excavations outside the areas permanently fenced with desert tortoise exclusion fencing shall be inspected periodically throughout the day, at the end of each workday and at the beginning of each day by the Designated Biologist or a Biological Monitor. Should a tortoise or other wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the individual as described in the Desert Tortoise Relocation/Translocation Plan. Any wildlife encountered during the course of construction shall be allowed to leave the construction area unharmed. b. Avoid Entrapment of Desert Tortoise. Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches, stored less than 8 inches aboveground and within desert tortoise habitat (i.e., outside the permanently fenced area) for one or more nights, shall be inspected for tortoises before the material is moved, buried or capped. As an alternative, all such structures may be capped before being stored outside the fenced area, or placed on pipe racks. These materials would not need to be inspected or capped if they are stored within the permanently fenced area after the clearance surveys have been completed. 11. ***Minimize Standing Water.*** Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards in an effort to prevent the formation of puddles, which could attract desert tortoises and common ravens to construction sites. A Biological Monitor shall patrol these areas to ensure water does not puddle and shall take appropriate action (e.g., coordinating with the contractor to reduce watering frequency) to reduce water application where necessary. 12. ***Dispose of Road-killed Animals.*** Road-killed animals or other carcasses detected on roads near the Project area shall be immediately reported to the Designated Biologist and picked up within 24 hours. The contractor and Designated Biologist shall be responsible for securing all required federal or State permits to handle and dispose of collected animals, including handling and disposal for scientific use. For special-status species roadkill, the Biological Monitor shall contact CDFG, and USFWS within 1 working day of receipt of the carcass for guidance on disposal or storage of the carcass. The Biological Monitor shall maintain and report special-status species records as described in Mitigation Measure WIL-3. 13. ***Minimize Spills of Hazardous Materials.*** All vehicles and equipment shall be maintained in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The Designated Biologist shall be informed of any hazardous spills immediately as directed in the Project Hazardous Materials Plan. Hazardous spills shall be immediately cleaned up and the contaminated soil properly disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated area. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills. 14. ***Worker Guidelines.*** During construction all trash and food-related waste shall be placed in self-closing containers and removed daily from the site. Workers shall not feed wildlife or bring pets to the Project site. Except for law enforcement personnel, no workers or visitors to the site shall bring firearms or weapons.						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
Vehicular traffic shall be confined to existing routes of travel to and from the Project site, and cross country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit when traveling on dirt access routes within desert tortoise habitat shall not exceed 25 miles per hour. 15. ***Implement Erosion Control Measures.*** Standard erosion control measures shall be implemented for all phases of construction and operation where sediment run-off from exposed slopes threatens to enter "Waters of the State". Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into the stream. All disturbed soils and roads within the Project site shall be stabilized to reduce erosion potential, both during and following construction. Areas of disturbed soils (access and staging areas) with slopes toward a drainage shall be stabilized to reduce erosion potential. 16. ***Monitor Ground Disturbing Activities Prior to Pre-Construction Site Mobilization.*** If pre-construction site mobilization requires ground-disturbing activities such as for geotechnical borings or hazardous waste evaluations, a Designated Biologist or Biological Monitor shall be present to monitor any actions that could disturb soil, vegetation, or wildlife. 17. ***Revegetation of Temporarily Disturbed Areas.*** The Applicant shall prepare and implement a Revegetation Plan to restore all areas subject to temporary disturbance to pre-Project grade and conditions. Temporarily disturbed areas within the Project area include, but are not limited to: all proposed locations for linear facilities, temporary access roads, berms, areas surrounding the drainage diffusers, construction work temporary lay-down areas not converted to part of the solar field, and construction equipment staging areas. The Revegetation Plan shall include a description of topsoil salvage and seeding techniques and a monitoring and reporting plan, and the following performance standards by the end of monitoring year 2: a. at least 80 percent of the species observed within the temporarily disturbed areas shall be native species that naturally occur in desert scrub habitats; and b. relative cover and density of plant species within the temporarily disturbed areas shall equal at least 60 percent.						
MM VEG-9: Weed Management Plan. Prior to beginning construction on the Project, the Applicant will prepare, circulate to the BLM for comment and approval, and then implement an Invasive Weed Management Plan (Appendix H) that meets the approval of BLM's AO to prevent the spread of existing weeds and the introduction of new weeds to the Project Area. The objective of the Weed Management Plan shall be to prevent the introduction of any new weeds and the spread of existing weeds as a result of Project construction, operation, and decommissioning. The Weed Management Plan shall include at a minimum the following information: specific weed management objectives and measures for each target non-native weed species; baseline conditions; a map of the Weed Management Areas; weed risk assessment and measures to prevent the introduction and spread of weeds; monitoring and surveying methods; and reporting requirements. The Plan shall be consistent with BLM's *Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States* (BLM, 2007) and the National Invasive Species Management Plan (National Invasive Species Council, 2008), and will be implemented by the Applicant to reduce the potential for the introduction of invasive species during construction, operation and maintenance, and decommissioning of the Project. The draft plan will be reviewed and approved by the BLM. The following measures are required in the Plan and will be implemented by the Applicant to monitor and control invasive species:	Prior to construction	BLM	Review and approve the Weed Management Plan and ensure implementation of the Invasive Weed Management Plan (Appendix H).			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
1. ***Preventative Measures During Construction.*** Equipment Cleaning: To prevent the spread of weeds into new habitats, and prior to entering the Project work areas, construction equipment will be cleaned of dirt and mud that could contain weed seeds, roots, or rhizomes. Equipment will be inspected to ensure they are free of any dirt or mud that could contain weed seeds and the tracks, feet, tires, and undercarriage will be carefully washed, with special attention being paid to axles, frame, cross members, motor mounts, underneath steps, running boards, and front bumper/brush guard assemblies. Other construction vehicles (e.g. pick-up trucks) that will be frequently entering and exiting the site will be inspected and washed on an as-needed basis. a. *Vehicle Washing*: All vehicles will be washed off-site when possible. Should off-site washing prove infeasible, an on-site cleaning station will be set up to clean equipment before it enters the work area. Either high-pressure water or air will be used to clean equipment and the cleaning site will be situated away from any sensitive biological resources. If possible, water used to wash vehicles and equipment will be collected and re-used. Ingress and egress will be limited to defined routes. b. *Site Soil Management*: Soil management will consist of limiting ground disturbance to the minimum necessary for construction activities and using dust suppressants to minimize the spread of seeds. Disturbed vegetation and topsoil will be re-deposited at or near the area from which they are removed to eliminate the transport of soil-borne invasive weed seeds, roots, or rhizomes. During reclamation of the temporarily cleared areas, the contractor will return topsoil and vegetative material to the areas from which they were stripped. BLM-approved dust suppressants (e.g. water and/or palliative) will be minimized on the site as much as possible, but will use during construction to minimize the spread of airborne weed seeds, especially during very windy days. As appropriate, temporary drift fences may be installed to help control sand movement during construction. c. *Weed-free Products*: Any use of hay or straw bales on the Project site will be limited to certified weed-free material. Other products such as gravel, mulch, and soil may also carry weeds and these products, too, will be certified weed-free. If needed, mulch will be made from the local, on-site native vegetation cleared from the Project area. d. *Personnel Training*: Weed management will be part of mandatory site training for all construction personnel and will be included in initial Worker Environmental Awareness Program training briefings. Training will include weed identification and the threat of impacts including impacts to local agriculture, vegetation communities, wildlife, and creating fire potential. Training will also cover the importance of preventing the spread of weeds. e. *Mechanical Weed Removal*: The Applicant primarily will use mechanical weed removal techniques with the use of herbicides restricted to BLM-approved usage in areas that are not accessible through mechanical means or where mechanical weed removal is impractical. f. *Herbicides*: The Applicant will use only BLM-approved pre- and/or post-emergent herbicides, as applicable. Pre-emergent herbicides will be applied to the soil before the weed seed germinates and is usually incorporated into the soil with irrigation or rainfall. Post-emergent herbicides will be applied directly to plants. Herbicides will be investigated in detail, made a part of the Invasive Weed Management Plan, and approved by BLM before use. g. *Pesticides*: Pesticide use will be limited to non-persistent, immobile pesticides applied only in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications. Any pesticide applications, if used, will be conducted within the framework of BLM and DOI policies, and will entail only the use of USEPA registered pesticides.						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
2. ***Containment and Control Measures.*** When Project monitoring (see below) indicates that invasive species are spreading, invasive species will be removed using mechanical and chemical methods. The Applicant will use mechanical weed removal methods as the preferred method, but herbicides may be used when conditions (such as wind, proximity of native vegetation) are such that the effect on native species is expected to be minimal. During suppression or eradication activities, care will be taken to have the least affect on native plant species. Herbicides used will be limited to those approved by the BLM. Herbicides will be applied before the invasive species flower and set seed. If monitoring indicates the spread of athel (*Tamarix* spp.), a woody invasive species, then athel will be controlled by cutting the trees and applying GarlonTM Ultra Herbicide to the stump immediately after cutting. GarlonTM is approved for use on athel by the BLM. All cut material generated during athel clearance will be removed from the site by truck. This material will be covered with a tarp or other material that will keep athel cuttings or seed from being spread by truck movement. The Applicant and its contractors will follow the BLM's Herbicide Use Standard Operating Procedures provided in Appendix B of the Record of Decision for the Final Vegetation Treatments Using Herbicides Programmatic Environmental Impact Statement (BLM, 2007). Personnel responsible for weed control will be trained in the proper and safe use of all equipment and chemicals used for weed control. 3. ***Monitoring.*** Baseline weed conditions will be assessed during the pre-construction phase of the Project, during pre-construction surveys and staking and flagging of construction areas. A stratified random sampling technique will be used to identify and count the extent of weeds on the site. Monitoring will take place each year during construction, and annually for three years following the completion of construction. The purpose of annual monitoring will be to determine if weed populations identified during baseline surveys have increased in density or are spreading as a result of the Project. Control methods will be implemented when measurable weed increases, as well as visually verified increases, are detected during monitoring. This will include small patches of unusually high density weeds (e.g., concentrations in swales) that are growing as a result of Project activities. During construction, daily monitoring records will be kept by biological monitors that will include information relevant to invasive weeds. During Project operations and maintenance, noxious and invasive weed list and provide monitoring and management appropriate to any new species in coordination with the BLM. After the three years of operations monitoring is complete, general management and monitoring of the Project area will be conducted by designated site personnel each year during both the germinating and early growing season (November through April) to eliminate new weed individuals prior to seed set. Throughout construction and long-term monitoring, personnel will be trained to identify weedy and native species and work with a trained vegetation monitor to determine where elimination is necessary. 4. ***Reporting.*** Results of monitoring and management efforts will be included in annual reports and a final monitoring report completed at the end of three years of post-construction monitoring. Copies of these reports will be kept on file at the site. Copies of each annual report as well as the final monitoring report will be sent to the BLM for review and comment. BLM will use the results of these reports to determine if any additional monitoring or control measures are necessary. 5. ***Success Criteria.*** Weed control will be ongoing on the Project site for the life of the Project, but plan success will be determined by BLM after the three years of operations monitoring through the reporting and review process. Success criteria will be defined as having no more than ten percent increase in a weed species or in overall weed cover in any part of the Project.						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
MM VEG-10: Special-Status Plant Species Impact Avoidance and Minimization, and Compensation. For this four-part measure, the Applicant shall: A) prepare and implement a Special-Status Plant Species Impact Avoidance and Mitigation Plan that meets the approval of BLM AO; B) ensure adequate special-status plant surveys and reporting; C) avoid, minimize and mitigate for impacts to special-status plants; and D) fund or support a compensatory mitigation program for special-status plants through land acquisition, restoration/enhancement, or a combination of acquisition and restoration/ enhancement. The Applicant shall implement measures **VEG-1** through **VEG-8**, and **VEG-10** to avoid, minimize, and compensate for impacts to special-status plant species. In this discussion the term "Project Disturbance Area" encompasses all areas to be temporarily and permanently disturbed by the Project, including the plant site, linear facilities, and areas disturbed by temporary access roads, fence installation, construction work lay-down and staging areas, parking, storage, or by any other activities resulting in disturbance to soil or vegetation. **A) Special-Status Plant Impact Avoidance and Minimization Measures** This measure contains the Best Management Practices and other measures designed to avoid accidental impacts to plants occurring outside of the Project Disturbance Area and within 100 feet of the Project Disturbance Area during construction, operation, and decommissioning. ***Special-Status Plant Impact Avoidance and Minimization Measures.*** The Applicant shall incorporate all measures for protecting special-status plants in close proximity to the site into the BRMIMP (Mitigation Measure VEG-7). These measures shall include the following elements: a) *Site Design Modifications*: Incorporate site design modifications to minimize impacts to special-status plants along the Project linears: limiting the width of the work area; adjusting the location of staging areas, lay downs, spur roads and poles or towers; driving and crushing vegetation as an alternative to blading temporary roads to preserve the seed bank, and minor adjustments to the alignment of the roads and pipelines within the constraints of the ROW. If engineered diversion channels are included, their discharge points shall be designed to maintain the natural surface drainage patterns between the engineered channel and the outlet of the natural washes that flow toward the south and east, downstream of the Project These modifications shall be clearly depicted on the grading and construction plans, and on report-sized maps in the BRMIMP. b) *Establish Environmentally Sensitive Areas (ESAs)*. Prior to the start of any ground- or vegetation-disturbing activities, a qualified Project biologist shall establish ESAs to protect avoided special-status plants that occur outside of the Project Disturbance Areas and within 100 feet of Project Disturbance Areas. This includes plant occurrences identified during the late season 2011 surveys. The locations of ESAs shall be clearly depicted on construction drawings, which shall also include all avoidance and minimization measures on the margins of the construction plans. The boundaries of the ESAs shall be placed a minimum of 20 feet from the uphill side of the occurrence and 10 feet from the downhill side. Where this is not possible due to construction constraints, other protection measures, such as silt-fencing and sediment controls, may be employed to protect the occurrences. Equipment and vehicle maintenance areas, and wash areas, shall be located 100 feet from the uphill side of any ESAs. ESAs shall be clearly delineated in the field with temporary construction fencing and signs prohibiting movement of the fencing or sediment controls under penalty of work stoppages and additional compensatory mitigation. ESAs shall also be clearly identified (with signage or by mapping on site plans) to ensure that avoided plants are not inadvertently harmed during construction, operation, or closure.	Prior to, during, and after construction	BLM	Review and approve a Special-Status Plant Species Impact Avoidance and Mitigation Plan.			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
c) *Special-Status Plant Worker Environmental Awareness Program (WEAP).* The WEAP (Mitigation Measure VEG-6) shall include training components specific to protection of special-status plants that may occur in the Study Area. d) *Herbicide and Soil Stabilizer Drift Control Measures.* Special-status plant occurrences within 100 feet of the Project Disturbance Area shall be protected from herbicide and soil stabilizer drift. The Invasive Weed Management Plan (Mitigation Measure VEG-9) shall include measures to avoid chemical drift or residual toxicity to special-status plants consistent with guidelines such as those provided by the Nature Conservancy's The Global Invasive Species Team (Hillmer and Liedtke, 2003), the USEPA, and the Pesticide Action Network Database.[3] e) *Erosion and Sediment Control Measures.* Erosion and sediment control measures shall not inadvertently impact special-status plants (e.g., by using invasive or non-native plants in seed mixes, introducing pest plants through contaminated seed or straw, etc.). These measures shall be incorporated in any required Drainage, Erosion, and Sedimentation Control Plans. f) *Avoid Special-Status Plant Occurrences.* Areas for spoils, equipment, vehicles, and materials storage areas; parking; equipment and vehicle maintenance areas, and wash areas shall be placed at least 100 feet from any ESAs. g) *Monitoring and Reporting Requirements.* The qualified botanist shall conduct weekly monitoring of the ESAs that protect special-status plant occurrences during construction and decommissioning activities. **B) Ensure Adequate Special-Status Plant Surveys And Reporting (Applies to Alternative 3 Routes)** At least 30 days prior to construction, the Applicant shall ensure that botanical surveys have been fully performed and reported on the Alternative 3 Routes, as described below: 1. ***Survey Timing.*** Surveys shall be timed to detect: a) summer annuals triggered to germinate by the warm, tropical summer storms (which may occur any time between June and October). Fall-blooming perennials that respond to the cooler, later season storms (typically beginning in September or October) shall only be required if blooms and seeds are necessary for identification or the species are summer-deciduous and require leaves for identification. The surveys shall not be timed to coincide with the statistical peak bloom period of the target species but shall instead be based on plant phenology and the timing of a significant storm event (i.e., a 10mm or greater rain or multiple storm events of sufficient volume to trigger germination, as measured at or within 1 mile of the Project site). Surveys shall occur at the appropriate time to capture the characteristics necessary to identify the taxon. 2. ***Surveyor Qualifications and Training.*** Surveys shall be conducted by a qualified botanist knowledgeable in the complex biology of the local flora, and consistent with CDFG protocols (CDFG, 2009). Each surveyor shall be equipped with a GPS unit and record a complete tracklog; these data shall be compiled and submitted along with the Summer-Fall Survey Botanical Report (described below). Prior to the start of surveys, all crew members shall, at a minimum, visit reference sites (where available) and/or review herbarium specimens of all BLM Sensitive plants, CNPS List 1B or 2 (Nature Serve rank S1 and S2) or proposed List 1B or 2 taxa, and any new reported or documented taxa, to obtain a search image. Because the potential for range extensions is unknown, the list of potentially occurring special-status plants shall include all special-status taxa known to occur within the Sonoran Desert region and						

[3] Available at: http://www.pesticideinfo.org

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
the eastern portion of the Mojave in California. The list shall also include taxa with bloom seasons that begin in fall and extend into the early spring as many of these are reported to be easier to detect in fall, following the start of the fall rains. 3. ***Survey Coverage.*** The survey coverage or intensity shall be in accordance with the most recent BLM Survey Protocols, which specify that intuitive controlled surveys shall only be accomplished by botanists familiar with the habitats and species that may reasonably be expected to occur in the project area (BLM, 2009). 4. ***Documenting Occurrences.*** If a special-status plant is detected, the full extent of the population on-site shall be recorded using GPS in accordance with BLM survey protocols. Additionally, the extent of the population within one mile of Project boundaries shall be assessed at least qualitatively to facilitate an accurate estimation of the proportion of the population affected by the Project. For populations that are very dense or very large, the population size may be estimated by simple sampling techniques. When populations are very extensive or locally abundant, the surveyor must provide some basis for this assertion and roughly map the extent on a topographic map. All but the smallest populations (e.g., a population occupying less than 100 square feet) shall be recorded as area polygons; the smallest populations may be recorded as point features. All GPS-recorded occurrences shall include: the number of plants, phenology, observed threats (e.g., OHV or invasive exotics), and habitat or community type. The map of occurrences submitted with the final botanical report shall be prepared to ensure consistency with definition of an occurrence by CNDDB, i.e., occurrences found within 0.25 miles of another occurrence of the same taxon, and not separated by significant habitat discontinuities, shall be combined into a single 'occurrence'. The Applicant shall also submit the raw GPS shape files and metadata, and completed CNDDB forms for each 'occurrence' (as defined by CNDDB). 5. ***Reporting.*** Raw GPS data, metadata, and CNDDB field forms shall be provided to the BLM AO within two weeks of the completion of each survey. If surveys are split into two or more periods (e.g., a late summer survey and a fall survey), then a summary letter shall be submitted following each survey period. 6. The Final Summer-Fall Botanical Survey Report shall be prepared consistent with CDFG guidelines (CDFG, 2009), and BLM 2009 guidelines and shall include all of the following components: a) the BLM designation, NatureServe Global and State Rank of each species or taxon found (or proposed rank, or CNPS List); b) the number or percent of the occurrence that will be directly affected, and indirectly affected by changes in drainage patterns or altered geomorphic processes; c) the habitat or plant community that supports the occurrence and the total acres of that habitat or community type that occurs in the Project Disturbance Area; d) an indication of whether the occurrence has any local or regional significance (e.g., if it exhibits any unusual morphology, occurs at the periphery of its range in California, represents a significant range extension or disjunct occurrence, or occurs in an atypical habitat or substrate); e) a completed CNDDB field form for every occurrence (occurrences of the same species within one-quarter mile or less of each other combined as one occurrence, consistent with CNDDB methodology), and f) two maps: one that depicts the raw GPS data (as collected in the field) on a topographic base map with Project features; and a second map that follows the CNDDB protocol for occurrence mapping.						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
C) Avoidance Requirements for Special-Status Plants The Applicant shall avoid impacts to special-status plant populations whenever possible, as described below. 1. Mitigation for CNDDB Rank 1 Plants – Avoidance on Linear Corridors Required: If species with a CNDDB rank of 1 is detected within the Project Disturbance Area, the Applicant shall prepare and implement a Special-Status Plant Mitigation Plan (Plan) that describes measures to avoid and minimize impacts to plant populations on the Project linear corridors and construction laydown areas, unless such avoidance would create greater environmental impacts in other resource areas (e.g. Cultural Resource Sites) or other restrictions (e.g., FAA or other restrictions for placement of transmission poles). The Applicant shall provide compensatory mitigation as described below in Mitigation Measure VEG-10.D for impacts to Rank 1 plants that cannot be avoided. 2. Preservation of the Germplasm of CNDDB Rank 1 Plants. For all significant impacts to CNDDB Rank 1 Plants, regardless of whether compensatory mitigation is required, mitigation shall include seed collection from the affected special-status plants on-site prior to construction to conserve the germplasm and provide a seed source for restoration efforts. The seed shall be collected under the supervision or guidance of a reputable seed storage facility such as the Rancho Santa Ana Botanical Garden Seed Conservation Program, San Diego Natural History Museum, or the Missouri Botanical Garden. The costs associated with the long-term storage of the seed shall be the responsibility of the Applicant. Any efforts to propagate and reintroduce special-status plants from seeds in the wild shall be carried out under the direct supervision of specialists such as those listed above and as part of a Habitat Restoration/Enhancement Plan approved by the BLM AO. 3. Avoidance and protection of desert dry wash woodland riparian habitat. A 50-foot buffer shall be fenced around the approximately 4.2-acre area identified as desert dry wash woodland (riparian) within solar plant site Unit 2 as shown in PA/FEIS Figure 3.3-1. Fencing shall consist of 3- or 4-strand smooth wire fence that shall be erected concurrent with the installation of solar plant site perimeter fencing prior to construction within Unit 2. The desert dry wash woodland fencing shall be maintained and the enclosed area monitored for avian use for the duration of the ROW grant. **D) Off-Site Compensatory Mitigation for Special-Status Plants** This section describes performance standards for mitigation for a range of options for compensatory mitigation. Where compensatory mitigation is required under the terms of Mitigation Measure VEG-10.C, above, the Applicant shall mitigate Project impacts to special-status plant occurrences with compensatory mitigation. Compensatory mitigation shall consist of acquisition of habitat supporting the target species, or restoration/enhancement of populations of the target species, and shall meet the performance standards for mitigation described below. Compensatory mitigation shall be at a ratio of 3:1 for Rank 1 plants, with 3 acres of habitat acquired or restored/enhanced for every acre of habitat occupied by the special-status plant that will be disturbed by the Project Disturbance Area (for example, if the area occupied by the special-status plant collectively measured is 0.25 acre, the compensatory mitigation will be 0.75 acre). The mitigation ratio for Rank 2 plants shall be 2:1. So, for the example above, the mitigation ratio would be 0.5 acre for the Rank 2 plants. The Applicant shall provide funding for the acquisition and/or restoration/ enhancement, initial improvement, and long-term maintenance and management of the acquired or restored lands. The actual costs to comply with this condition will vary depending on the Project Disturbance Area, the actual costs of acquiring compensation habitat, the actual costs of initially improving the habitat, the actual costs of long-term management as determined by a Property Analysis Record (PAR) report, and other transactional costs related to the use of compensatory mitigation.						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
The Applicant shall comply with other related requirements of this measure, as follows: **I.** ***Compensatory Mitigation by Acquisition*:** The requirements for the acquisition initial protection and habitat improvement, and long-term maintenance and management of special-status plant compensation lands include all of the following: 1. *Selection Criteria for Acquisition Lands.* The compensation lands selected for acquisition may include any of the following three categories: a. Occupied Habitat, No Habitat Threats: The compensation lands selected for acquisition shall be occupied by the target plant population and shall be characterized by site integrity and habitat quality that are required to support the target species, and shall be of equal or better habitat quality than that of the affected occurrence. The occurrence of the target special-status plant on the proposed acquisition lands should be viable, stable or increasing (in size and reproduction). b. Occupied Habitat, Habitat Threats. Occupied compensation lands characterized by habitat threats may also be acquired as long as the population could be reasonably expected to recover with habitat restoration efforts (e.g., OHV or grazing exclusion, or removal of invasive non-native plants) and is accompanied by a Habitat Enhancement/Restoration Plan as described in Mitigation Measure VEG-10.D.II, below. c. Unoccupied but Adjacent. The Applicant may also acquire habitat for which occupancy by the target species has not been documented, if the proposed acquisition lands are adjacent to occupied habitat. The Applicant shall provide evidence that acquisitions of such unoccupied lands would improve the defensibility and long-term sustainability of the occupied habitat by providing a protective buffer around the occurrence and by enhancing connectivity with undisturbed habitat. This acquisition may include habitat restoration efforts where appropriate, particularly when these restoration efforts will benefit adjacent habitat that is occupied by the target species. 2. *Review and Approval of Compensation Lands Prior to Acquisition.* The Applicant shall submit a formal acquisition proposal to the BLM AO describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for special-status plants in relation to the criteria listed above, and must be approved by the BLM AO. 3. *Management Plan.* The Applicant or approved third party shall prepare a management plan for the compensation lands in consultation with the entity that will be managing the lands. The goal of the management plan shall be to support and enhance the long-term viability of the target special-status plant occurrences. The Management Plan shall be submitted for review and approval to the BLM AO. 4. *Integrating Special-Status Plant Mitigation with Other Mitigation lands.* If all or any portion of the acquired Desert Tortoise, Waters of the State, or other required compensation lands meets the criteria above for special-status plant compensation lands, the portion of the other species' or habitat compensation lands that meets any of the criteria above may be used to fulfill that portion of the obligation for special-status plant mitigation. 5. *Compensation Lands Acquisition Requirements.* The Applicant shall comply with the following requirements relating to acquisition of the compensation lands after the BLM AO, has approved the proposed compensation lands:						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
a. Preliminary Report. The Applicant, or an approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the BLM AO. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the BLM AO. For conveyances to the state, approval may also be required from the California Department of General Services, the Fish and Game Commission and the Wildlife Conservation Board. b. Title/Conveyance. The Applicant shall acquire and transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement, as required by the BLM AO. Any transfer of a conservation easement or fee title must be to CDFG, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code §65965), or to BLM or other public agency approved by the BLM AO. If an approved non-profit organization holds fee title to the compensation lands, a conservation easement shall be recorded in favor of CDFG or another entity approved by the BLM AO. If an entity other than CDFG holds a conservation easement over the compensation lands, the BLM AO may require that CDFG or another entity approved by the BLM AO, in consultation with CDFG, be named a third party beneficiary of the conservation easement. The Applicant shall obtain approval of the BLM AO of the terms of any transfer of fee title or conservation easement to the compensation lands. c. Initial Protection and Habitat Improvement. The Applicant shall fund activities that the BLM AO requires for the initial protection and habitat improvement of the compensation lands. These activities will vary depending on the condition and location of the land acquired, but may include trash removal, construction and repair of fences, invasive plant removal, and similar measures to protect habitat and improve habitat quality on the compensation lands. The costs of these activities are estimated to be $330 per acre, using the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at the ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, but actual costs will vary depending on the measures that are required for the compensation lands. A non-profit organization, CDFG or another public agency may hold and expend the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code §65965), if it meets the approval of the BLM AO in consultation with CDFG, and if it is authorized to participate in implementing the required activities on the compensation lands. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG or its designee. d. Property Analysis Record. Upon identification of the compensation lands, the Applicant shall conduct a PAR or PAR-like analysis to establish the appropriate amount of the long-term maintenance and management fund to pay the in-perpetuity management of the compensation lands. The PAR or PAR-like analysis must be approved by the BLM AO before it can be used to establish funding levels or management activities for the compensation lands. e. Long-term Maintenance and Management Funding. In accordance with Mitigation Measure VEG-13 (*Phasing*), the Applicant shall deposit in the National Fish and Wildlife Foundation's (NFWF) Renewable Energy Action Team (REAT) Account a non-wasting capital long-term maintenance and management fee in the amount determined through the PAR or PAR-like analysis conducted for the compensation lands.						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
f. The BLM AO, in consultation with CDFG, may designate another non-profit organization to hold the long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity. If CDFG takes fee title to the compensation lands, CDFG shall determine whether it will hold the long-term management fee in the special deposit fund, leave the money in the REAT Account, or designate another entity to manage the long-term maintenance and management fee for CDFG and with CDFG supervision. g. Interest, Principal, and Pooling of Funds. The Applicant shall ensure that an agreement is in place with the long-term maintenance and management fund (endowment) holder/manager to ensure the following requirements are met: i. Interest. Interest generated from the initial capital long-term maintenance and management fund shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action that is approved by the BLM AO and is designed to protect or improve the habitat values of the compensation lands. ii. Withdrawal of Principal. The long-term maintenance and management fund principal shall not be drawn upon unless such withdrawal is deemed necessary by the BLM AO or by the approved third-party long-term maintenance and management fund manager, to ensure the continued viability of the species on the compensation lands. iii. Pooling Long-Term Maintenance and Management Funds. An entity approved to hold long-term maintenance and management funds for the Project may pool those funds with similar non-wasting funds that it holds from other projects for long-term maintenance and management of compensation lands for special-status plants. However, for reporting purposes, the long-term maintenance and management funds for this Project must be tracked and reported individually to the BLM AO. h. Other Expenses. In addition to the costs listed above, the Applicant shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to the title and document review costs incurred from other state agency reviews, overhead related to providing compensation lands to CDFG or an approved third party, escrow fees or costs, environmental contaminants clearance, and other site cleanup measures. i. Mitigation Security. The Applicant shall provide financial assurances in accordance with Mitigation Measure VEG-13 (*Phasing*) to the BLM AO to guarantee that an adequate level of funding is available to implement any of the mitigation measures required by this condition that are not completed prior to the start of ground-disturbing Project activities. Financial assurances shall be provided to the BLM AO in the form of an irrevocable letter of credit, a pledged savings account or another form of approved security ("Security"). The amount of the Security shall be $2,280 per acre, using the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at a ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, for every acre of habitat supporting the target special-status plant species which is impacted by the project. The actual costs to comply with this condition will vary depending on the actual costs of acquiring compensation habitat, the costs of initially improving the habitat,						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
and the actual costs of long-term management as determined by a PAR report. Prior to submitting the Security to the BLM AO, the Applicant shall obtain the BLM AO's approval of the form of the Security. The BLM AO may draw on the Security if the BLM AO determines the Applicant has failed to comply with the requirements specified in this condition. The BLM AO may use money from the Security solely for implementation of the requirements of this condition. The BLM AO's use of the Security to implement measures in this condition may not fully satisfy the Applicant's obligations under this condition, and the Applicant remains responsible for satisfying the obligations under this condition if the Security is insufficient. The unused Security shall be returned to the Applicant in whole or in part upon successful completion of the associated requirements in this condition. j. The Applicant may elect to comply with the requirements in this condition for acquisition of compensation lands, initial protection and habitat improvement on the compensation lands, or long-term maintenance and management of the compensation lands by funding, or any combination of these three requirements, by providing funds to implement those measures into the REAT Account established with the NFWF. To use this option, the Applicant must make an initial deposit to the REAT Account in an amount equal to the estimated costs (as set forth in the Security section of this condition) of implementing the requirement. If the actual cost of the acquisition, initial protection and habitat improvements, or long-term funding is more than the estimated amount initially paid by the Applicant, the Applicant shall make an additional deposit into the REAT Account sufficient to cover the actual acquisition costs, the actual costs of initial protection and habitat improvement on the compensation lands, and the long-term funding requirements as established in an approved PAR or PAR-like analysis. If those actual costs or PAR projections are less than the amount initially transferred by the Applicant, the remaining balance shall be returned to the Applicant. The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the Energy Commission. Such delegation shall be subject to approval by the BLM AO, in consultation with CDFG, BLM, and USFWS, prior to land acquisition, enhancement or management activities. The Applicant, or an approved third party to which the Applicant has delegated land acquisition activities pursuant to an executed agreement, shall acquire the land, in fee or in easement, no more than 18 months after the start of Project ground-disturbing activities. **II. *Compensatory Mitigation by Habitat Enhancement/Restoration*:** As an alternative or adjunct to land acquisition for compensatory mitigation the Applicant may undertake habitat enhancement or restoration for the target special-status plant species. Habitat enhancement or restoration activities must achieve protection at a 3:1 ratio for Rank 1 plants and 2:1 for Rank 2 plants, with improvements applied to 3 acres, or 2 acres, respectively, of habitat for every acre of special-status plant habitat directly or indirectly disturbed by the Project Disturbance Area (for example, if the area occupied by the special-status plant collectively measured is 0.25 acre, the improvements would be applied to an area equal to 0.75 acre at a 3:1 ratio, or 0.5 acre at a 2:1 ratio). Examples of suitable enhancement projects include but are not limited to the following: i) control unauthorized vehicle use into an occurrence (or pedestrian use if clearly damaging to the species); ii) control of invasive non-native plants that infest or pose an immediate threat to an occurrence; iii) exclude grazing by wild burros or livestock from an occurrence; or iv) restore lost or degraded hydrologic or geomorphic functions critical to the species by restoring previously diverted flows, removing obstructions to the wind sand transport corridor above an occurrence, or increasing groundwater availability for dependent species.						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
If the Applicant elects to undertake a habitat enhancement project for mitigation, the project must meet the following performance standards: The proposed enhancement project shall achieve rescue of an off-site occurrence that is currently assessed, based on the NatureServe threat ranking system (Master et al., 2009; see also Morse et al., 2004) with one of the following threat ranks: a) long-term decline >30 percent; b) an immediate threat that affects >30 percent of the population, or c) has an overall threat impact that is High to Very High. "Rescue" would be considered successful if it achieves an improvement in the occurrence trend to "stable" or "increasing" status, or downgrading of the overall threat rank to slight or low (from "High" to "Very High"). If the Applicant elects to undertake a habitat enhancement project for mitigation, they shall submit a Habitat Enhancement/Restoration Plan to the BLM AO for review and approval, and shall provide sufficient funding for implementation and monitoring of the Plan. The amount of the Security shall be $2,280 per acre, using the estimated cost per acre for Desert Tortoise mitigation as a best available proxy, at the ratio of 3:1 for Rank 1 plants and 2:1 for Rank 2 plants, for every acre of habitat supporting the target special-status plant species which is directly or indirectly impacted by the project. The amount of the security may be adjusted based on the actual costs of implementing the enhancement, restoration and monitoring. The implementation and monitoring of the enhancement/restoration may be undertaken by an appropriate third party such as NFWF, subject to approval by the BLM AO. The Habitat Enhancement/Restoration Plan shall include each of the following: 1. *Goals and Objectives*. Define the goals of the restoration or enhancement project and a measurable course of action developed to achieve those goals. The objective of the proposed habitat enhancement plan shall include restoration of a target special-status plant occurrence that is currently threatened with a long-term decline. The proposed enhancement plan shall achieve an improvement in the occurrence trend to "stable" or "increasing" status, or downgrading of the overall threat rank to slight or low (from "High" to "Very High"). 2. Historical Conditions. Provide a description of the pre-impact or historical conditions (before the site was degraded by weeds or grazing or ORV, etc.), and the desired conditions. 3. Site Characteristics. Describe other site characteristics relevant to the restoration or enhancement project (e.g., composition of native and pest plants, topography and drainage patterns, soil types, geomorphic and hydrologic processes important to the site or species. 4. Ecological Factors. Describe other important ecological factors of the species being protected, restored, or enhanced such as total population, reproduction, distribution, pollinators, etc. 5. Methods. Describe the restoration methods that will be used (e.g., invasive exotics control, site protection, seedling protection, propagation techniques, etc.) and the long-term maintenance required. The implementation phase of the enhancement must be completed within five years. 6. Budget. Provide a detailed budget and time-line, and develop clear, measurable, objective-driven annual success criteria. 7. Monitoring. Develop clear, measurable monitoring methods that can be used to evaluate the effectiveness of the restoration and the benefit to the affected species. The Plan shall include a minimum of five years of quarterly monitoring, and then annual monitoring for the remainder of the enhancement project, and until the performance standards for rescue of a threatened occurrence are met. At a minimum the progress reports shall include: quantitative measurements of the projects progress in meeting the enhancement project success criteria, detailed description of remedial actions taken or proposed, and contact information for the responsible parties.						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
8. Reporting Program. The Plan shall ensure accountability with a reporting program that includes progress toward goals and success criteria. Include names of responsible parties. 9. Contingency Plan. Describe the contingency plan for failure to meet annual goals. Long-term Protection. Include proof of long-term protection for the restoration site. For private lands this would include conservations easements or other deed restrictions; projects on public lands must be contained in a Desert Wildlife Management Area, Wildlife Habitat Management Area, or other land use protections that will protect the mitigation site and target species.						
MM VEG-11: Mitigation for Impacts to Sensitive Riparian Habitat and State Waters. The Applicant shall implement the following measures to avoid, minimize and mitigate for direct and indirect impacts to waters of the state and to satisfy requirements of California Fish and Game Code §§1600 and 1607. 1. ***Acquire Off-Site State Waters***: The Applicant shall acquire, in fee or in easement, a parcel or parcels of land that includes at least 196.9 acres of state jurisdictional waters, or comparable area based on actual project impact to jurisdictional features that meets BLM and CDFG mitigation ratios, as identified in APM HYDRO-1 (Table 2-7, *Applicant Proposed Measures*). The parcel or parcels comprising the 196.6 acres of ephemeral washes shall include at least 10.8 acres of desert dry wash woodland. Under Alternative 2, the mitigation requirement for impacts to riparian habitat and state waters would be a minimum of 63.3 acres that included at least 1.5 acres of desert dry wash woodland. If Alternative 3 were constructed the mitigation requirements for impacts to riparian habitat and state waters would be incrementally greater than under Alternative 1; however, these requirements would need to be finalized to include the impacts of road facilities on riparian habitat located on Project linears south of the Project. The terms and conditions of this acquisition or easement shall be as described in Mitigation Measure WIL-4 (*Desert Tortoise Compensatory Mitigation*). Mitigation for impacts to state waters shall occur within the Palo Verde and surrounding watersheds, as close to the Project site as possible. If security is posted in accordance with Provision 2 below (Security for Implementation of Mitigation), the Applicant shall acquire, in fee or in easement, the land, no more than 18 months after the start of Project ground-disturbing activities. 2. ***Security for Implementation of Mitigation***: The Applicant shall provide financial assurances to the BLM AO and CDFG to guarantee that an adequate level of funding is available to implement the acquisitions and enhancement of state waters as described in this condition. These funds shall be used solely for implementation of the measures associated with the project. Financial assurance can be provided to the BLM AO and CDFG in the form of an irrevocable letter of credit, a pledged savings account or Security prior to initiating ground-disturbing project activities. Prior to submittal to the BLM AO, the Security shall be approved by the BLM AO, in consultation with CDFG and the USFWS, to ensure funding. An estimate of $448,932 in required Security funds was developed for land costs or the estimated costs of enhancement and endowment (see WIL-4, Compensatory Mitigation for Desert Tortoise Habitat Losses, for a discussion of the assumptions used in calculating the Security) based on an estimate of $2,280 per acre (196.9 acres) to fund acquisition, enhancement and long-term management. For Alternative 2, the Security amount is estimated to be $144,324. The estimate for Alternative 3 is $485,640, which does not include road impacts on portions of the Central Route or Western Route that deviates from the proposed Project gen-tie line. These amounts may change based on land costs or the estimated costs of enhancement and endowment. The final amount due will be determined by the PAR analysis conducted pursuant to Mitigation Measure WIL-4 and approved by the BLM AO and CDFG. The final mitigation acreage is also subject to CDFG concurrence with project impacts to waters of the state that were developed by the Applicant.	Prior to operation	BLM, CDFG	Ensure provision of funding by the Applicant.			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
3. ***Preparation of Management Plan***: The Applicant shall submit to the BLM AO and CDFG a draft Management Plan that reflects site-specific enhancement measures for the drainages on the acquired compensation lands. The objective of the Management Plan shall be to enhance the wildlife value of the drainages, and may include enhancement actions such as weed control, fencing to exclude livestock, or erosion control. 4. ***Code of Regulations***: The Applicant shall provide a copy of the BRMMP and CDFG permits to all contractors, subcontractors, and the Applicant's Project supervisors. Copies shall be readily available at work sites at all times during periods of active work and must be presented to any CDFG personnel upon demand. The BLM AO reserves the right to issue a stop work order or allow CDFG to issue a stop work order after giving notice to the Applicant. If the BLM AO in consultation with CDFG, determines that the Applicant has breached any of the terms or conditions or for other reasons, including but not limited to the following: a. The information provided by the Applicant regarding streambed alteration is incomplete or inaccurate; b. New information becomes available that was not known to it in preparing the terms and conditions; or c. The Project or Project activities as described in the Staff Assessment have changed. 5. ***Best Management Practices:*** The Applicant shall also comply with the following conditions to protect drainages near the Project Disturbance Area: a. The Applicant shall minimize road building, construction activities and vegetation clearing within ephemeral drainages to the extent feasible. b. The Applicant shall not allow water containing mud, silt, or other pollutants from grading, aggregate washing, or other activities to enter ephemeral drainages or be placed in locations that may be subjected to high storm flows. c. The Applicant shall comply with all litter and pollution laws. All contractors, subcontractors, and employees shall also obey these laws, and it shall be the responsibility of the Applicant to ensure compliance. d. Spoil sites shall not be located at least 30 feet from the boundaries and drainages or in locations that may be subjected to high storm flows, where spoils might be washed back into drainages. e. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances that could be hazardous to vegetation or wildlife resources, resulting from Project-related activities, shall be prevented from contaminating the soil and/or entering waters of the state. These materials, placed within or where they may enter a drainage by the Applicant or any party working under contract or with the permission of the Applicant, shall be removed immediately. f. No broken concrete, debris, soil, silt, sand, bark, slash, sawdust, rubbish, cement or concrete or washings thereof, oil or petroleum products or other organic or earthen material from any construction or associated activity of whatever nature shall be allowed to enter into, or placed where it may be washed by rainfall or runoff into, waters of the state. g. When operations are completed, any excess materials or debris shall be removed from the work area. No rubbish shall be deposited within 150 feet of the high water mark of any drainage. h. No equipment maintenance shall occur within 150 feet of any ephemeral drainage where petroleum products or other pollutants from the equipment may enter these areas under any flow.						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Vegetation (cont.)						
MM VEG-12: Channel Decommissioning and Reclamation Plan. If engineered diversion channels are included in the Project, then, at least 12 months prior to Project closure, the Applicant shall prepare a draft Decommissioning and Reclamation Plan to remove the engineered diversion channels from the Project site, and implement the final plan upon site closure. The goal of the plan shall be to restore the site's topography and hydrology to a relatively natural condition and to establish native plant communities within the Project Disturbance Area. The Channel Decommissioning and Reclamation Plan shall include a cost estimate for implementing the proposed decommissioning and reclamation activities, and shall be consistent with the guidelines in BLM's 43 CFR 3809.550 et seq., subject to review and revisions from the BLM AO in consultation with USFWS and CDFG.	Prior to Project closure	Review and approve the Channel Decommissioning and Reclamation Plan at least 12 months prior to Project closure.				
MM VEG-13: Phasing. The Applicant shall provide compensatory mitigation for the total Project Disturbance Area and may provide such mitigation in multiple phases for distinct construction elements (e.g., Unit 1, Unit 2, etc.). These phases will generally include installation of fencing, clearing, grubbing and grading, and development of common facilities first, followed by the remaining power block units. All construction activities for the non-linear features during these subsequent phases will occur within desert tortoise exclusionary fenced areas that have been cleared in accordance with USFWS protocols. Prior to initiating each phase of construction the Applicant shall submit the actual construction schedule, a figure depicting the locations of proposed construction and amount of acres to be disturbed. Mitigation acres are calculated based on the compensation requirements for each resource type including desert tortoise (Mitigation Measure WIL-4), western burrowing owl (Mitigation Measure WIL-9), Mojave fringe-toed lizard (Mitigation Measure WIL-10), and state waters (Mitigation Measure VEG-11). Compensatory mitigation for each phase shall be implemented according to the timing required by each condition.	Prior to each phase of construction	USFWS, CDFG, RWQCB	Review and approve phasing schedule, mitigation acreage, and compensatory mitigation for each phase of construction.			
Biological Resources – Wildlife						
APM BIO-1: Desert Tortoise-specific Protection Measures During Construction. a. ***Environmental Compliance Personnel:*** Environmental compliance personnel shall be employed to oversee the implementation of all desert tortoise protection measures in accordance with a BO. An ECM will be assigned to the Project who shall be an on-site staff member of the Project. The ECM will be responsible for facilitating implementation of the environmental conditions of the Project and for coordinating compliance with the BLM and USFWS. A Project Lead Biologist and alternate Lead Biologists with demonstrated expertise with desert tortoise shall oversee compliance with the protection measures for the desert tortoise and other special-status species. There also shall be ABs that have demonstrated expertise to conduct specific activities for desert tortoise protection; the Lead Biologist also will be an AB. Additionally, qualified BMs will assist the AB in enforcing APMs. McCoy Solar shall submit the names and qualifications of the proposed Lead Biologist(s) and all ABs to the USFWS and BLM for review and approval prior to pre-construction clearance surveys. Project activities involving ground disturbance shall not begin until the Lead Biologist and ABs are approved by the aforementioned agencies. Replacement of Lead Biologist and ABs would require USFWS and BLM approval. The ECM, ABs, and BMs shall have the authority to halt all non-emergency activities that are in violation of the protection measures, or if a desert tortoise wanders into a work site. Work will proceed only after hazards to the desert tortoise are removed, the species no longer is at risk, or the animal has been moved from harm's way by the AB. The ABs will document any incident occurring during Project activities which is in non-compliance with the protection measures stated in the BO. The Lead Biologist and ECM shall ensure that appropriate corrective action is taken. Corrective actions shall be documented by the AB or BM. The following incidents shall require immediate cessation of the Project activities causing the incident:	During construction	BLM, USFWS	Implement desert tortoise-specific protection measures, including: • Employment of environmental compliance personnel to oversee implementation of all desert tortoise protection measures in accordance with a BO • Construction of desert tortoise exclusion fencing • Pre-construction clearance surveys			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
1. Imminent threat of injury or death to a desert tortoise. 2. Unauthorized handling of a desert tortoise. 3. Operation of construction equipment or vehicles outside of areas secured with desert tortoise fencing without a BM present, except on designated roads. 4. Conducting any construction activity without an AB or BM present where one is required. b. ***Desert Tortoise Exclusion Fencing***: Prior to the onset of ground disturbing activities, the entire solar plant site will be fenced with a permanent tortoise exclusion fence per current USFWS requirements (USFWS, 2009) to keep tortoises from entering the solar plant site during construction and operation phases. The fencing type will be 1-inch by 2-inch vertical mesh galvanized fence material, extending at least 2 feet above the ground and buried at least 1 foot. Where burial is impossible, the mesh will be bent at a right angle toward the outside of the fence and covered with dirt, rocks, or gravel to prevent tortoises from digging under the fence. Tortoise-proof gates will be established at all site entry points. Fence construction may be completed during any time of the year (USFWS, 2010). As necessary, linear facilities (e.g., gen-tie line and switchyard) will be temporarily fenced to prevent tortoise entry during construction. Alternatively, monitoring during construction can be used to protect tortoises instead of temporary fencing. Temporary fencing will follow current USFWS guidelines for permanent fencing and supporting stakes will be sufficiently spaced to maintain fence integrity; burial may be minimized to avoid surface disturbance. All fence construction will be monitored by an AB or BMs to ensure that no desert tortoises are harmed. Following installation, all permanent exclusion fencing will be inspected monthly and during all major rainfall events; temporary fencing will be inspected at least weekly, or more often as necessary. Any damage to the fencing will be repaired immediately. All fencing erected during a tortoise activity period or prior to tortoises exiting brumation will be inspected at least three times each day for a minimum of 2 weeks (or for a minimum of two weeks after tortoises become active following brumation), to search for any tortoises that might be fence-walking; at least one search will occur immediately prior to lethal ambient temperatures. c. ***Pre-Construction Clearance Surveys***: Within 1 week prior to fence installation, the AB and/or approved BMs will survey the staked fence line location for all desert tortoise burrows and tortoises, covering a swath of at least 90 feet centered on the fence line, using 15-foot-wide transects. All potential desert tortoise burrows or pallets will be searched. Burrows along the fence line that must be disturbed will be excavated by ABs or approved BMs using hand tools. Tortoise burrows will be mapped using GPS, and the size and age identified. Where flagging would not attract poaching, burrows will also be flagged. All fence construction then will be monitored by BMs. A clearance survey for tortoises will be conducted inside all fenced areas. Consistent with the McCoy Desert Tortoise Translocation Plan (BIO-1[d]), a minimum of two consecutive clearance passes without finding any new tortoises must be completed and these must coincide with heightened tortoise activity from mid-March through May and September through early November, or as otherwise agreed to by BLM and USFWS. This will maximize the probability of finding all tortoises. Clearance transects will be a maximum of 15 feet (5 meters) apart per USFWS approved protocols (USFWS, 2009), except on broad patches of unvegetated, well-developed desert pavement, where the width may be increased to a maximum of 30 feet (9 meters) upon USFWS approval. Once the solar plant site is deemed free of tortoises, heavy equipment will be allowed to enter the site to perform construction activities. It is anticipated that very few tortoises will be found during clearance or monitoring activities, but if tortoises are observed, the biologists will implement the McCoy Desert Tortoise Translocation Plan. The AB and BMs also will conduct clearance surveys of construction areas outside of the solar plant site. Burrows will be avoided if at all possible (especially if this is temporary fencing). However, if a burrow must be destroyed for fencing to occur, then it will be visually and tactilely			• Preparation and implementation of Desert Tortoise Translocation Plan • Construction monitoring • Immediate notification to the BLM and USFWS if a dead, injured, or sick tortoise is observed.			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
examined for occupancy by tortoises and other wildlife. If occupancy is negative or cannot be established, the burrow will be carefully excavated with hand tools, using standardized techniques approved by USFWS (2009) and the Desert Tortoise Council (1994), including disinfection techniques for all tools. No burrows that can be avoided will be collapsed during perimeter fence construction. Other tortoise burrows will be flagged judiciously to avoid attraction of tortoise predators or people to the burrow. All BMs, the AB, and relevant construction personnel will be informed of all potential tortoise activity adjacent to an unfenced construction area. Following Project area clearance, a report will be prepared by the Project Lead Biologist to document the clearance surveys, the capture and release locations of all desert tortoises found, post-release monitoring, individual tortoise data, and other relevant data, consistent with the McCoy Desert Tortoise Translocation Plan. This report will be submitted to the BLM and USFWS. d. ***Desert Tortoise Translocation Plan***: The Applicant will prepare and implement a Desert Tortoise Translocation Plan that will be approved by USFWS prior to construction. e. ***Construction Monitoring***: No construction will occur in unfenced areas (see BIO-1[b], *Desert Tortoise Exclusion Fencing*) or on the linear facilities without BMs present. This includes both the construction phase (construction, revegetation) and maintenance activities during the operations phase that require new surface disturbance. An adequate number of trained and experienced monitors must be present during all construction activities in unfenced areas, depending on the various construction tasks, locations, and season. f. ***Dead, Injured, and Sick Desert Tortoises***: The Lead Biologist will notify the BLM and USFWS immediately if a dead or injured desert tortoise is observed. Written notification must be made within 2 days of the date of the finding or incident (if known) and must include: Location of the tortoise, photographs, cause of death (if known), and other pertinent information. The AB will ensure that all tortoises injured by Project activities receive prompt veterinary care at the Applicant's expense. If an injured animal recovers, the BLM and USFWS will be contacted by the Applicant for final disposition of the animal. However, if efforts to keep the injured animal separate from other tortoises and turtles are successful during the tortoise's treatment, then it is recommended that it be released at or near its capture point to continue to contribute to the persistence of the local tortoise population. Tortoises fatally injured or killed from Project-related activities will be submitted for necropsy as outlined in Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming Desert Tortoises (*Gopherus agassizii*) (Berry, 2001) at the Applicant's expense. Care will be taken by the AB in handling dead specimens to preserve biological material in the best possible state.						
APM BIO-2: General Protection Measures During Construction. a. ***Biological Resources Mitigation and Monitoring Plan (BRMMP)***: The BRMMP will outline steps to implement the protection measures; document their implementation; and monitor their effectiveness. The BRMMP will identify the terms and conditions of any permits associated with the Project, including, but not limited to, the USFWS §7 Biological Opinion, CDFG §2081 Incidental Take Permit, and CDFG Streambed Alteration Agreement. The BRMMP will be submitted to the BLM and USFWS for approval prior to the start of ground disturbance. b. ***Reporting***: As part of implementing protection measures, regular reports will be submitted to the relevant resource agencies to document the Project activities, mitigation implemented and mitigation effectiveness, and provide recommendations as needed. A schedule of reporting will be specific to individual plans. However, the Lead Biologist will submit monthly reports to the ECM during construction, annual comprehensive reports, and special-incident reports. The Lead Biologist will be responsible for reviewing and signing reports prior to	Prior to and during construction	BLM, USFWS, CDFG	Implement general protection measures during construction, including: • BRMMP • Regular reporting of Project activities, mitigation implementation and effectiveness, and recommendations as needed			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
submittal to the agencies. In addition to a regular reporting schedule, all encounters with desert tortoises will be reported to the Lead Biologist, who will report the following information in Monthly and Annual Reports: 1. Location (narrative and maps) and dates of observations; 2. General condition and health, including injuries and state of healing; 3. Diagnostic markings, including identification numbers or markers; and 4. Disposition (if moved). c. ***Worker Environmental Training***: The Applicant will prepare and implement site-specific Worker Environmental Training to inform Project personnel about the biological constraints of the Project. The training will be included in the BRMMP and will be developed and presented by a qualified Project biologist prior to the commencement of construction activity. All Project personnel must attend the training. The training will include information regarding the sensitive biological resources, restrictions, protection measures, and individual responsibilities associated with the Project. Special emphasis will be placed on protection measures developed for the desert tortoise and the consequences of non-compliance. Written material will be provided to employees at orientation and participants will sign an attendance sheet documenting their participation. d. ***Construction-related Activities***: Existing roads will be utilized wherever possible to avoid unnecessary impacts. New and existing roads that are planned for either construction or widening will not extend beyond the planned impact area and will minimize surface disturbance in native habitats, where practical. All vehicles passing or turning around will do so within the planned impact area or in previously disturbed areas. Along the linear facilities, the anticipated impact zones, including staging areas, equipment access, and disposal or temporary placement of spoils, will be delineated with stakes and/or flagging prior to construction to avoid natural resources, where possible. Outside the Project boundaries, personnel will utilize established roadways (paved or unpaved) for traveling to and from the Project Area, including for transmission line construction. No work in unfenced and uncleared habitat will occur except under the direct supervision of a BM. Cross-country vehicle and equipment use outside designated work areas will be prohibited. Best Management Practices will be employed to prevent loss of habitat due to erosion caused by Project-related impacts (i.e., grading or clearing for new roads). All detected erosion will be remedied within 2 days of discovery. Additionally, fueling of equipment will take place within existing paved or contained areas and not within or adjacent to drainages or native desert habitats. Contractor equipment will be checked for leaks prior to operation and repaired as necessary. All vehicles and equipment will be in proper working condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The AB and BM will be informed of any hazardous spills within 24 hours. Hazardous spills will be immediately cleaned up and the contaminated soil will be properly disposed of at a licensed facility. Employees and contractors will look under vehicles and equipment for the presence of desert tortoises prior to movement. No equipment will be moved until the animal has left voluntarily or an AB removes it. e. ***Construction Speed Limits***: To minimize the likelihood for vehicle strikes of tortoises and other species during construction, a speed limit of 25 miles per hour will be established for travel on all dirt Project access roads. Signs will be posted at appropriate locations (for example, at Arizona crossings of drainages) to remind drivers to be aware of the potential for desert tortoise and other wildlife occurring on the roadways. f. ***Ground Excavations***: The Applicant will ensure that Project features located outside the permanently fenced sites, such as open trenches, pits, bores and other excavations that might trap, entangle, or constitute as pitfalls to desert tortoises and other wildlife, be filled in, fenced, covered, or otherwise modified at the end of each work day so they are no longer a hazard to desert tortoises and other wildlife. All excavations in tortoise			• Worker environmental training • Use of established roadways and proper fuel use, spill prevention, and cleanup techniques • 25 mph speed limit • Cover, inspect, and remove trapped tortoises from ground excavation sites • Proper construction material storage and inspection for desert tortoises • Proper hazardous material storage and spill cleanup • Report road kills to a BM or AB daily, to ensure timely removal • No pets or firearms onsite • Prohibit the intentional killing or collection of all native plant or native wildlife species • Provide funds to the USFWS' range-wide raven monitoring and control program to support the more comprehensive goals of that program • Weed Management Plan • Apply water for dust suppression • Revegetation Plan			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
habitat outside the permanently fenced sites will be inspected for trapped desert tortoises at the beginning, middle, and end of the work day, at a minimum, but also will be continuously monitored by BMs as part of monitoring construction outside of fenced areas. Should a tortoise become entrapped, the AB will remove it immediately. These Project features will not need to be inspected if they are located within the permanently fenced solar plant site after the clearance surveys have been completed. However, any such Project features inside temporarily fenced locations that have been cleared of tortoises will be inspected daily for other wildlife.						
g. ***Construction Material Storage***: The Applicant will ensure that any construction pipe, culvert, or similar structure stored less than 8 inches above the ground, stored for one or more nights, and within desert tortoise habitat outside the permanently fenced sites, will be inspected for tortoises before the material is moved, buried or capped. As an alternative, all such structures may be capped before being stored on the construction site or placed on pipe racks. These materials will not need to be inspected or capped if they are stored within the permanently fenced solar plant site after the clearance surveys have been completed or inside temporarily fenced locations.						
h. ***Hazardous Materials***: The Applicant will ensure all vehicles and equipment are in proper working condition to ensure that there is no potential for fugitive emissions of motor oil, fuel, antifreeze, hydraulic fluid, grease, or other hazardous materials. Contractor equipment will be checked for leaks prior to operation and repaired as necessary. Fueling of equipment will take place within existing paved roads, where possible, and not within or adjacent to drainages. Hazardous spills will be immediately cleaned up and the contaminated soil will be properly disposed of at a licensed facility. The ECM, Lead Biologist, and BLM will be informed of any significant hazardous spills within 24 hours.						
i. ***Trash Abatement***: Trash and food items will be contained in secure, closed lid (raven- and coyote-proof) containers. Trash will be removed regularly (at least once a week) to reduce the attractiveness to the site to opportunistic tortoise predators such as common ravens (*Corvus corax*) and coyotes (*Canis latrans*) and to reduce the possibility of animals ingesting or becoming entangled in foreign matter.						
j. ***Roadkill Removal***: To preclude providing food to scavengers, including potential tortoise predators, such as ravens and coyotes, all road kills on construction entry roads will be collected, bagged, and put in a secure trash bin, daily. All personnel will be required to report road kills to a BM or AB daily, to ensure timely removal.						
k. ***Pets and Firearms***: The Applicant will prohibit workers from bringing pets or firearms to the Project.						
l. ***Plant and Wildlife Collection***: The Applicant will prohibit the intentional killing or collection of all native plant or native wildlife species, including, but not limited to desert tortoise. Workers will not disturb, capture, handle, or move animals, or their nests/burrows. Violations will be reported in the monthly and annual reports.						
m. ***Raven Management***: The Applicant will provide funds to the USFWS' range-wide raven monitoring and control program to support the more comprehensive goals of that program. These funds will be in lieu of extensive quantitative monitoring at the Project site. The amount will be determined through negotiation with USFWS. In addition, a Raven Management Plan will be designed and implemented to identify the conditions of concern specific to the Project that may attract ravens to the Project and to define a plan that will 1) monitor raven activity and 2) specify management and control measures. The monitoring effort is intended to provide qualitative and semi-quantitative data to ensure that ravens do not pose a threat to desert tortoises from the Project.						
n. ***Weed Management Plan***: The Applicant will prepare and implement a Weed Management Plan to prevent the spread of existing weeds and the introduction of new weeds to the Project Area.						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
o. ***Water Application for Dust Control***: The Applicant will ensure water is applied to the construction area, dirt roads, trenches, spoil piles, and other areas where ground disturbance has taken place to minimize dust emissions and topsoil erosion. A BM will patrol these areas to ensure water does not pool for long periods of time and potentially attract desert tortoises, common ravens, and other wildlife. p. ***Cleanup and Restoration; Revegetation Plan***: The Applicant will ensure that all unused material and equipment will be removed upon completion of construction activities or maintenance activities conducted outside the permanently fenced sites (this includes non-emergency and emergency repairs). Upon completion, all construction equipment and refuse, including, but not limited to wrapping material, cables, cords, wire, boxes, rope, broken equipment parts, twine, strapping, buckets, metal or plastic containers will be removed from the site and disposed of properly. Any unused or leftover hazardous products will be properly disposed of offsite. The Applicant will prepare and implement a Revegetation Plan to restore temporarily disturbed areas.						
APM BIO-3: Protection Measures During Operation and Maintenance. Road, transmission line, and pipeline maintenance activities are expected to occur during the life of the Project. To the extent possible, major road surface maintenance activities outside the solar plant site will be scheduled for the season with the least desert tortoise activity (typically November 1 through February 28), unless accompanied by an AB. During operation, all personnel who encounter a desert tortoise will immediately report the encounter to the ECM. An AB will monitor all major maintenance activities; minor maintenance (e.g., inspections) does not have to be accompanied by an AB. Only an AB may move tortoises during the operations phase and only if necessary. If feasible, all tortoises will be allowed to move into a safe area of their own accord. In order to prevent roadkills, any tortoise observed on the Project access road will be watched until it is safely off the road before the personnel can continue. If a desert tortoise is found inside the fenced solar plant site, an AB will be contacted immediately to translocate the desert tortoise from the solar plant site; in the interim, the tortoise will be captured, enclosed in a clean cardboard box with a lid, and held in a climate controlled situation until translocation by an AB, in accordance with details described in the McCoy Desert Tortoise Translocation Plan (BIO-1[d]). The ECM or AB will document the location (narrative and maps), date of observations, general condition and health (if known), including injuries and state of healing; diagnostic markings, including identification numbers or markers; and disposition, in the annual report.	During operation	BLM	• Schedule maintenance during the season with the least active desert tortoise activity • Report all tortoise activities to ECM • Monitor all major maintenance activities • Only an AB may move a tortoise if it's not able to move on its own accord			
APM BIO-4: Desert Tortoise Compensation. To fully mitigate for habitat loss and potential take of desert tortoise, the Applicant will provide compensatory mitigation at a 1:1 ratio for impacts to all Category 3 desert tortoise habitat in accordance with the NECO Plan (BLM, 2002). Approximately 4,500 acres of Category 3 habitat would be disturbed). This excludes 38 acres of sand dunes, agricultural areas, and areas that are currently developed or disturbed along the access road. Acreage of disturbance was based on the best available Project plans and would be adjusted, based on pre- and post-construction aerial photography, to reflect the final Project disturbance footprint. Because the construction of Unit 1, Unit 2, and the linear facilities would be phased, compensation obligations (e.g., security deposits and the actual funding or acquisition of mitigation land) should be apportioned as follows: a. Unit 1: 2,259 acres at a 1:1 ratio; b. Unit 2: 2,178 acres at a 1:1 ratio; and c. Linear facilities: 106 acres at a 1:1 ratio. The following qualitative criteria would be used to select compensation lands to ensure that they provide mitigation for the incidental take of desert tortoises:	Prior to construction	BLM, CDGF, USFWS				

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
a. Compensation lands should be part of a larger block of lands that are either already protected or planned for protection, or feasibly could be protected by a public resource agency or a private biological reserve organization. b. Parcels should provide habitat that is as good as or better than the habitat being impacted by the Project. Preferably, the lands would comprise sufficiently good habitat that they are either currently occupied or could be occupied by the desert tortoise once they are protected from anthropogenic impacts and/or otherwise enhanced. c. Parcels should not be subject to such intensive recreational, grazing, or other uses that recovery is rendered unlikely or lengthy. Nor should those invasive species that are likely to jeopardize habitat recovery (e.g., Sahara mustard [*Brassica tournefortii*]) be present in uncontrollable numbers, either on or immediately adjacent to the parcels under consideration. d. The parcels should be connected to occupied desert tortoise habitat or in sufficiently close proximity to known occupied tortoise habitat such that an unencumbered genetic flow is possible. Preferably, the existing populations of desert tortoise on these lands would represent populations that are stable, recovering, or likely to recover. e. The parcels should be consistent with the goals, objectives, and recovery actions of an accepted recovery strategy (e.g., recovery plan) for the desert tortoise if possible.						
APM BIO-5: Protection Measures during Decommissioning/Closure: Project Decommissioning: The planned operating life of the Project is 30 years. In the event the Project permanently shuts down, and no other project will occupy the same industrial space, the Applicant will prepare and implement a Decommissioning Plan to ensure that the environment is protected during the decommissioning phase. Prior to decommissioning, a plan will be finalized and approved by the BLM. The Applicant shall retain an AB for the decommissioning phase of the Project to ensure that all environmental protection measures are implemented. The Applicant will submit the names and qualifications of all proposed biologists to the USFWS and BLM for review and approval at least 30 days prior to decommissioning activities and prior to initiation of any tortoise handling. Decommissioning activities will not begin until the ABs are approved by the aforementioned agencies.	At least 30 days prior to decommissioning	BLM	Review and approve the decommissioning plan.			
MM WIL-1: Measures to Avoid Take of Desert Tortoise. The Applicant shall undertake appropriate measures to manage the construction site and related facilities in a manner to avoid or minimize impacts to desert tortoise. Methods for clearance surveys, fence specification and installation, tortoise handling, artificial burrow construction, egg handling, and other procedures shall be consistent with those described in the USFWS (2009) *Desert Tortoise Field Manual* or more current guidance provided by CDFG and USFWS. The Applicant shall also implement all terms and conditions described in the Biological Opinion prepared by USFWS. The Applicant shall implement the following measures: 1. ***Desert Tortoise Exclusion Fence Installation.*** To avoid impacts to desert tortoises, permanent exclusion fencing shall be installed along the permanent perimeter security fence (boundaries) as phases are constructed. Biological monitoring or temporary fencing shall be used along linear features or any subset of the plant site phasing that does not correspond to permanent perimeter fencing. All fencing installation corridors shall be flagged to assist biologists in studying the fence route and surveyed within 24 hours prior to the initiation of fence construction. Clearance surveys of the desert tortoise exclusionary fence and utility rights-of-way alignments shall be conducted by the Designated Biologist(s) using techniques outlined in the USFWS' 2009 *Desert Tortoise Field Manual* and may be conducted in any season with USFWS and CDFG approval. Biological Monitors may assist the Designated Biologist under his or her supervision. These fence	Prior to and during construction	CDFG, USFWS				

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
clearance surveys shall provide 100-percent coverage of all areas to be disturbed and an additional transect along both sides of the fence line. Disturbance associated with desert tortoise exclusionary fence construction shall not exceed 30 feet on either side of the proposed fence alignment. Prior to the surveys the Applicant shall provide to the BLM Authorized Officer (BLM AO), CDFG, and USFWS a figure clearly depicting the limits of construction disturbance for the proposed fence installation. The fence line survey area shall be 90 feet wide centered on the fence alignment. Where construction disturbance for fence line installation can be limited to 15 feet on either side of the fence line, this fence line survey area may be reduced to an area approximately 60 feet wide centered on the fence alignment. Transects shall be no greater than 15 feet apart. All desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined to assess occupancy of each burrow by desert tortoises and handled in accordance with the *Desert Tortoise Field Manual*. Any desert tortoise located during fence clearance surveys shall be handled by the Designated Biologist(s) in accordance with the *Desert Tortoise Field Manual*. a. *Timing, Supervision of Fence Installation*. The exclusion fencing shall be installed in any area subject to disturbance prior to the onset of site clearing and grubbing in that area. The fence installation shall be supervised by the Designated Biologist and monitored by the Biological Monitors to ensure the safety of any tortoise present. b. *Fence Material and Installation*. All desert tortoise exclusionary fencing shall be constructed in accordance with the USFWS' *Desert Tortoise Field Manual* (Chapter 8 – Desert Tortoise Exclusion Fence). c. *Security Gates*. Security gates shall be designed with minimal ground clearance to deter ingress by tortoises. The gates may be electronically activated to open and close immediately after the vehicle(s) have entered or exited to prevent the gates from being kept open for long periods of time. d. *Fence Inspections*. Following installation of the desert tortoise exclusion fencing for both the permanent site fencing and temporary fencing in the utility corridors, the fencing shall be regularly inspected. If tortoise were moved out of harm's way during fence construction, permanent and temporary fencing shall be inspected at least two times a day for the first 7 days to ensure a recently moved tortoise has not been trapped within the fence. Thereafter, permanent fencing shall be inspected monthly and during and within 24 hours following all major rainfall events. A major rainfall event is defined as one for which flow is detectable within the fenced drainage. Any damage to the fencing shall be temporarily repaired immediately to keep tortoises out of the site, and permanently repaired within 48 hours of observing damage. Inspections of permanent site fencing shall occur for the life of the Project. Temporary fencing shall be inspected weekly and, where drainages intersect the fencing, during and within 24 hours following major rainfall events. All temporary fencing shall be repaired immediately upon discovery and, if the fence may have permitted tortoise entry while damaged, the Designated Biologist shall inspect the area for tortoise. 2. ***Desert Tortoise Clearance Surveys within the Plant Site.*** Clearance surveys shall be conducted in accordance with the final USFWS-approved *Desert Tortoise Translocation Plan, McCoy Solar Energy Project* (Appendix F in the Biological Assessment; TetraTech EC Inc., 2012) and shall consist of two surveys covering 100 percent the Project area by walking transects no more than 15 feet apart. If a desert tortoise is located on the second survey, a third survey shall be conducted. Each separate survey shall be walked in a different direction or parallel but offset to allow opposing angles of observation. Clearance surveys for non-linear areas of Phase 1A may be conducted outside the active season. Clearance surveys of the remaining portions of the						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
power plant site may only be conducted when tortoises are most active in the Project vicinity (March through May or September through mid-November). Clearance surveys of linear features may be conducted during anytime of the year. Surveys outside of the active season in areas other than Phase 1A require approval by USFWS and CDFG. Any tortoise located during clearance surveys of the power plant site and linear features shall be relocated and monitored in accordance with the Desert Tortoise Relocation/Translocation Plan: a. *Burrow Searches*. During clearance surveys all desert tortoise burrows, and burrows constructed by other species that might be used by desert tortoises, shall be examined by the Designated Biologist, who may be assisted by the Biological Monitors, to assess occupancy of each burrow by desert tortoises and handled in accordance with the *Desert Tortoise Field Manual*. To prevent reentry by a tortoise or other wildlife, all burrows shall be collapsed once absence has been determined, but only on the last survey pass and if not occupied by other wildlife. Tortoises taken from burrows and from elsewhere on the power plant site shall be relocated or translocated as described in the Desert Tortoise Relocation/Translocation Plan. b. *Burrow Excavation/Handling*. All potential desert tortoise burrows located during clearance surveys would be excavated by hand, tortoises removed, and collapsed or blocked to prevent occupation by desert tortoises. All desert tortoise handling and removal, and burrow excavations, including nests, would be conducted by the Designated Biologist, who may be assisted by a Biological Monitor in accordance with the *Desert Tortoise Field Manual*. c. *Monitoring Following Clearing*. Following the desert tortoise clearance and removal from the power plant site and utility corridors, workers and heavy equipment shall be allowed to enter the Project site to perform clearing, grubbing, leveling, and trenching. A Designated Biologist shall oversee site clearing and shall be on-site during grading activities to find and move tortoises missed during the initial tortoise clearance survey. Should a tortoise be discovered, it shall be relocated or translocated as described in the Desert Tortoise Relocation/Translocation Plan. 3. ***Reporting.*** The Designated Biologist shall record the following information for any desert tortoises handled: a) the locations (narrative and maps) and dates of observation; b) general condition and health, including injuries, state of healing and whether desert tortoise voided their bladders; c) location moved from and location moved to (using GPS technology); d) gender, carapace length, and diagnostic markings (i.e., identification numbers or marked lateral scutes); e) ambient temperature when handled and released; and f) digital photograph of each handled desert tortoise as described in the paragraph below. Desert tortoise moved from within Project areas shall be marked and monitored in accordance with the Desert Tortoise Relocation/Translocation Plan (Mitigation Measure WIL-2).						
MM WIL-2: Desert Tortoise Relocation/Translocation Plan. The Applicant shall develop and implement a final Desert Tortoise Relocation/Translocation Plan (Plan) that is consistent with current USFWS approved guidelines, and meets the approval of the BLM AO. The Plan shall include guidance during different phases of Project construction and shall include measures to minimize the potential for repeated translocations of individual desert tortoises. The final Plan shall include all revisions deemed necessary by BLM, USFWS, and CDFG.						
MM WIL-3: Project Notifications and Reporting. The Applicant shall provide BLM staff with reasonable access to the Project site and compensation lands under the control of the Applicant and shall otherwise fully cooperate with BLM's efforts to verify the Project owner's compliance with, or the effectiveness of, mitigation measures. The Designated Biologist shall do all of the following:	Prior to, during, and after construction	BLM, CDFG, USFWS				

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
1. ***Notification.*** Notify the BLM AO at least 14 calendar days before initiating construction-related ground disturbance activities; immediately notify the BLM AO in writing if the Applicant is not in compliance with any required conditions of project approval, including but not limited to any actual or anticipated failure to implement mitigation measures within the specified time periods; 2. ***Monitoring During Grubbing and Grading.*** Remain onsite daily while vegetation salvage, grubbing, grading and other ground-disturbance construction activities are taking place to avoid or minimize take of listed species, to check for compliance with all impact avoidance and minimization measures, and to check all exclusion zones to ensure that signs, stakes, and fencing are intact and that human activities are restricted in these protective zones. 3. ***Monthly Compliance Inspections.*** Conduct compliance inspections at a minimum of once per month after clearing, grubbing, and grading are completed and submit a monthly compliance report to the BLM AO, USFWS, and CDFG during construction. 4. ***Notification of Injured, Dead, or Relocated Listed Species.*** In the event of a sighting in an active construction area (e.g., with equipment, vehicles, or workers), injury, kill, or relocation of any listed species, the BLM AO, CDFG, and USFWS shall be notified immediately by phone. Notification shall occur no later than noon on the business day following the event if it occurs outside normal business hours so that the agencies can determine if further actions are required to protect listed species. Written follow-up notification via FAX or electronic communication shall be submitted to these agencies within two calendar days of the incident and include the following information as relevant: a. *Injured Desert Tortoise.* If a desert tortoise is injured as a result of Project-related activities during construction, the Designated Biologist shall immediately take it to a CDFG-approved wildlife rehabilitation and/or veterinarian clinic. Any veterinarian bills for such injured animals shall be paid by the Applicant. Following phone notification as required above, the BLM AO, CDFG, and USFWS shall determine the final disposition of the injured animal, if it recovers. Written notification shall include, at a minimum, the date, time, location, circumstances of the incident, and the name of the facility where the animal was taken. b. *Desert Tortoise Fatality.* If a desert tortoise is killed by Project-related activities during construction or operation, submit a written report with the same information as an injury report. These desert tortoises shall be salvaged according to guidelines described in the USGS publication *Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming Desert Tortoise.* The Applicant shall pay to have the desert tortoises transported and necropsied. The report shall include the date and time of the finding or incident. 5. ***Stop Work Order.*** The BLM AO may issue the Applicant a written stop work order to suspend any activity related to the construction or operation of the Project to prevent or remedy a violation of one or more required conditions of project approval (including but not limited to failure to comply with reporting, monitoring, or habitat acquisition obligations) or to prevent the illegal take of an endangered, threatened, or candidate species. The Applicant shall comply with the stop work order immediately upon receipt thereof.						
MM WIL-4: Compensatory Mitigation for Desert Tortoise Habitat Losses. To fully mitigate for habitat loss and potential take of desert tortoise, the Applicant shall provide compensatory mitigation at a 1:1 ratio for impacts to 4,900 acres, adjusted to reflect the final footprint of the selected Project alternative. For the purposes of this measure, the Project footprint means all lands directly disturbed in the construction and operation of the Project, including all linear features, as well as undeveloped areas inside the Project's boundaries that will no longer provide	Prior to construction	BLM, CDFG, USFWS	Review and approve the acquisition proposal.			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
viable long-term habitat for the desert tortoise. To satisfy this measure, the Applicant shall acquire, protect and transfer 1 acre of desert tortoise habitat for every acre of habitat within the final Project footprint, and provide associated funding for the acquired lands, as specified below. Mitigation Measure WIL-15 may provide the Applicant with another option for satisfying some or all of the requirements in this measure. In lieu of acquiring lands itself, the Applicant may satisfy the requirements of this measure by depositing funds into the REAT Account established with the NFWF, as provided below in section 3.h. of this measure. The timing of the mitigation shall correspond with the timing of the site disturbance activities. However, if security is posted in accordance with 3.g. below (Mitigation Security), the Applicant shall acquire, in fee or in easement, the land, no more than 18 months after the start of Project ground-disturbing activities. If compensation lands are acquired in fee title or in easement, the requirements for acquisition, initial improvement and long-term management of compensation lands include all of the following: 1. ***Selection Criteria for Compensation Lands.*** The compensation lands selected for acquisition in fee title or in easement shall a. be within the Colorado Desert Recovery Unit, with potential to contribute to desert tortoise habitat connectivity and build linkages between desert tortoise designated critical habitat, known populations of desert tortoise, and/or other preserve lands; b. provide habitat for desert tortoise with capacity to regenerate naturally when disturbances are removed; c. be prioritized near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation; d. be connected to lands with desert tortoise habitat equal to or better quality than the Project site, ideally with populations that are stable, recovering, or likely to recover; e. not have a history of intensive recreational use or other disturbance that does not have the capacity to regenerate naturally when disturbances are removed or might make habitat recovery and restoration infeasible; f. not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration; g. not contain hazardous wastes that cannot be removed to the extent that the site could not provide suitable habitat; and h. have water and mineral rights included as part of the acquisition, unless the BLM AO, in consultation with CDFG and USFWS, agrees in writing to the acceptability of land. 2. ***Review and Approval of Compensation Lands Prior to Acquisition.*** The Applicant shall submit a formal acquisition proposal to the BLM AO, CDFG, and USFWS describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for desert tortoise in relation to the criteria listed above. Approval from the BLM AO and CDFG, in consultation with BLM and the USFWS, shall be required for acquisition of all compensatory mitigation parcels. 3. ***Compensation Lands Acquisition Requirements.*** The Applicant shall comply with the following requirements relating to acquisition of the compensation lands after the BLM AO and CDFG, in consultation with BLM and the USFWS, have approved the proposed compensation lands:						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
a. *Preliminary Report.* The Applicant, or approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the BLM AO and CDFG. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the BLM AO and CDFG, in consultation with the USFWS. For conveyances to the state, approval may also be required from the California Department of General Services, the Fish and Game Commission, and the Wildlife Conservation Board. b. *Title/Conveyance.* The Applicant shall transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement as required by the BLM AO and CDFG. Transfer of either fee title or an approved conservation easement will usually be sufficient, but some situations, e.g., the donation of lands burdened by a conservation easement to BLM, will require that both types of transfers be completed. Any transfer of a conservation easement or fee title must be to CDFG, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code §65965), or to BLM under terms approved by the BLM AO and CDFG. If an approved non-profit organization holds title to the compensation lands, a conservation easement shall be recorded in favor of CDFG in a form approved by CDFG. If an approved non-profit holds a conservation easement, CDFG shall be named a third party beneficiary. c. *Initial Habitat Improvement Fund.* The Applicant shall fund the initial protection and habitat improvement of the compensation lands. Alternatively, a non-profit organization may hold the habitat improvement funds if it is qualified to manage the compensation lands (pursuant to California Government Code §65965) and if it meets the approval of CDFG and the BLM AO. If CDFG takes fee title to the compensation lands, the habitat improvement fund must be paid to CDFG or its designee. d. *Property Analysis Record.* Upon identification of the compensation lands, the Applicant shall conduct a PAR or PAR-like analysis to establish the appropriate long-term maintenance and management fee to fund the in-perpetuity management of the acquired mitigation lands. e. *Long-term Maintenance and Management Fund.* The Applicant shall deposit in NFWF's REAT Account a non-wasting capital long-term maintenance and management fee in the amount determined through the PAR analysis conducted for the compensation lands. The BLM AO, in consultation with CDFG, may designate another non-profit organization to hold the long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity. If CDFG takes fee title to the compensation lands, CDFG shall determine whether it will hold the long-term management fee in the special deposit fund, leave the money in the REAT Account, or designate another entity to manage the long-term maintenance and management fee for CDFG and with CDFG supervision. f. *Interest, Principal, and Pooling of Funds.* The Applicant, the BLM AO and CDFG shall ensure that an agreement is in place with the long-term maintenance and management fee holder/manager to ensure the following conditions: i. Interest. Interest generated from the initial capital long-term maintenance and management fee shall be available for reinvestment into the principal and for the long-term operation, management, and protection of the approved compensation lands, including reasonable administrative overhead, biological monitoring, improvements to carrying capacity, law enforcement measures, and any other action approved by CDFG designed to protect or improve the habitat values of the compensation lands.						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
ii. Withdrawal of Principal. The long-term maintenance and management fee principal shall not be drawn upon unless such withdrawal is deemed necessary by the CDFG or the approved third-party long-term maintenance and management fee manager to ensure the continued viability of the species on the compensation lands. If CDFG takes fee title to the compensation lands, monies received by CDFG pursuant to this provision shall be deposited in a special deposit fund established solely for the purpose to manage lands in perpetuity unless CDFG designates NFWF or another entity to manage the long-term maintenance and management fee for CDFG. iii. Pooling Long-Term Maintenance and Management Fee Funds. CDFG, or a BLM AO- and CDFG-approved non-profit organization qualified to hold long-term maintenance and management fees solely for the purpose to manage lands in perpetuity, may pool the endowment with other endowments for the operation, management, and protection of the compensation lands for local populations of desert tortoise. However, for reporting purposes, the long-term maintenance and management fee fund must be tracked and reported individually to the CDFG and BLM AO. iv. Other expenses. In addition to the costs listed above, the Applicant shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to title and document review costs, expenses incurred from other state agency reviews, and overhead related to providing compensation lands to CDFG or an approved third party; escrow fees or costs; environmental contaminants clearance; and other site cleanup measures. g. *Mitigation Security*. The Applicant shall provide financial assurances to the BLM AO and CDFG with copies of the document(s) to the USFWS, to guarantee that an adequate level of funding is available to implement the mitigation measures described herein. These funds shall be used solely for implementation of the measures associated with the Project in the event the Applicant fails to comply with the requirements specified in this measure, or shall be returned to the Applicant upon successful compliance with the requirements in this measure. The BLM AO's or CDFG's use of the security to implement required measures may not fully satisfy the Applicant's obligations under this condition. Financial assurance can be provided to the BLM AO and CDFG in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security"). Prior to submitting the Security to the BLM AO, the Applicant shall obtain the BLM AO's and CDFG's approval, in consultation with the USFWS, of the form of the Security. Security shall be provided in the amounts calculated as follows: i. land acquisition costs for compensation land, calculated at $500/acre. ii. initial protection and improvement activities on the compensation land, calculated at $330/acre. iii. Long term maintenance and management fee, calculated at $1,450 an acre. The amount of security shall be adjusted for any change in the Project footprints for each phase as described above. h. The Applicant may elect to fund the acquisition and initial improvement of compensation lands through NFWF by depositing funds for that purpose into NFWF's REAT Account. Initial deposits for this purpose must be made in the same amounts as the security required in 3.g., above, and may be provided in lieu of security. If this option is used for the acquisition and initial improvement, the Applicant shall make an additional deposit into the REAT Account if necessary to cover the actual acquisition costs and administrative costs and fees of the compensation land purchase once land is identified and the actual costs are known. If the actual costs for acquisition and administrative costs and fees are less than $500 an acre, the excess money deposited in the REAT Account shall be returned to the Applicant. Money						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
deposited for the initial protection and improvement of the compensation lands shall not be returned to the Applicant. The responsibility for acquisition of compensation lands may be delegated to a third party other than NFWF, such as a non-governmental organization supportive of desert habitat conservation, by written agreement of the BLM AO and CDFG. Such delegation shall be subject to approval by the BLM AO and CDFG, in consultation with the USFWS, prior to land acquisition, initial protection or maintenance and management activities.						
MM WIL-5: Raven Monitoring and Control Plan. The Applicant shall implement a Raven Monitoring and Control Plan that is consistent with the most current USFWS-approved raven management guidelines, and which meets the approval of the BLM AO in consultation with USFWS and CDFG. A raven management plan included in the Applicant's BA to BLM shall provide the basis for the final plan, subject to review, revisions and approval from the BLM AO, CDFG, and USFWS. The management plan shall include but not be limited to a program to monitor raven presence in the Project vicinity, determine if raven numbers are increasing, and to implement raven control measures as needed based on monitoring results. The purpose of the plan is to avoid any Project-related increases in raven numbers during construction, operation, and decommissioning. The Applicant shall also provide funding for implementation of the USFWS Regional Raven Management Program, as described below. 1. The Raven Plan shall: a. Identify conditions associated with the Project that might provide raven subsidies or attractants; b. Describe management practices to avoid or minimize conditions that might increase raven numbers and predatory activities; c. Describe control practices for ravens; d. Establish thresholds that would trigger implementation of control practices; e. Address monitoring and nest removal during construction and for the life of the Project, and; f. Discuss reporting requirements. 2. ***USFWS Regional Raven Management Program***: The Applicant shall submit payment to the project sub-account of the REAT Account held by NFWF to support the USFWS Regional Raven Management Program. The one-time fee shall be as described in the cost allocation methodology or more current guidance as provided by USFWS or CDFG.	Prior to construction	BLM, CDFG, and USFWS	Review and approve the Raven Monitoring and Control Plan. Ensure the collection of fees for the USFWS Regional Raven Management Program.			
MM WIL-6: Avian and Bat Protection Plan. The Applicant shall prepare and implement an Avian and Bat Protection Plan (sometimes referred to as "Bird and Bat Conservation Strategies") to monitor the death and injury of birds and bats from collisions with facility features such as transmission lines and tower structures (e.g., meteorological towers). The monitoring data shall be used to inform an adaptive management program that would avoid and minimize Project-related avian and bat impacts. The study design shall be approved by the BLM AO in consultation with CDFG and USFWS, and shall be incorporated into the Project's Biological Resources Mitigation, Implementation, and Monitoring Plan (BRMIMP; see Mitigation Measure VEG-2) and implemented. The applicant shall follow APLIC guidelines for avian protection on powerlines and shall use current guidelines to reduce bird mortality from collision and electrocution with powerlines. The APLIC (2006) and USFWS recommend the following:	Prior to operation	BLM, CDFG, USFWS	Review and approve the Avian and Bat Protection Plan.			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
1. Provide 60-inch minimum horizontal separation between energized conductors or energized conductors and grounded hardware; 2. Insulate hardware or conductors against simultaneous contact if adequate spacing is not possible; 3. Use structure designs that minimize impacts to birds; and 4. Shield wires to minimize the effects from bird collisions.						
MM WIL-7: Pre-construction Nest Surveys. Pre-construction nest surveys shall be conducted if construction activities would begin from February 1 through July 31. The Designated Biologist or Biological Monitor conducting the surveys shall be experienced bird surveyors familiar with standard nest-locating techniques such as those described in Martin and Guepel (1993). The goal of the nesting surveys shall be to identify the general location of the nest sites, sufficient to establish a protective buffer zone around the potential nest site, and need not include identification of the precise nest locations. Surveyors performing nest surveys shall not concurrently be conducting desert tortoise surveys. The bird surveyors shall perform surveys in accordance with the following guidelines: 1. Surveys shall cover all potential nesting habitat areas that could be disturbed by each phase of construction. Surveys shall also include areas within 500 feet of the boundaries of the active construction areas (including linear facilities); 2. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. One of the surveys shall be conducted within a 14-day period preceding initiation of construction activity. Additional follow-up surveys may be required if periods of construction inactivity exceed 3 weeks, an interval during which birds may establish a nesting territory and initiate egg laying and incubation; 3. If active nests or suspected active nests are detected during the survey, a buffer zone (protected area surrounding the nest, the size of which is to be determined by the Designated Biologist in consultation with CDFG) and monitoring plan shall be developed. Nest locations shall be mapped and submitted, along with a report stating the survey results, to the BLM AO; and 4. The Designated Biologist shall monitor the nest until he or she determines that nestlings have fledged and dispersed; activities that might, in the opinion of the Designated Biologist, disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made.	Prior to construction	BLM, CDFG	Ensure the completion of required surveys to CDFG protocol standards.			
MM WIL-8: American Badger and Desert Kit Fox Protection. To avoid direct impacts to American badgers and desert kit fox, the Applicant shall implement the following measures: 1. [Removed from ROD] 2. ***Prepare Desert Kit Fox Management Plan:*** At least 45 days prior to construction, the Applicant shall submit a Desert Kit Fox Management Plan that: 1) incorporates baseline desert kit fox census and health survey findings into a cohesive management strategy that minimizes disease risk to kit fox populations; 2) specifically identifies preconstruction survey methods for kit foxes and large carnivores (e.g., badgers) in the Project area; 3) describes preconstruction and construction-phase passive relocation methods from the site, and; 4) coordinates survey findings prior to and during construction to meet the information needs of wildlife health officials in monitoring the health of kit fox populations. The Plan shall include contingency measures that would be performed if canine distemper were documented in the Project area possible dispersal areas adjacent to the Project site, and measures to address potential kit fox reoccupancy of the site (as documented at the	Prior to construction	BLM, CDFG	Review and approve the Desert Kit Fox Management Plan.			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
Genesis site). The contents and requirements of the Plan shall be subject to review and approval by the BLM and CDFG. 3. ***Implement Desert Kit Fox Management Plan:*** If canine distemper is not identified in the Project area or relocation areas during baseline surveys, the mitigation strategy may utilize passive means or active means with appropriate CDFG authorization to relocate kit foxes from the site. The approach below assumes that canine distemper is not detected during baseline surveys. a. *Pre-Construction Surveys:* Biological Monitors shall conduct pre-construction surveys for desert kit fox and American badger no more than 30 days prior to initiation of construction activities. Surveys shall also consider the potential presence of dens within 100 feet of the project boundary (including utility corridors and access roads) and shall be performed for each phase of construction. If dens are detected each den shall then be further classified as inactive, potentially active, or definitely active. b. Inactive dens that would be directly impacted by construction activities shall be excavated by hand and backfilled to prevent reuse by badgers or kit fox. c. Potentially and definitely active dens that would be directly impacted by construction activities shall be monitored by the Biological Monitor for three consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) and/or infrared camera stations at the entrance. d. If no tracks are observed in the tracking medium or no photos of the target species are captured after three nights, the den shall be excavated and backfilled by hand. e. If tracks are observed, the den shall be progressively blocked with natural materials (rocks, dirt, sticks, and vegetation piled in front of the entrance) for the next three to five nights to discourage the badger or kit fox from continued use. After verification that the den is unoccupied it shall then be excavated and backfilled by hand to ensure that no badgers or kit fox are trapped in the den. BLM approval may be required prior to release of badgers on public lands. f. If an active natal den (a den with pups) is detected on the site, the BLM AO and CDFG shall be contacted within 24 hours to determine the appropriate course of action to minimize the potential for animal harm or mortality. The course of action would depend on the age of the pups, location of the den on the site (e.g., is the den in a central area or in a perimeter location), status of the perimeter site fence (completed or not), and the pending construction activities proposed near the den. A 500-foot no-disturbance buffer shall be maintained around all active dens. g. The following measures are required to reduce the likelihood of distemper transmission: i. No pets shall be allowed on the site prior to or during construction, with the possible exception of vaccinated kit fox scat detection dogs during preconstruction surveys, and then only with prior CDFG approval; ii. Any sick or diseased kit fox, or documented kit fox mortality shall be reported to CDFG and the BLM AO within 8 hours of identification. If a dead kit fox is observed, it shall be collected and stored according to established protocols distributed by CDFG WIL, and the WIL contacted to determine carcass suitability for necropsy.						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
MM WIL-9: Burrowing Owl Protection and Mitigation. The Applicant shall implement the following measures to avoid, minimize and offset impacts to burrowing owls: 1. ***Pre-Construction Surveys:*** The Designated Biologist or Biological Monitor shall conduct pre-construction surveys for burrowing owls no more than 30 days prior to initiation of construction activities. Surveys shall be focused exclusively on detecting burrowing owls, and shall be conducted from two hours before sunset to one hour after or from one hour before to two hours after sunrise. The survey area shall include the Project Disturbance Area and surrounding 500-foot survey buffer for each phase of construction in accordance with VEG-13 (*Phasing*). 2. ***Implement Burrowing Owl Mitigation Plan:*** The Applicant shall prepare and implement a final Burrowing Owl Mitigation Plan. The Plan shall be approved by the BLM AO in consultation with USFWS and CDFG, and shall: a. identify suitable sites as close as possible to the Project site, and within 1 mile of the Project Disturbance Areas for creation or enhancement of burrows prior to passive relocation efforts; b. provide guidelines for creation or enhancement of at least two natural or artificial burrows per relocated owl; c. provide detailed methods and guidance for passive relocation of burrowing owls occurring within the Project disturbance area; and d. describe monitoring and management of the passive relocation effort, including the created or enhanced burrow location and the project area where burrowing owls were relocated from and provide a reporting plan. e. include the following elements related to artificial burrow relocation: i. A brief description of the project and project site pre-construction; ii. The mitigation measures that will be implemented; iii. Potential conflicting site uses or encumbrances; iv. A comparison of the occupied burrow site(s) and the artificial burrow site(s) (e.g., vegetation, habitat types, fossorial species use in the area, and other features); v. Artificial burrow(s) proximity to the project activities, roads and drainages; vi. Artificial burrow(s) proximity to other burrows and entrance exposure; Photographs of the site of the occupied burrow(s) and the artificial burrows; vii. Map of the project area that identifies the burrow(s) to be excluded as well as the proposed sites for the artificial burrows; viii. A brief description of the artificial burrow design; ix. Description of the monitoring that will take place during and after project implementation including information that will be provided in a monitoring report. x. A description of the frequency and type of burrow maintenance Because elements (iv) through (vii) rely on information that can be obtained only during pre-construction surveys, those elements of the Plan shall be included in a separate relocation plan if and when relocation activities are proposed.	No more than 30 days prior to construction	BLM, CDFG, USFWS	Ensure completion of preconstruction surveys and review and approve the Burrowing Owl Mitigation Plan. Ensure acquisition of mitigation for burrowing owl habitat.			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
f. address the following elements related to the exclusion plan: i. Confirm by site surveillance that the burrow(s) is empty of burrowing owls and other species by use of a fiber-optic endoscope or comparable device; ii. Describe the type of scope and appropriate timing of scoping to avoid impacts; iii. Describe occupancy factors to look for and what will guide determination of vacancy and excavation timing (e.g., one-way doors should be left in place 48 hours to ensure burrowing owls have left the burrow before excavation, visited twice daily and monitored for evidence that owls are inside and can't escape); iv. Identify how the burrow(s) will be excavated (excavation using hand tools with refilling to prevent reoccupation is preferable whenever possible (may include using piping to stabilize the burrow to prevent collapsing until the entire burrow has been excavated and it can be determined that no owls reside inside the burrow); v. Describe removal of other potential owl burrow surrogates or refugia on site; Photographing the excavation and closure of the burrow to demonstrate success and sufficiency; vi. Describe required monitoring of the exclusion site to evaluate success and, if needed, to implement remedial measures to prevent subsequent owl use to avoid take; vii. Identify how the impacted site will continually be made inhospitable to burrowing owls and fossorial mammals (e.g., by allowing vegetation to grow tall, heavy disking, or immediate and continuous grading) until development is complete. 3. ***Implement Avoidance Measures:*** If an active burrowing owl burrow is detected within 500 feet from the Project disturbance area the following avoidance and minimization measures shall be implemented: a. *Establish Non-Disturbance Buffer*: Fencing shall be installed at a 250-foot radius from the occupied burrow to create a non-disturbance buffer around the burrow. The non-disturbance buffer and fence line may be reduced to 160 feet if all Project-related activities that might disturb burrowing owls would be conducted during the non-breeding season (September 1st through January 31st). Signs shall be posted in English and Spanish at the fence line indicating no entry or disturbance is permitted within the fenced buffer. b. *Monitoring*: If construction activities would occur within 500 feet of the occupied burrow during the nesting season (February 1 to August 31st) the Designated Biologist or Biological Monitor shall monitor to determine if these activities have potential to adversely affect nesting efforts, and shall make recommendations to minimize or avoid such disturbance. 4. ***Acquire Compensatory Burrowing Owl Habitat:*** Consistent with CDFG mitigation guidance (CBOC, 1993), the Applicant shall acquire, in fee or in easement, at least 45 acres of land suitable to support a resident population of burrowing owls and shall provide funding for the enhancement and long-term management of these compensation lands (based on three owl pairs and four unpaired owls observed during focused surveys and 6.5 acres per pair or individual bird; to be adjusted based on final survey findings). The responsibilities for acquisition and management of the compensation lands may be delegated by written agreement to CDFG or to a third party, such as a non-governmental organization dedicated to habitat conservation, subject to approval by the BLM AO, in consultation with CDFG prior to land acquisition or management activities. Additional funds shall be based on the adjusted market value of compensation lands at the time of construction to acquire and manage habitat.						

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
a. *Criteria for Burrowing Owl Mitigation Lands*: The terms and conditions of this acquisition or easement shall be as described in Mitigation Measure WIL-4 [Desert Tortoise Compensatory Mitigation], with the additional criteria to include that the 45 acres of mitigation land must provide suitable habitat for burrowing owls. The 45 acres of burrowing owl mitigation lands may be included with the desert tortoise mitigation lands ONLY if this burrowing owl criterion is met. If the 45 acres of burrowing owl mitigation land is separate from the acreage required for desert tortoise compensation lands, the Applicant shall fulfill the requirements described below in this measure. b. *Security*: If the 19.5 acres of burrowing owl mitigation land is separate from the acreage required for desert tortoise compensation lands, the Applicant or an approved third party shall complete acquisition of the proposed compensation lands within the time period specified for this acquisition. Alternatively, financial assurance can be provided by the Applicant to the BLM AO and CDFG, according to the measures outlined in Mitigation Measure WIL-4. These funds shall be used solely for implementation of the measures associated with the Project. Financial assurance can be provided to the BLM AO in the form of an irrevocable letter of credit, a pledged savings account, or another form of security ("Security") prior to initiating ground-disturbing Project activities. Prior to submittal, the Security shall be approved by the BLM AO in consultation with CDFG and the USFWS to ensure funding. The final amount due will be determined by an updated appraisal and PAR analysis conducted as described in Mitigation Measure WIL-4.						
MM WIL-10: Compensatory Mitigation for Mojave Fringe-toed Lizard Habitat Losses. To mitigate for permanent habitat loss and direct impacts to Mojave fringe-toed lizards the Applicant shall provide compensatory mitigation at a 3:1 ratio, which may include compensation lands purchased in fee or in easement in whole or in part, for impacts to stabilized or partially stabilized desert dune habitat (19 acres x 3 = 57.0 acres); or the three times (3X) the acreage of sand dune/partially stabilized sand dune habitat permanently impacted by the final Project footprint, whichever is greater). If compensation lands are acquired, the Applicant shall provide funding for the acquisition in fee title or in easement, initial habitat improvements and long-term maintenance and management of the compensation lands. 1. ***Criteria for Compensation Lands***: The compensation lands selected for acquisition shall: a. Be sand dune or partially stabilized sand dune habitat within the McCoy Valley or Chuckwalla Valley with potential to contribute to Mojave fringe-toed lizard habitat connectivity and build linkages between known populations of Mojave fringe-toed lizards and preserve lands with suitable habitat; b. To the extent feasible, be connected to lands currently occupied by Mojave fringe-toed lizard; c. To the extent feasible, be near larger blocks of lands that are either already protected or planned for protection, or which could feasibly be protected long-term by a public resource agency or a non-governmental organization dedicated to habitat preservation; d. Provide quality habitat for Mojave fringe-toed lizard, that has the capacity to regenerate naturally when disturbances are removed; e. Not have a history of intensive recreational use or other disturbance that might make habitat recovery and restoration infeasible; f. Not be characterized by high densities of invasive species, either on or immediately adjacent to the parcels under consideration, that might jeopardize habitat recovery and restoration;	Prior to operation	BLM, CDFG, USFWS	Ensure compensatory mitigation is acquired.			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
g. Not contain hazardous wastes that cannot be removed to the extent the site is suitable for habitat; h. Not be subject to property constraints (i.e. mineral leases, cultural resources); and i. Be on land for which long-term management is feasible. 2. ***Security for Implementation of Mitigation***: The Applicant shall provide financial assurances to the BLM AO to guarantee that an adequate level of funding is available to implement the acquisitions and enhancement of Mojave fringe-toed lizard habitat as described in this measure. These funds shall be used solely for implementation of the measures associated with the Project. Financial assurance can be provided to the BLM AO according to the measures outlined in Mitigation Measure WIL-4. The final amount due will be determined by an updated appraisal and a PAR analysis conducted as described in Mitigation Measure WIL-4. 3. ***Preparation of Management Plan***: The Applicant shall submit to the BLM AO, CDFG and USFWS a draft Management Plan that reflects site-specific enhancement measures for the Mojave fringe-toed lizard habitat on the acquired compensation lands. The objective of the Management Plan shall be to enhance the value of the compensation lands for Mojave fringe-toed lizards, and may include enhancement actions such as weed control, fencing to exclude livestock, erosion control, or protection of sand sources or sand transport corridors.						
MM WIL-11: [Removed from FEIS]						
MM WIL-12. Measures to Minimize Impacts to Golden Eagles. The Applicant shall implement the following measures to avoid or minimize Project-related construction impacts to golden eagles during initial Project construction and again prior to Project decommissioning. 1. ***Annual Inventory During Construction***: For each calendar year during which construction will occur an inventory shall be conducted to determine if golden eagle territories occur within one mile of the Project boundaries. Survey methods for the inventory shall be as described in the *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations* (Pagel et al., 2010) or more current guidance from the USFWS. 2. ***Inventory Data***: Data collected during the inventory shall include at least the following: territory status (unknown, vacant, occupied, breeding successful, breeding unsuccessful); nest location, nest elevation; age class of golden eagles observed; nesting chronology; number of young at each visit; digital photographs; and substrate upon which nest is placed. 3. ***Determination of Unoccupied Territory Status***: A nesting territory or inventoried habitat shall be considered unoccupied by golden eagles ONLY after completing at least 2 full surveys in a single breeding season. In circumstances where ground observation occurs rather than aerial surveys, at least 2 ground observation periods lasting at least 4 hours or more are necessary to designate an inventoried habitat or territory as unoccupied as long as all potential nest sites and alternate nests are visible and monitored. These observation periods shall be at least 30 days apart for an inventory, and at least 30 days apart for monitoring of known territories. 4. ***Monitoring and Adaptive Management Plan***: If an occupied nest[4] is detected within 1 mile of the Project boundaries, the Applicant shall prepare and implement a Golden Eagle Monitoring and Management Plan for the duration of construction to ensure that Project construction activities do not result in injury or disturbance to	Prior to construction and decommissioning	USFWS	Ensure completion of surveys for Golden Eagles pursuant to USFWS survey methods. Ensure collection of data and review and approve a Golden Eagle Monitoring and Management Plan			

[4] An occupied nest is one used for breeding by a pair of golden eagles in the current year. Presence of an adult, eggs, or young, freshly molted feathers or plucked down, or current years' mutes (whitewash) also indicate site occupancy. Additionally, all breeding sites within a breeding territory are deemed occupied while raptors are demonstrating pair bonding activities and developing an affinity to a given area. If this culminates in an individual nest being selected for use by a breeding pair, then the other nests in the nesting territory will no longer be considered occupied for the current breeding season. A nest site is considered occupied throughout the periods of initial courtship and pair-bonding, egg laying, incubation, brooding, fledging, and post-fledging dependency of the young.

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
golden eagles. The monitoring methods shall be consistent with those described in the *Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations* (Pagel et al., 2010) or more current guidance from the USFWS. The Monitoring and Management Plan shall be prepared in consultation with the USFWS. Triggers for adaptive management shall include any evidence of Project-related disturbance to nesting golden eagles, including but not limited to: agitation behavior (displacement, avoidance, and defense), increased vigilance behavior at nest sites, changes in foraging and feeding behavior, or nest site abandonment. The Monitoring and Management Plan shall include a description of adaptive management actions, which shall include, but not be limited to, cessation of construction activities that are deemed by the Designated Biologist to be the source of golden eagle disturbance.						
MM WIL-13: Measures to Minimize Wildlife Impacts from Evaporation Ponds. As directed by BLM, USFWS, and CDFG based on current wildlife management information and data, the Applicant shall cover the evaporation ponds prior to any discharge with 1.5-inch mesh netting designed to exclude birds and other wildlife from drinking or landing on the water of the ponds. Netting with mesh sizes other than 1.5 inches may be installed if approved by the BLM AO in consultation with CDFG and USFWS. The netted ponds shall be monitored regularly to verify that the netting remains intact, is fulfilling its function in excluding birds and other wildlife from the ponds, and does not pose an entanglement threat to birds and other wildlife. The ponds shall include a visual deterrent in addition to the netting, and the pond shall be designed such that the netting shall never contact the water. Monitoring of the evaporation ponds shall include the following: 1. ***Monthly Monitoring***: The Designated Biologist or Biological Monitor shall regularly survey the ponds at least once per month starting with the first month of operation of the evaporation ponds. The purpose of the surveys shall be to determine if the netted ponds are effective in excluding birds, if the nets pose an entrapment hazard to birds and wildlife, and to assess the structural integrity of the nets. The monthly surveys shall be conducted in 1 day for a minimum of 2 hours following sunrise (i.e., dawn), a minimum of 1 hour mid-day (i.e., 11:00 to 13:00), and a minimum of 2 hours preceding sunset (i.e., dusk) in order to provide an accurate assessment of bird and wildlife use of the ponds during all seasons. Surveyors shall be experienced with bird identification and survey techniques. Operations staff at the Project site shall also report finding any dead birds or other wildlife at the evaporation ponds to the Designated Biologist within one day of the detection of the carcass. The Designated Biologists shall report any bird or other wildlife deaths or entanglements within two days of the discovery to the BLM AO, CDFG, and USFWS. 2. ***Dead or Entangled Birds***: If dead or entangled birds are detected, the Designated Biologist shall take immediate action to correct the source of mortality or entanglement. The Designated Biologist shall make immediate efforts to contact and consult the CPM, CDFG, and USFWS by phone and electronic communications prior to taking remedial action upon detection of the problem, but the inability to reach these parties shall not delay taking action that would, in the judgment of the Designated Biologist, prevent further mortality of birds or other wildlife at the evaporation ponds. 3. ***Quarterly Monitoring***: If after 12 consecutive monthly site visits no bird or wildlife deaths or entanglements are detected at the evaporation ponds by or reported to the Designated Biologist, monitoring can be reduced to quarterly visits. 4. ***Biannual Monitoring***: If after 12 consecutive quarterly site visits no bird or wildlife deaths or entanglements are detected by or reported to the Designated Biologist and with approval from the BLM AO, USFWS and CDFG, future surveys may be reduced to two surveys per year, during the spring nesting season and during fall migration. If approved by the BLM AO, USFWS and CDFG, monitoring outside the nesting season may be conducted by the Environmental Compliance Manager.	Throughout pond operation	BLM, CDFG, USFWS	Retain and schedule Designated Biologist and Biological Monitor Cover the evaporation ponds prior to any discharge			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Biological Resources – Wildlife (cont.)						
5. ***Modification of Monitoring Program***: Without respect to the above requirements the Applicant, CDFG or USFWS may submit to the BLM AO a request for modifications to the evaporation pond monitoring program based on information acquired during monitoring, and may also suggest adaptive management measures to remedy any problems that are detected during monitoring or modifications if bird impacts are not observed. Modifications to the evaporation pond monitoring described above and implementation of adaptive management measures shall be made only after approval from the BLM AO, in consultation with USFWS and CDFG.						
MM WIL-14: [Removed from FEIS]						
MM WIL-15: In-Lieu Fees to Satisfy Compensation Requirements. The Applicant may choose to satisfy its mitigation obligations by paying an in-lieu fee instead of acquiring compensation lands, pursuant to California Fish and Game Code §§2069 and 2099 or any other applicable in-lieu fee provision, to the extent the in-lieu fee provision is found by the Fish and Game Commission to mitigate the impacts identified herein.	Prior to operation.	CDFG	Ensure payment of in-lieu fees, if required.			
Cultural Resources						
MM CUL-1: The BLM's execution of an MOA for the proposed undertaking in accordance with the requirements of §106 of the NHPA will lead to avoidance, minimization, or mitigation of potential adverse effects to historic properties. The BLM shall prepare the MOA in consultation with the ACHP, SHPO, the Applicant, Riverside County, Indian tribes, and other identified consulting parties. The MOA will be binding on the Applicant and the proposed undertaking. An executed MOA represents the BLM's completion of the NHPA §106 process. The MOA must be executed prior to the ROD. The MOA will contain measures to avoid, minimize, and mitigate adverse effects to historic properties and detail the process for activities to proceed in areas where historic properties are not now known to exist; procedures for treatment of unanticipated effects and post-review discoveries; recognition that BLM will comply with NAGPRA; compliance monitoring; dispute resolution; and tribal participation. Resolution of adverse effects to historic properties will be developed in consultation and may include research and documentation, data recovery excavations, curation, public interpretation, or use or creation of historic contexts. In addition, a HPTP shall be prepared, appended to the MOA, and implemented and shall contain procedures to avoid, minimize, and mitigate effects to historic properties, and could include measures similar to the following: a. On the basis of preliminary CRHR eligibility assessments, NRHP eligibility assessments, or existing NRHP eligibility determinations, the BLM may require the relocation of project components to avoid or reduce damage to cultural resource values known prior to construction. Where operationally feasible, potentially NRHP- or CRHR-eligible resources shall be protected from direct project impacts by project redesign within previously surveyed and analyzed areas. b. Where CRHR- or NRHP-eligible or -listed historic properties cannot be protected from direct effects by project redesign, the Applicant shall comply with appropriate mitigative treatment(s) that will be detailed in the HPTP. c. All CRHR-listed or eligible cultural resources and all NRHP-listed, eligible, and unevaluated cultural resources being treated as eligible (as determined by the BLM) that will not be affected by direct impacts, but are within 50 feet of project construction activities, shall be monitored by a qualified archaeologist. Protective fencing or other markers, at the BLM's discretion, shall be erected and maintained to protect these resources from inadvertent trespass for the duration of construction in the vicinity.	MOA executed prior to ROD.	BLM	Adhere to MOA during all phases of construction Comply with project component relocation requirements Comply with mitigative treatment(s) Retain and schedule archaeological monitor(s) during construction Retain and schedule all required tribal cultural consultants Develop and implement a Long Term Management Plan			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Cultural Resources (cont.)						
d. The HPTP shall contain a research design and a scope of work for evaluation of cultural resources and for data recovery or additional treatment of NRHP-listed or -eligible sites that cannot be avoided. Additional treatment for resources could include sample excavation and/or surface artifact collection, site documentation, curation, public interpretation, or use or creation of historic contexts. Additional content of the treatment plan will be dictated by the consultations associated with the development of the MOA. e. Construction work within 100 feet of historic properties that require data-recovery fieldwork shall not begin until authorized by the BLM. f. Archaeological monitoring shall be conducted by qualified archaeologists familiar with the types of historical and prehistoric resources that could be encountered within the project area, and under direct supervision of a principal archaeologist. All supervisory cultural resources personnel will be approved by the BLM through the agency's Cultural Resource Use Permitting process. A tribal cultural consultant may be required at culturally sensitive locations specified by the BLM following government-to-government consultation with Indian tribes. The HPTP shall indicate the locations where tribal cultural consultants may be required. The Applicant shall retain and schedule any required tribal cultural consultants. g. In the event of unanticipated effects or post-review discoveries during construction, operation and maintenance, or decommissioning, procedures outlined in the MOA shall be adhered to. At a minimum, this shall include stop work orders in the vicinity of the find, recordation and evaluation of the find by a qualified archaeologist, notification of the find to BLM, and appropriate treatment measures, possibly including data recovery or avoidance. h. The Applicant shall develop and implement a Long Term Management Plan for post-construction monitoring and condition assessment of sites in the APE which could be subject to impacts from project operation and maintenance activities.						
Geology and Soils Resources						
MM GEO-1: Conduct geotechnical studies to assess soil characteristics and aid in appropriate foundation design. The Applicant and/or its contractor shall perform a design-level geotechnical study that includes subsurface exploration and material testing necessary to determine the CBC seismic design category and site soil class for which each of the Project components must be designed. The geotechnical study shall identify the presence, if any, of potentially adverse soil conditions such as liquefiable soils, expansive soils, corrosive soils, and soils that may settle or experience hydrocompaction. Based on the nature, location and severity of adverse soil conditions, the geotechnical study shall recommend appropriate and feasible design features necessary to reduce the potential for liquefiable, expansive, corrosive or collapsible soils to adversely affect MSEP facilities. Such measures might include use of corrosion-resistant materials and coatings; use of non-corrosive, non-expansive backfills; use of cathodic protection systems; soil-treatment processes; redirection of surface water and drainage away from expansive foundation soils; and/or any other combination of soil preparation methods or foundation designs necessary to avoid or reduce the adverse affects of soils on Project structures. Studies shall be carried out by a registered geologist or certified geotechnical engineer, and shall conform to industry standards of care and ASTM standards for field and laboratory testing. For completeness and direct correlation to the Proposed Action, the Applicant shall provide the geotechnical consultant with the most recent copy of the project case exhibit (tract map, parcel map, plot plan, etc.) for incorporation into the report. Furthermore, the consultant shall plot all appropriate geologic and geotechnical data on this case exhibit and include it as an appendix/figure/plate in their report. Study results and proposed solutions shall be provided for review and approval to the BLM at least 60 days before final Project design.	Study results and proposed solutions shall be provided for review and approval to the BLM at least 60 days before final Project design	BLM	Conduct geotechnical studies to assess soil characteristics and aid in appropriate foundation design			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Greenhouse Gas Emissions and Global Climate Change						
MM GHG-1: All SF_6-containing circuit breakers that will be installed for each power unit shall be hermetically sealed.	During construction	BLM	Hermetically seal all of the SF_6-containing circuit breakers that will be installed for each power unit			
MM CLIMATE-1: [Removed from ROD]						
Hazards and Hazardous Materials						
MM HAZ-1: The Applicant shall prepare and implement a site-specific Hazardous Materials Safety Plan. The plan shall identify the chemicals potentially present in on-site soils, health and safety hazards associated with those chemicals, monitoring to be performed during site activities, soil handling methods required to minimize the potential for harmful exposures, appropriate personal protective equipment, and emergency response procedures. The Plan shall be included in and implemented as part of the Project's larger Safety and Health Program. The plan shall be submitted to the BLM for approval prior to commencement of construction activities and shall be distributed to all construction crew members prior to construction and operation of the Project.	Prior to construction	BLM	Develop and implement a site-specific Hazardous Materials Safety Plan			
MM HAZ-2: Broken PV Module Detection and Handling Plan. If photovoltaic (PV) panels containing cadmium telluride (CdTe) are used on the Project site, the Applicant shall prepare and implement a Broken PV Module Detection and Handling Plan. The plan shall describe the Applicant's plan for identifying and handling photovoltaic (PV) modules that may break, chip, or crack at some point during the Project's life cycle. The plan shall describe and define methods for detecting and handling broken PV modules to ensure the safe handling, storage, transport, and recycling and/or disposal of the modules and related electrical components in a manner that is compliant with applicable law and protective of human health and the environment. The plan shall be submitted to the BLM for approval prior to commencement of construction activities and shall be distributed to all construction crew members and temporary and permanent employees prior to construction and operation of the Project.	Prior to construction	BLM	Develop and implement a Broken PV Module Detection and Handling Plan			
Paleontological Resources						
APM Paleo-1. To address potential paleontological impacts during the pre-construction phase: a. Prior to the start of any Project-related construction (defined as construction-related vegetation clearing, ground disturbance and preparation, and site excavation activities), the project owner shall ensure that a qualified paleontologist is available for field activities and is prepared to implement the conditions of approval. The qualified paleontologist shall be responsible for implementing all the paleontological conditions of approval and for using qualified personnel to assist in this work. b. Prior to the start of construction, the qualified paleontologist shall prepare a worker's environmental awareness training program. The paleontological training program shall address the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources. The training program shall also include the set of reporting procedures that workers are to follow if paleontological resources are encountered during Project activities. The training program shall be presented by a qualified paleontologist and may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern.	Prior to construction	BLM	Prior to construction a qualified paleontologist shall: • Be responsible for implementing all of the paleontological conditions of approval • prepare a worker's environmental awareness training program			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Paleontological Resources (cont.)						
APM Paleo-2. To address potential paleontological impacts during the construction phase: a. The qualified paleontologist or paleontological monitor shall be present at all times he or she deems appropriate to monitor construction-related grading, excavation, trenching, and/or augering in areas with a significant potential for fossil-bearing sediments to occur. All ground-disturbing activities in areas determined to have a high sensitivity shall be monitored on a full-time basis at the start of the Project. All ground disturbances in areas determined to have low to high sensitivity at depths of 1.5 m (5 feet) or greater shall also require monitoring on a full-time basis, initially. If no significant fossils are found, then the frequency of monitoring shall be adjusted at the discretion of the qualified paleontologist after an adequate amount of time is spent observing the geologic deposits in the project area. No monitoring is required in areas determined to have a low sensitivity. b. Paleontological monitoring will include inspection of exposed rock units and collection of matrix to be tested for the presence of microscopic fossils. Paleontological monitors will have authority to temporarily divert excavations or drilling away from exposed fossils in order to efficiently and professionally recover the fossil specimens and collect associated data. Any paleontological fieldwork occurring on lands administered by the BLM would require a Paleontological Resources Use Permit issued by the BLM state office.	During construction	BLM	During construction a qualified paleontologist shall: • Monitor construction related grading, trenching, and/or augering • Inspect exposed rock and collection of a matrix to be tested for the presence of microscopic fossils			
APM Paleo-3. To address potential paleontological impacts during the post- construction phase: The Project owner shall ensure preparation of a paleontological resources monitoring report by the qualified paleontologist. The report shall be completed following the analysis of any recovered fossil materials and related information. The report shall include, but not be limited to, a description and inventory list of recovered fossil materials (if any); a map showing the location of paleontological resources found in the field; determinations of scientific significance; and a statement by the qualified paleontologist that project impacts to paleontological resources have been mitigated.	During post-construction	BLM	During the post-construction phase a qualified paleontologist shall prepare a paleontological resources report.			
Recreation and Public Access						
MM REC-1: The Applicant shall prepare and distribute interpretive materials, including a construction schedule and safety information regarding trucks and other heavy equipment on local roads, to users of the Midland, Mule Mountains, and La Posa LTVAs, Wiley's Well and Coon Hollow Campgrounds, and BLM kiosks announcing the development of the solar facilities at the Project site and the permanent closure of approximately 4,300 acres of public land to recreational use. The Applicant shall prepare a one-page fact sheet about the Project and submit it to the PSSCFO for review. The BLM AO shall approve the draft materials prior to distribution.	Prior to construction	BLM	Prepare and distribute interpretive materials, including a construction schedule and safety information			
MM REC-2: No less than 15 days prior to construction, the Applicant shall coordinate construction activities and the Project construction schedule with the AO for the recreation areas impacted. The Applicant shall schedule construction activities to avoid heavy recreational use periods in coordination with and at the discretion of the AO. The Applicant shall locate construction equipment to avoid temporary preclusion of recreation areas in accordance with the recommendation of the AO. The Applicant shall document its coordination efforts with the AO and provide this documentation to the Lead Agencies and affected jurisdictions at least 30 days prior to construction.	Begin coordination no less than 60 days prior to construction and provide documentation of the coordination effort to the Lead Agencies and affected jurisdictions at least 30 days prior to construction.	BLM	Coordinate construction activities and the Project construction schedule with the AO for the recreation areas impacted			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Recreation and Public Access (cont.)						
MM REC-3: No less than 60 days prior to construction, the Applicant shall coordinate with the AO administering any NECO Plan-designated open routes to establish temporary closure of the routes to avoid construction area hazards, if the route is deemed unsafe to use during construction. The Applicant shall post a public notice of the temporary route closure and penalties for any off-route OHV activities. The Applicant shall document its coordination efforts with the AO and submit this documentation to the BLM and other agencies affected at least 30 days prior to construction.	Begin coordination no less than 60 days prior to construction and provide documentation of the coordination effort to the Lead Agencies and affected jurisdictions at least 30 days prior to construction.	BLM	Coordinate with the AO administering any NECO Plan-designated open routes to establish temporary closure of the routes to avoid construction area hazards			
MM REC-4: The Applicant shall encourage Project workers to utilize local housing or private RV parks in Blythe and/or nearby communities.	Prior to and during construction	BLM	Encourage Project workers to utilize local housing or private RV parks			
MM REC-5: The Project cannot preclude the maintenance of north/south OHV connectivity to the west side of the Big Maria Wilderness Area and to the northeast side of the Palen-McCoy Wilderness Area. The Applicant may choose to allow continuous public access along the previously designed open route (Black Rock Road) while providing for separate site security to the solar facilities.	During all project phases	BLM	Maintain north/south OHV connectivity to the west side of the Big Maria Wilderness Area and to the northeast side of the Palen-McCoy Wilderness Area			
Special Designations and Lands with Wilderness Characteristics						
MM LWC-1: Wilderness Characteristics Mitigation. The Applicant shall provide funding to BLM for the following actions to be taken to mitigate for the loss of approximately 1,089 acres of lands with wilderness characteristics that would result from the construction of Unit 2. Onsite mitigation is infeasible. The mitigation shall be focused in the Big Maria Mountains Wilderness Area, Palen-McCoy Wilderness Area or other designated wilderness areas in general proximity to the project, as identified with BLM. Mitigation will be implemented by: 1. Removal and restoration of approximately 15 miles of unauthorized vehicle routes; 2. Conversion of approximately 3 miles of vehicle route into a hiking trail; and 3. Installation of vehicle barriers and signing along publicly accessible portions of the wilderness boundaries. The Notice to Proceed for Unit 2 of the MSEP will provide that, before any ground disturbance occurs in the area inventoried to have wilderness characteristics, the Applicant shall make payment (as described further below) to BLM to fund this work and that the work shall be completed no later than 18 months from the commencement of construction for the relevant portion of Unit 2. The Applicant shall make a not-to-exceed payment of $251,000 to fund the mitigation. Such payment shall be made prior to any ground disturbance in the area inventoried to have wilderness characteristics and will complete the Applicant's obligations with respect to this mitigation measure. The Applicant shall not be responsible for the cost or obligations associated with any additional design, permitting or NEPA, ESA, NHPA or related analysis required to implement the Wilderness Characteristics Mitigation or any liability arising from the undertaking of the measures.	Prior to issuance of a Notice to Proceed for Unit 2	BLM	Prepare and implement a proposal to mitigate impacts to LWCs.			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Transportation and Traffic						
APM TRANS-1: To minimize the potential for any peak a.m. or p.m. work day delays associated with the Mesa Drive, Black Rock Road, and Hobson Way intersections: The Applicant would reduce the number of vehicles on these approaches by splitting construction crews with staggered start times to reduce peak arrivals by about half; encouraging carpooling by workers; and scheduling Project deliveries and truck trips for off-peak hours in order to avoid interference with the peak on-site worker a.m. and p.m. commute	During construction	BLM	The applicant shall reduce traffic by: • Staggering worker start times • Encouraging carpooling • Scheduling deliveries during off peak hours			
MM TRN-1: The Applicant and/or its contractor shall prepare and implement a traffic control plan to reduce construction- and decommissioning-related traffic impacts on the roadways at, and near the work site, as well as to reduce potential traffic safety hazards and ensure adequate access for emergency responders. The Applicant and/or its contractor shall coordinate development and implementation of this plan with the BLM and other jurisdictional agencies (e.g., Riverside County, City of Blythe, and Caltrans), as appropriate. To the extent applicable, the traffic control plan shall conform to Part 6 (Temporary Traffic Control) of the *California Manual on Uniform Traffic Control Devices* (Caltrans, 2010), and shall include, but not be limited to, the following elements: 1. Implementing circulation and detour plans to minimize impacts on local road circulation during temporary lane closures. Flaggers and/or signage shall be used to guide vehicles through and/or around the work zone. 2. Identifying truck routes designated by Riverside County and local jurisdictions. Haul routes that minimize truck traffic on local roadways shall be utilized to the extent possible. 3. Providing sufficient-sized staging areas for trucks accessing work zones to minimize disruption of access to adjacent public right-of-ways. 4. Controlling and monitoring worker vehicle movement through the enforcement of standard construction specifications by on-site inspectors. 5. Scheduling truck trips outside the peak morning and evening commute hours to the extent possible. 6. Limiting the duration of lane closures to the extent possible. 7. Storing all equipment and materials in designated contractor staging areas on or adjacent to the worksite, such that traffic obstruction is minimized. 8. Implementing roadside safety protocols. Advance "Road Work Ahead" warning and speed control signs (including those informing drivers of state-legislated double fines for speed infractions in a work zone) shall be posted to reduce speeds and provide safe traffic flow through the work zone. 9. Providing advance notification to administrators of police and fire stations (including fire protection agencies), ambulance service providers, and recreational facility managers of the timing, location, and duration of construction and decommissioning activities and the locations of detours and lane closures, where applicable. Maintain access for emergency vehicles within, and/or adjacent to, roadways affected by construction and decommissioning activities at all times. 10. Repairing and restoring adversely affected roadway pavements to their pre-construction condition.	Prior to construction	BLM and other jurisdictional agencies	Develop and implement a Traffic Control Plan			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Transportation and Traffic (cont.)						
MM TRN-2: Prior to construction, the Applicant shall develop a Coordinated Transportation Management Plan and work with the BLM and Riverside County to prepare and implement a transportation management plan for roadways adjacent to and directly affected by the planned Project facilities, and to address the transportation impact of the multiple overlapping construction projects within the vicinity of the Project in the region. The transportation management plan shall include, but not be limited to, the following requirements: 1. Coordination of individual traffic control plans for Project and nearby projects. 2. Coordination between the contractor and Riverside County in developing circulation and detour plans that include safety features (e.g., signage and flaggers). The circulation and detour plans shall address: a. Full and partial roadways closures; b. Circulation and detour plans to include the use of signage and flagging to guide vehicles through and/or around the construction zone, as well as any temporary traffic control devices; c. Bicycle detour plans, where applicable; d. Parking along arterial and local roadways; and e. Haul routes for construction trucks and staging areas for instances when multiple trucks arrive at the work sites. 3. Protocols for updating the transportation management plan to account for delays or changes in the schedules of individual projects.	Prior to construction	BLM and Riverside County	Develop and implement a Coordinated Transportation Management Plan			
Utilities						
MM UTILITIES-1: In order to ensure that the selected reverse osmosis brine disposal method would not conflict with Colorado River RWQCB requirements or policies, the Applicant shall not use brine as a land-applied dust suppressant or apply brine to the ground for any other purpose.	During construction	BLM	Refrain from using brine as a land-applied dust suppressant or apply brine to the ground for any other purpose.			
Visual Resources						
MM VIS-1: Project Design, Building and Structural Materials. Visual design elements shall be integrated into the construction plans, details, shop drawings and specifications; these shall include, but not be limited to, grubbing and clearing, vegetation thinning and clearing, grading, revegetation, drainage, and structural plans. Visual design elements within the plans shall be measureable and monitored while under construction, while operational, and when decommissioned. The plans shall include a monitoring and compliance plan that establishes the monitoring requirements and thresholds for acceptable performance. A careful study of the site shall be performed to identify appropriate colors and textures for materials; both summer and winter appearance shall be considered as well as seasons of peak visitor use (September 15 to April 15). Visual design elements to be integrated into construction plans, details, shop drawings and specifications must at a minimum include: 1. Vegetation and ground disturbance associated with access road construction, gen-tie and distribution line installations, and the perimeter access road shall be minimized and take advantage of existing clearings wherever feasible.	Prior to construction	BLM	• Integrate visual design elements into the construction plans, details, shop drawings and specifications • Develop and implement a monitoring and compliance plan for integrating the visual design elements			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Visual Resources (cont.)						
2. Along all off-site access roads, all off-site gen-tie and distribution line corridors, and all internal access roads 16 feet or wider, graveled surfaces, areas to be permanently cleared of vegetation, and (if applicable) cut slopes shall be treated with rock stains or other color treatment appropriate with the surrounding landscape. 3. Openings in vegetation for facilities, structures, roads, and gen-tie line monopoles (and/or H-frames), shall be feathered and shaped to repeat the size, shape, and characteristics of naturally occurring openings. 4. A form of color treatment shall be used to reduce visual contrast between the backs or non-energy gathering side of the solar panels and the landscape setting. Since not all of the panels are visible outside the project footprint, the exact location or color treatment method that will be required shall be determined prior to installation. 5. Security fencing shall be coated with black poly-vinyl or other visual contrast reducing color. 6. Materials, coatings, or paints having little or no reflectivity shall be used whenever possible. 7. Grouped structures, including the water tanks and prefabricated buildings, shall be painted the same color to reduce visual complexity and color contrast. 8. The gen-tie line and the distribution line shall utilize nonspecular conductors and nonreflective coatings on insulators. 9. The choice of color treatments shall be based on the appearance at typical viewing distances and consider the entire landscape around the proposed development as it would be viewed from publically accessible locations. Appropriate colors for smooth surfaces often need to be two to three shades darker than the background color to compensate for shadows that darken most textured natural surfaces. Choice of colors shall be made from the BLM Standard Environmental Color Chart CC-001 in consultation with a BLM landscape architect or other designated visual resource specialist. 10. A lighting plan shall be prepared that documents how lighting will be designed and installed to minimize night-sky impacts during facility construction and operations. Lighting for facilities should not exceed the minimum number of lights and brightness required for safety and security, and should not cause excessive reflected glare. Low-pressure sodium light sources should be used to reduce light pollution. Full cut-off luminaires should be used to minimize uplighting. Lights should be directed downward or toward the area to be illuminated. Light fixtures should not spill light beyond the project boundary. Lights in highly illuminated areas that are not occupied on a continuous basis should have switches, timer switches, or motion detectors so that the lights operate only when the area is occupied. Where feasible, vehicle mounted lights should be used for night maintenance activities. Wherever feasible, consistent with safety and security, lighting should be kept off when not in use. The lighting plan should include a process for promptly addressing and mitigating complaints about potential lighting impacts.						
MM VIS-2: Construction Phase Visual Mitigation. A pre-construction meeting with BLM landscape architects or other designated visual/scenic resource specialists shall be held before construction begins to coordinate on the VRM mitigation strategy and confirm the compliance-checking schedule and procedures. Final design and construction documents will be reviewed for completeness with regard to the visual mitigation elements, assuring that requirements and commitments are adequately addressed. The construction documents shall include, but not be limited to grading, drainage, revegetation, vegetation clearing, and feathering plans, and must demonstrate how VRM objectives will be met, monitored, and measured for conformance. Specific measures shall include the following:	Prior to construction	BLM	• Develop a VRM mitigation strategy • Include grading, drainage, revegetation, vegetation clearing, and feathering plans			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Visual Resources (cont.)						
1. The Applicant shall reduce visual impacts during construction by clearly delineating construction boundaries and minimizing areas of surface disturbance; preserving existing, native vegetation to the extent feasible; utilizing undulating surface-disturbance edges; stripping, salvaging, and replacing topsoil; using contoured grading; controlling erosion; using dust suppression techniques; and restoring exposed soils to their original contour and vegetation. 2. Visual impact mitigation objectives and activities shall be discussed with equipment operators before construction activities begin. 3. Existing rocks, vegetation, and drainage patterns shall be preserved to the extent feasible. 4. Brush-beating or mowing or using protective surface matting rather than removing vegetation shall be employed where feasible. 5. Slash from vegetation removal shall be mulched and spread to cover fresh soil disturbances as part of the revegetation plan. Slash piles shall not be left in sensitive viewing areas. 6. The visual color contrast of graveled surfaces shall be reduced with approved color treatment practices. 7. No paint or permanent discoloring agents shall be applied to rocks or vegetation to indicate surveyor construction activity limits. 8. All stakes and flagging shall be removed from the construction area and disposed of in an approved facility.			in the construction documents • demonstrate how VRM objectives will be met, monitored, and measured for conformance in the construction documents			
MM VIS-3: Operation and Maintenance Phase Visual Mitigation. Terms and conditions for VRM mitigation compliance should be maintained and monitored for compliance with visual objectives, adaptive management adjustments, and modifications as necessary and approved by the BLM landscape architect or other designated visual/scenic resource specialist. Minimum measures are as follows: 1. The Applicant shall maintain revegetated surfaces until a self sustaining stand of vegetation is re-established and visually adapted to the undisturbed surrounding vegetation. No new disturbance shall be created during operations without completion of a VRM analysis and approval by the AO. 2. Interim restoration shall be undertaken during the operating life of the Project as soon as possible after disturbances. 3. Painted facilities shall be kept in good repair and repainted when color fades or flakes. 4. The color treatment method used to reduce visual contrast between the backs or non-energy gathering side of the solar panels and the landscape setting shall be kept in good repair, and repaired/retreated when it no longer effectively reduces the visual contrast.	During operation	BLM	Maintain and monitor compliance with the visual objectives, adaptive management adjustments, and modifications approved by the BLM landscape architect or other designated visual/scenic resource specialist			
MM VIS-4: Decommissioning and Site Reclamation Plan. A Decommissioning and Site Reclamation Plan, covering visual impact mitigation measures, shall be in place prior to construction, and reclamation activities should be undertaken as soon as possible after disturbances occur and be maintained throughout the life of the Project. The following decommissioning/reclamation activities/practices shall be implemented to partially mitigate visual impacts associated with solar energy development, where feasible: 1. Pre-development visual conditions, and the B-Quality scenery (north of I-10), and the C-Quality scenery (south of I-10), and integrity shall be reviewed, and the visual elements of form, line, color, and texture shall be restored to pre-development visual compatibility or to that of the surrounding landscape setting conditions, whichever achieves the better visual quality and most ecologically sound outcome.	Prior to construction	BLM	Implement Decommissioning and Site Reclamation Plan			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Visual Resources (cont.)						
2. A Decommissioning and Site Reclamation Plan shall be developed, approved by the BLM, and implemented. The plan shall require that all aboveground and near-ground structures be removed. Some structures shall be removed only to a level below the ground surface that will allow reclamation/restoration. Topsoil from all decommissioning activities shall be salvaged and reapplied during final reclamation. The plan shall include provisions for monitoring and determining compliance with the Project's visual mitigation and reclamation objectives. 3. Soil borrow areas, cut-and-fill slopes, berms, water bars, and other disturbed areas shall be contoured to approximate naturally occurring slopes, thereby avoiding form and line contrasts with the existing landscapes. The Applicant shall contour to a rough texture (i.e., use large rocks/boulders, grade uneven surfaces, and/or vegetation mulches/debris) in order to trap seed and to discourage off-road travel, thereby reducing associated visual impacts. 4. A combination of seeding, planting of nursery stock, transplanting of local vegetation within the proposed disturbance areas, and staging of decommissioning activities enabling direct transplanting shall be considered. Where feasible, native vegetation shall be used for revegetating to establish a composition consistent with the form, line, color, and texture of the surrounding undisturbed landscape. 5. Stockpiled topsoil shall be reapplied to disturbed areas, and the areas shall be revegetated by using a mix of native species selected for visual compatibility with existing vegetation, where applicable, or by using a mix of native and non-native species if necessary to ensure successful revegetation. Gravel and other surface treatments shall be removed or buried. 6. Rocks, brush, and vegetal debris shall be restored whenever possible to approximate pre-existing visual conditions. 7. Edges of revegetated areas shall be feathered to reduce form and line contrasts with the existing landscapes. 8. A decommissioning VRM Monitoring and Compliance Plan shall be prepared by the Applicant and approved by the BLM that establishes the schedule and terms for monitoring and the conditions and methods of measurement for determining compliance.						
Water Resources						
APM HYDRO-1: To address impacts to state jurisdictional washes: a. The Project will be designed to ensure that post-development downstream hydrology will remain essentially the current downstream hydrology. b. The final locations of poles and spur roads associated with the linear facilities will be designed to be flexible so that drainages that cross the linear corridor will be avoided to the extent feasible. c. The Applicant proposes the following mitigation ratios to be used for the state jurisdictional waters that will be impacted by the Project:	Prior to construction	BLM	Address impacts to jurisdictional washes			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks

Water Resources (cont.)

SOLAR PLANT SITE

Vegetation Community/Land Cover	Permanent Impacts (acres)		Proposed Mitigation Ratio	Mitigation Acres		
	Unit 1	Unit 2		Unit 1	Unit 2	Total
Ephemeral "Riparian" Drainages						
Desert Dry Wash Woodland (Blue Palo Verde-Ironwood Woodland Alliance)	0	1.5	3:1	0	4.5	4.5
Mesquite Bosque	0	0	3:1	0	0	0
Vegetated Ephemeral Channels (Wash-dependent Vegetation with Sparsely Scattered Trees)	2.8	38.1	1.5:1	4.2	57.2	61.4
Vegetated Ephemeral Channels (Vegetated with No Trees)	47.3	50.4	1:1	47.3	50.4	97.7
Unvegetated (approximately less than or equal to 5% cover)	10.2	15.1	1:1	10.2	15.1	25.3
Subtotal Ephemeral "Riparian" Drainages	**60.3**	**105.1**	-	**61.7**	**127.2**	**188.9**
Upland Vegetation						
Sonoran Creosote Bush Scrub	2198.7	2072.9	1:1	2198.7	2072.9	4271.6
Stabilized and Partially Stabilized Desert Dunes (Sand Sheets and Dunes: Creosote Bush-White Burr Sage-Galleta Grass)	0	0	3:1	0	0	0
Subtotal Upland Vegetation	**2198.7**	**2072.9**		**2198.7**	**2072.9**	**4271.6**
Other Cover Types						
Agricultural Land (Crops, Ruderal Vegetation, or Bare Ground)	0	0	0	0	0	0
Developed (No Vegetation)	0	0	0	0	0	0
Subtotal Other Cover Types	**0**	**0**	-	0	0	0
Subtotals for Solar Plant Site	**2,259**	**2,178**	-	**2260.4**	**2200.1**	**4460.5**
	4,437					

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks

Water Resources (cont.)

LINEAR FACILITIES

Vegetation Community/Land Cover	Gen-tie and Access Rd Impacts[1] (acres)		Distribution Line Impacts (acres)		Proposed Mitigation Ratio	Mitigation Acres
	Temporary	Permanent	Temporary	Permanent		
Ephemeral "Riparian" Drainages						
Desert Dry Wash Woodland (Blue Palo Verde-Ironwood Woodland Alliance)	0.5	0.7	0.1	0.8	3:1	6.3
Mesquite Bosque	0.2	0.2	0	0	3:1	1.2
Vegetated Ephemeral Channels (Wash-dependent Vegetation with Sparsely Scattered Trees)	0.0	0.0	0	0	1.5:1	0
Vegetated Ephemeral Channels (Vegetated with No Trees)	0.1	0.1	0	0	1:1	0.2
Unvegetated (approximately less than or equal to 5% cover)	0.2	0.1	0	0	1:1	0.3
Upland Vegetation						
Sonoran Creosote Bush Scrub	9.8	15.0	1.5	2.6	1:1	28.9
Stabilized and Partially Stabilized Desert Dunes (Sand Sheets and Dunes: Creosote Bush-White Burr Sage-Galleta Grass)	19.0	19.0	0	0	3:1	114
Other Cover Types						
Agricultural Land (Crops, Ruderal Vegetation, or Bare Ground)	0	0	0.3	2	0	0
Developed (No Vegetation)	14.5	21.8	0	0	0	0
Subtotal for Linear Facilities	**44.3**	**56.9**	**1.9**	**5.4**	-	**150.9**
Grand Total (Solar Plant Site and Linear Facilities)	**4545.5**				-	**4611.4**
Grand Total without Developed Area[2]	**4509.2**				-	**4575.1**

[1] Includes impacts associated with poles, spur roads, gen-tie maintenance road, pull sites, laydown yard, and the main access road.

[2] The developed area refers to a portion of the main access road.

MM WATER-1: [Removed from ROD]

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Water Resources (cont.)						
MM WATER-2: The proposed evaporation ponds shall be sized to accommodate operational discharges plus a 25-year storm event within the tributary area, with no less than 1 foot of freeboard.	Prior to construction	BLM	Design evaporation ponds to be able to accommodate operational discharge plus a 25-year storm event			
MM WATER-3: Comprehensive Drainage, Stormwater, and Sedimentation Control Plan (Plan). The Applicant shall ensure that the Plan is completed prior to the initiation of construction (or decommissioning as relevant), and ensure that recommendations of that plan are implemented. The Applicant shall ensure that additional stormwater retention measures and facilities, including but not limited to retention basins and other facilities or features designed to retain stormwater on site, shall be implemented within the MSEP site. Stormwater retention facilities shall be designed to accommodate increases in flows that would be generated as a result of MSEP implementation, in comparison to existing conditions, as identified in Table 4.20-2 and 4.20-3, such that MSEP implementation would not result in a net increase in discharge from the site under either a 10-year or 100-year storm event. At the installation sites for new buildings, roads, the switchyard, transformers, solar panels, the gen-tie line, transmission towers, and other facilities that would be installed in association with the MSEP, designs for these facilities shall be reviewed and approved by the BLM with respect to potential generation of altered stormwater flows, erosion, and sedimentation. The use of flow-obstructing fencing shall be avoided; instead, fencing that allows for the passage of water while minimizing buildup of debris shall be utilized on site. To ensure implementation of Applicant Proposed Measure BIO-1b and Mitigation Measure WIL-1, the Applicant shall coordinate with the BLM, CDFG, and USFWS to determine appropriate fencing design. All proposed grading and impervious surfaces on site shall be reviewed and approved by the BLM, with respect to its potential to cause or result in additional erosion and sedimentation, increased stormwater flows, or altered drainage patterns that could lead to unintentional ponding or flooding on site or downstream, and/or additional erosion and sedimentation. Stormwater flows emanating from proposed impervious surfaces shall be retained on site and/or directed into channels and other stormwater infrastructure, and shall be sized such that unintentional ponding, flooding, erosion, or sedimentation would not occur on site or downstream.	Prior to construction	BLM, CDFG, and USFWS	Develop and implement a Comprehensive Drainage, Stormwater, and Sedimentation Control Plan			
MM WATER-4: In order to ensure that proposed on-site buildings and staff therein are protected from flooding, all on-site buildings and fill areas shall be placed outside of frequent flood flow areas. Additionally, proposed on-site buildings, maintenance areas, designated parking lots, and associated facilities shall be constructed at a finished floor elevation of at least 1 foot above the highest anticipated flood flows during a 100-year event. The proposed evaporation pond shall include berms of levees that reach at least 2 feet above the highest anticipated flood flows during a 100-year storm event, or at least 2 feet above the highest adjacent ground, whichever is greater, in order to protect the evaporation pond from incident flooding events and ensure that the ponds are not inundated by flood flows. Slope protection shall be provided for all fill areas exposed to erosive flows. In specific areas where frequent flows are anticipated, posts for solar panels shall be constructed on a deepened footing, as recommended by the geotechnical engineer, in order to withstand anticipated scouring.	Prior to construction	BLM	• Plan construction of all buildings and fill areas outside of frequent flood flow areas • Plan development of all other staff-use areas at a finished floor elevation of at least 1 foot above the highest anticipated flood flows during a 100-year event			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Water Resources (cont.)						
MM WATER-5: Flood Safety Plan. Prior to initiation of MSEP operation, the Applicant shall complete a Flood Safety Plan for the site. The Flood Safety Plan shall delineate specific actions to be completed during a flood event, in order to protect workers and facilities as relevant. The Plan shall identify refuge areas that would not be susceptible to 100-year flooding, and provide requirements and guidance with respect to avoiding injury, death, or equipment damage during a flood event. The Plan shall be adhered to and updated, as needed, during the entire operation period of the MSEP.	Prior to operation	BLM	Complete a Flood Safety Plan for the site			
MM WATER-6: Construction period flood protection. The Applicant shall ensure that during construction, temporary construction related structures such as bridges, roads, berms, and other facilities, would be constructed so as to avoid interference with 100-year flood flows. Temporary installation of the following types of facilities shall be avoided: temporary elevated earthen structures such as roads and berms; earthen bridges or other structures within a waterway or flood conveyance that could interfere with flood flows; dams; unnecessary ditches; other major structures that could concentrate flood flows. Additionally, to the extent practicable, the Applicant shall ensure that the construction process proceeds in a manner so as to minimize exposure of facilities to construction period flooding. Temporary ditches and trenches (such as for pipes, wires, or other infrastructure) should be completed and backfilled as quickly as possible, and should not be left open for extended periods. Drainage infrastructure should be installed prior to installation of the solar arrays and other facilities on site. Other facilities that may be susceptible to flood damage during construction should be managed so as to minimize construction time of those facilities.	Prior to construction	BLM	Ensure that temporary construction structures such as bridges, roads, berms, and other facilities, would be constructed so as to avoid interference with 100-year flood flows.			
MM WATER-7: Groundwater Monitoring and Mitigation Plan. A Groundwater Monitoring and Mitigation Plan shall be prepared prior to construction. The Groundwater Monitoring and Mitigation Plan shall be prepared by a qualified professional geologist, hydrogeologist, or civil engineer registered in the State of California and submitted by the Applicant to the BLM for approval, and to the RWQCB for review and comment. This Plan shall provide detailed methodology for monitoring background and site groundwater levels, water quality, and flow. Monitoring shall be performed during pre-construction, construction, and operation of the Project, with the intent to establish pre-construction and Project- related groundwater level and water quality trends that can be quantitatively compared against observed and simulated trends near the Project pumping wells and near potentially affected existing private wells, if any. Water quality monitoring shall include annual sampling and testing for constituents as required by the California Department of Health for the proposed on-site potable use. The Groundwater Monitoring and Mitigation Plan shall include a schedule for submittal of quarterly data reports by the Applicant to the BLM, for the duration of the monitoring period. These quarterly data reports shall be prepared and submitted to the BLM for review and approval, and shall include water level monitoring data (trend analyses) from all pumping and monitoring wells. Based on the results of the quarterly reports, the Applicant and the BLM shall determine if the Project's pumping activities have resulted in water level decline in the baseline at any of the monitoring wells, including nearby operating private wells, if any. If significant drawdown occurs at active off-site groundwater supply wells, the Applicant shall immediately reduce groundwater pumping until water levels stabilize or recover, to a reasonable level. The measure of the significance of the water level decline and associated mitigation measure for operating water supply wells shall be outlined in the Groundwater Monitoring and Mitigation Plan. The Groundwater Monitoring and Mitigation Plan shall also include a schedule for submittal of annual data reports by the Applicant to the BLM, for the first 5 years of the project (including the construction period). These annual data reports shall be prepared and submitted to the BLM for review and approval, and shall include at a minimum the following information: • Daily usage, monthly range, and monthly average of daily water usage in gallons per day;	Prior to construction	BLM	Prepare and implement a Groundwater Monitoring and Mitigation Plan; submit quarterly and annual data reports to BLM.			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Water Resources (cont.)						
• Total water used on a monthly and annual basis in acre-feet; summary of all water level data and water quality data; • Identification of trends that indicate potential for off-site wells to experience decline of water level; and • Identification of all sources of water by type (i.e., groundwater, surface water, municipal water) and well/location used on BLM Land. The BLM shall determine whether operating groundwater supply wells surrounding the Project site are influenced by Project activities. The Groundwater Monitoring and Mitigation Plan shall describe additional mitigation measures that may be implemented if BLM determines that additional mitigation is required, which shall be implemented as agreed upon in the Plan and with the concurrence of the BLM. After the first 5 years of the Project, the Applicant and the BLM shall jointly evaluate the effectiveness of the Groundwater Monitoring and Mitigation Plan and determine if monitoring frequencies or procedures should be revised or eliminated.						
Wildland Fire Ecology						
MM FIRE-1: The Applicant shall prepare and implement a Fire Safety Plan to ensure the safety of workers and the public during Project construction, operation and maintenance, and decommissioning activities. This plan shall complement or supplement provisions of the Applicant's proposed Emergency Action Plan. The Fire Safety Plan shall be provided to the BLM and RCFD for approval before the Applicant receives a Notice to Proceed (NTP). The Fire Safety Plan shall include, but not be limited to, the following elements: 1. All internal combustion engines used at the Project site shall be equipped with spark arrestors. Spark arrestors shall be in good working order. 2. Once initial two-track roads have been cut and initial fencing completed, light trucks and cars shall be used only on roads where the roadway is cleared of vegetation. Mufflers on all cars and light trucks shall be maintained in good working order. 3. Fire rules shall be posted on the project bulletin board at the contractor's field office and areas visible to employees. 4. Equipment parking areas and small stationary engine sites shall be cleared of all extraneous flammable materials. 5. The Applicant shall make an effort to restrict use of chainsaws, chippers, vegetation masticators, grinders, drill rigs, tractors, torches, and explosives to outside of the official fire season. When the above tools are used, water tanks equipped with hoses, fire rakes, and axes shall easily accessible to personnel. 6. Smoking shall be prohibited in wildland areas and within 50 feet of combustible materials storage, and shall be limited to paved areas or areas cleared of all vegetation. 7. Each Project construction site (if construction occurs simultaneously at various locations) and the proposed solar plant site shall be equipped with fire extinguishers and fire-fighting equipment sufficient to extinguish small fires. 8. The Applicant shall coordinate with the RCFD to create a training component for emergency first responders to prepare for specialized emergency incidents that may occur at the Project site. 9. All construction workers, plant personnel, and maintenance workers visiting the plant and/or transmission lines to perform maintenance activities shall receive training on the proper use of fire-fighting equipment and procedures to be followed in the event of a fire. Training records shall be maintained and be available for review by the RCFD.	Prior to Construction	BLM and RCFD	Develop and implement fire safety plan			

Mitigation Measure	Timing for Implementation	Monitoring Agency(s)	Compliance Action	Verification of Compliance		
				Initials	Date	Remarks
Wildland Fire Ecology (cont.)						
10. Vegetation near all solar panel arrays, ancillary equipment, and access roads shall be controlled through periodic cutting and spraying of weeds, in accordance with the Vegetation Management Plan. 11. The BLM and RCFD shall be consulted during plan preparation and fire safety measures recommended by the agencies included. 12. The plan shall list fire prevention procedures and specific emergency response and evacuation measures that would be required to be followed during emergency situations. 13. All on-site employees shall participate in annual fire prevention and response training exercises with the RCFD 14. The Applicant shall designate an emergency services coordinator from among the full-time on-site employees who shall perform routine patrols of the site during the fire season equipped with a portable fire extinguisher and communications equipment. The Applicant shall notify the BLM and County of the name and contact information of the current emergency services coordinator in the event of any change. 15. Remote monitoring of all major electrical equipment (transformers and inverters) will screen for unusual operating conditions. Higher than nominal temperatures, for example, can be compared with other operational factors to indicate the potential for overheating which under certain conditions could precipitate a fire. Units could then be shut down or generation curtailed remotely until corrective actions are taken.						
16. Fires ignited onsite shall be immediately reported to BLM FIRE and the RCFD. 17. The engineering, procurement, and construction contract(s) for the proposed project shall clearly state the requirements of this mitigation measure.						
Unexploded Ordnance						
MM UXO-1: The Applicant shall prepare and implement a UXO Identification, Training, and Reporting Plan to properly train all site workers in the recognition, avoidance, and reporting of military waste debris and ordnance. The Applicant shall submit the plan to the BLM for review and approval prior to the start of construction. The plan shall contain, at a minimum, the following: 1. A description of the training program outline and materials, and the qualifications of the trainers; 2. Identification of available trained experts that will respond to notification of discovery of any suspected ordnance (unexploded or not); 3. Procedures to stop work immediately in the vicinity of suspected UXO and to notify the local CUPA and the U.S. Army Corps of Engineers; 4. A work plan to recover and remove discovered ordnance, and complete additional field screening, possibly including geophysical surveys to investigate adjacent areas for surface, near-surface or buried ordnance in all proposed land disturbance areas. 5. Documentation of all surveys and investigations performed to evaluate and remove discovered ordnance. The Applicant shall submit the UXO Identification, Training, and Reporting Plan to the BLM for approval no less than 30 days prior to the initiation of construction activities at the site or within the linear corridors, as appropriate. The results of geophysical surveys shall be submitted to the BLM within 30 days of completion of the surveys.	Submit plan at least 30 days prior to the initiation of construction If required, submit survey results within 30 days of completion of the surveys	BLM	Develop and implement UXO Identification, Training, and Reporting Plan			