

1.0 Executive Summary

Solar Millennium LLC (hereafter referred to as the Applicant) proposes to construct, own, and operate the Ridgecrest Solar Power Project (RSPP or Project). The Project is a concentrated solar thermal electric generating facility with a single solar plant of 250-megawatt (MW) nominal capacity.

As a solar thermal project over 50 MW located on land managed by the Bureau of Land Management (BLM), the Project is under the jurisdiction of both the California Energy Commission (CEC) and BLM. In 2007, the BLM California Desert District and the CEC executed a MOU to establish a policy for the joint environmental review of solar thermal power plant projects. As a California agency, the CEC must comply with the requirements of the California Environmental Quality Act (CEQA), and as a Federal agency, the BLM must comply with the requirements of the National Environmental Policy Act (NEPA). The two agencies are conducting a joint review of the Project and a combined CEQA/NEPA document will be prepared.

Although CEQA and NEPA differ in several respects, they are sufficiently similar and flexible that a single environmental document can be prepared that will comply with both laws. This AFC is intended to address BLM needs as well as those of the CEC in order to support preparation of the joint NEPA/CEQA document.

1.1 Project Description

The Project site is immediately south of U.S. Highway 395 approximately five miles southwest of the city of Ridgecrest, Kern County, California (see Figure 1-1). An application has been filed with BLM for a right-of-way (ROW) grant of approximately 3,920 acres. The total area that will be disturbed by Project construction and operation is about 1,760 acres. The facility footprint itself will be about 1,440 acres.

The Project will utilize solar parabolic trough technology to generate electricity. With this technology, arrays of parabolic mirrors collect heat energy from the sun and refocus the radiation on a receiver tube located at the focal point of the parabola. A heat transfer fluid (HTF) is heated to high temperature (750°F) as it circulates through the receiver tubes. The heated HTF is then piped through a series of heat exchangers where it releases its stored heat to generate high pressure steam. The steam is then fed to a traditional steam turbine generator where electricity is produced.

The Applicant's primary objectives for the Project are to construct, operate and maintain an efficient, economic, reliable, safe and environmentally-sound utility-scale solar generating facility utilizing proven, reliable, and efficient parabolic trough technology. The Project supports both State and national goals and objectives of energy independence, environmental protection, and economic prosperity. It helps meet specific legal and policy mandates in support of these goals. These include SB 1078 (California Renewable Portfolio Standard Program); AB 32 (California Global Warming Solutions Act of 2006); and Executive Orders by Governor Schwarzenegger. On the national level, the Project implements Federal law (Energy Policy Act of 2005), and orders by Secretary of the Interior Salazar and his predecessor aimed at significantly increasing the supply of renewable energy from public lands. On an economic and social level, the Project creates jobs and helps ensure an adequate supply of electric energy to power and sustain the economy of Kern County and the rest of California.

The Project's nominal 250 MW output will be produced by two solar fields (Solar Field #1 to the north of Brown Road and Solar Field #2 to the south of Brown Road). Facilities on the site include a power block, parking lot; other support facilities and an internal switchyard. The power block will have its own administration, control, warehouse, maintenance, and lab buildings; HTF system; steam generator; steam turbine generator; an air-cooled condenser (cooling tower); and various ancillary equipment.

A new 230-kV transmission line from the turbine generator to a new nearby switchyard will interconnect with Southern California Edison's (SCE) existing 230 kV Inyokern/Kramer Junction transmission line passing west of the Project site. Additionally, the Project will require the relocation of roughly 7,500 feet (1.4 miles) of two existing transmission lines owned and operated by SCE. The first is a double-circuit 230-kV line (with one of the circuits currently operated at 115 kV) and the second is a double-circuit 115-kV line. The California Public Utilities Commission (CPUC) has jurisdiction over the relocation of both lines. For the relocation of the 230-kV line, CPUC General Order 131-D may require that SCE obtain a Certificate of Public Convenience and Necessity (CPCN) because the transmission line may be used for operation in excess of 200 kV and none of the exemptions to the requirement that are described in the General Order applies; otherwise a Permit to Construct will be required. For the 115-kV line, SCE will be required to obtain a Permit to Construct because the line carries (and will continue to carry) load of less than 200 kV. The Applicant has initiated discussions with SCE regarding the CPCN/Permit to Construct applications.

Both transmission lines run over federal land pursuant to ROWs issued by BLM. SCE will be required to obtain amended ROWs for the relocations, and BLM is required to review these amendments through the NEPA process. The additional land required for the amended ROW is contained within the ROW the Applicant is seeking from BLM. The Applicant will assign this portion of the ROW to SCE at the appropriate time, with the concurrence of BLM.

This AFC, and the combined CEQA/NEPA documents in which it will result, should satisfy BLM's NEPA obligations with respect to the transmission line relocations. As the relevant environmental resource sections of this AFC explain, these relocations will not have any significant impacts. Specifically, the relocations: (1) are not located in DT critical habitat or high-quality MGS habitat, and will be constructed using best management practices and under the supervision of a biological resources monitor (Section 5.3, Biological Resources); (2) will not affect any sensitive cultural resources (Section 5.4, Cultural Resources); (3) as the replacement of existing structures, will not introduce a significant new visual element to, or otherwise significantly affect, the viewshed (Section 5.15, Visual Resources); and (4) will not have any impacts on electromagnetic fields (EMF), aviation safety, radio communications, or noise, including corona effect, with the closest residence being more than one mile away (Section 5.14, Transmission Line Safety and Nuisance). BLM's recent West-wide Corridor Programmatic Environmental Impact Statement (PEIS) may also assist in satisfying BLM's obligations under NEPA.

The Project will use a propane-fueled boiler for quick startup and a heater for HTF freeze protection. The fuel will be propane, which will be stored in onsite tanks, supplied via regular truck deliveries. Thermal power plants require cooling which historically has involved large quantities of cooling water. The Project will utilize an air-cooled condenser commonly referred to as "dry cooling", thereby dramatically reducing the amount of water needed by the facility. Total water consumption for the 250-MW facility is estimated at approximately 150 acre-feet per year (afy) to be supplied by the Indian Wells Valley Water District (IWWVD) via a new pipeline. The new 12-inch diameter, five-mile long water pipeline would be installed within the Brown Road and China Lake Boulevard rights-of-way to a point of connection with the IWWVD water tank.

Project construction is expected to begin in the fourth quarter of 2010 and take approximately 28 months for Project completion. Commercial operation is expected to commence in the third quarter of 2013.

1.2 Project Alternatives

The Applicant evaluated a range of potential alternatives to the proposed Project in terms of location, linear facility routes, and design. The "No Project" alternative was considered and rejected because it would not fulfill the Project's objectives of developing a utility-scale solar facility to help meet State and Federal renewable energy mandates.

The selected site was the most suitable among the various alternative sites based on economic, technical, environmental, transmission access, and other criteria. Three alternative sites were considered and rejected because they would not avoid or substantially reduce environmental impacts or meet Project objectives as well as the proposed site. All of the sites have acceptable levels of solar intensity but two of the sites were not in reasonable proximity to potential interconnection locations and highways. Two of the four sites considered showed poor prospects of obtaining site control because they include significant amounts of subdivided private land or because availability of purchase or lease was unknown. These two sites also had suitability problems; one had five percent slope (excessive for a solar thermal plant) and another was too small for a 250 MW project. One site is within desert tortoise critical habitat and another in the Alabama Hills National Recreation area.

As previously discussed, the Applicant is proposing to deliver the power generated from the Project by interconnecting to the existing Southern California Edison 230 kV transmission line that runs along the site's western boundary and connects to the Inyokern substation. This line will be relocated to outside of the plant site boundary but within the Project's BLM ROW. The Project will interconnect at the most suitable location on the SCE 230 kV line at the site boundary. An alternative that was explored was to interconnect at Inyokern substation, which is located five miles from the Project site. However, this option was eliminated from further analysis as it would require the construction of five additional miles of new transmission line which would increase costs and create additional potential for environmental impacts.

Although dry-cooled, which greatly reduces water consumption, the Project will still require a small amount of water (150 afy) for operational needs such as solar mirror washing, feed water makeup, and potable needs. The Applicant evaluated three potential water sources to supply these needs: 1) groundwater via wells on the Project site, 2) reclaimed water from the City of Ridgecrest wastewater plant, (approximately 16 miles from the Project site) and 3) water from the IWWWD. While water from either an onsite or offsite well on private land could be available, the depth to water (approximately 600 feet) and the need to treat the water to make it usable for plant operation makes this alternative prohibitively expensive. Even if water were used solely for construction and not treated, the expense of digging the well would exceed the expense of purchasing water from the IWWWD. Obtaining reclaimed water from the City of Ridgecrest wastewater treatment plant would require a lengthy 16-mile pipeline, which would both be costly and incur additional potential environmental impacts. The recycled water would also require additional processing and treatment and could not be used for domestic purposes by Project employees. Although the Project is not in the Indian Wells Valley Irrigation District, the District is interested in supplying water to the Project. A relatively short (five-mile) water pipeline would be required under this option, and the Applicant has decided to pursue utilizing treated water from the District for facility water needs. This is the selected option.

1.3 Environmental Information

The following paragraphs briefly summarize, in alphabetical order, the information contained in Section 5.0 of the AFC for each topical area. Both impacts of the Project and the cumulative impacts of the Project are considered together with other probable or reasonably foreseeable projects. The cumulative analysis is based on the study areas as they have been defined for each resource topic. For example, the Mohave Ground Squirrel (MGS) Conservation Area is the area used for evaluating cumulative impacts to the MGS for biological resources. The Last Chance Archeological District is the area of consideration for cultural resources. Kern County is the basis for evaluating cumulative effects of solar development on land use, and for Socioeconomics, the region encompassing Kern, Los Angeles and San Bernardino Counties is the area considered. The Indian Wells Valley Groundwater Basin is the basis for the analysis of cumulative effects for Water Resources. As such, any proposed projects and indirectly, regional growth within those areas, have been included in the cumulative impact analysis.

For other resource topics with localized effects, cumulative analyses have been conducted for projects within a six-mile radius of the Project. These projects include several wind monitoring projects (for which temporary ROW applications have been submitted to BLM), hotel construction, residential growth associated with the realignment of China Lake Naval Air Weapons Station (NAWS), a Super Wal-Mart, improvements to U.S. Highway 395, and transmission line projects and corridors. Activities such as wind monitoring will have little effect on environmental resources. The Project with the greatest potential to result in cumulative impacts is the proposed Wal-Mart development project.

1.3.1 Air Quality

The Project will be a source of criteria pollutants nitrogen dioxide (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), respirable particulate matter (PM₁₀), and fine particulate matter (PM_{2.5}) associated with the operation of the auxiliary boiler, HTF heater, emergency fire water pump and generator engines, auxiliary cooling tower, HTF expansion tanks/ullage system, and maintenance vehicle traffic in the solar fields. Controlled emissions from these sources will not exceed major source thresholds for any pollutant, and do not exceed the threshold above which emission offsets would be required for the Project.

Consistent with KCAPCD New Source Review requirements, Best Available Control Technology (BACT) must be applied to any new or modified source that results in an emission increase of NO_x, SO_x, volatile organic compounds (VOC), PM₁₀, or CO. As BACT, the Applicant has proposed ultra-low-NO_x burners with propane fuel for the Project auxiliary boiler and HTF heater; Tier 3-compliant engines fueled with ultra-low sulfur diesel fuel for the emergency fire water pump and generator engines; high-efficiency drift eliminators for the auxiliary cooling tower; and a two-stage condensing system with carbon absorption for the HTF ullage system vent.

Project emissions were modeled to determine impacts to air quality during the construction and operations phases. The Project's modeled construction impacts (without background) showed compliance with all California Ambient Air Quality Standards (CAAQS). When background is considered, the Project showed a potential for exceedances of the CAAQS for NO₂ and PM₁₀, at or near the facility fenceline. The Project's modeled impacts during operation, when added to background concentrations, are projected to be below the Federal and State ambient air quality standards for all criteria pollutants with the exception of the 24-hour and annual PM₁₀ CAAQS. The 24-hour and annual PM₁₀ impacts exceed the State standards because the background 24-hour and annual PM₁₀ concentrations by themselves exceed the applicable standards, even though Project contributions to the total were about 15 percent of the daily standard and 4 percent of the annual CAAQS.

Although new particulate emissions are estimated to result during operation of the Project, the Project could potentially reduce overall PM₁₀ emissions in the region and local project area where potential exceedances are modeled to occur. Currently, the BLM allows the use of off-road vehicles on BLM land in the vicinity of the project site. As off-road vehicle use will be excluded from the Project plant site in the future, PM₁₀ concentrations near the Project site would also be reduced without that type of activity. By its nature, a solar energy project must keep dust to a minimum through the use of dust control measures because a film of dust on the mirrors will reduce their efficiency for power production. Dust control is achieved by a combination of soil stabilizers, water from the mirror washing, and compaction of the driving surface over time; these control measures will be utilized by the proposed Project.

The modeled worst-case pollutant concentrations during construction and operation occur at or near the Project fenceline. The background concentrations for NO₂, PM₁₀ and PM_{2.5} come from monitoring stations located within the cities of Trona and Ridgecrest, and are expected to be higher than what would be found in the vicinity of a remote site. These concentrations represent the highest values that occur over a three year period, and the analysis assumes that the high background days would coincide with the limited times that the local atmospheric conditions would also maximize impacts from the Project. Due to the conservative nature of the analyses, there is some potential for the Project to cause short-term exceedances of the NO₂, PM₁₀, and PM_{2.5} CAAQS in the immediate area of the site during construction

and the PM10 24-hour and annual CAAQS during operation (when background is added in) during infrequent meteorological conditions. However, the site is remote, the models and background pollutant concentrations are conservative, the analysis does not account for the benefit of dust reduction from existing activities during operation, and feasible mitigation measures will be employed, including the implementation of a dust control plan. In addition, the Project will have a long term benefit of reducing greenhouse gas (GHG) and other pollutant emissions over the long term compared to conventional fossil-fueled power plants.

With respect to cumulative impacts, it is expected that the other cumulative projects will be required to undergo a separate environmental review process and each project will address its own emissions and impacts on ambient air quality standards. The potential for cumulative effects during construction depends on how many of the proposed projects actually are constructed, whether projects in proximity to each other are constructed on overlapping schedules so that peak construction emissions and impacts coincide. The proposed transportation, residential, retail and hotel projects are expected to have negligible operating emissions. Therefore, the potential for significant adverse cumulative impacts during construction and operations is considered to be minimal.

1.3.2 Biological Resources

Project impacts on biological resources would be less than significant with implementation of avoidance, minimization, and mitigation measures. The Project biological investigation included literature research, field surveys, and discussions with resources agencies staff. The investigation covered the 1,738-acre area that will be disturbed by Project construction and operation plus surrounding buffer area for a total study area acreage of about 9,312 acres.

The investigation focused on special-status plants and wildlife, including the federally and State-listed desert tortoise (DT), State-listed Mohave ground squirrel (MGS), and the western burrowing owl (WBO), a California Department of Fish and Game (CDFG) species of special concern. Spring surveys identified a total of 50 DTs in the study area, 40 inside the Project disturbance area and 10 in the buffer. The Project site is not located in DT critical habitat, or in a designated DT Desert Wildlife Management Area (DWMA). No MGS were observed in the study area, but 1,725.6 acres of suitable and 234.7 acres of high-quality MGS habitat occur within the disturbance area. A total of 844 acres of the Project disturbance area (south of Brown Road) occur within the MGS Conservation Area, a designated Wildlife Habitat Management Area. Several MGS records occur in the vicinity of the Project site, and thus MGS would be expected to occur in the area. One WBO pair, and four additional individuals were detected in the disturbance area, and an additional WBO pair was detected in the buffer. These findings will require the implementation of avoidance, minimization, and mitigation measures in order to bring Project impacts to DT, MGS, and WBO to less than significant.

One large and several associated smaller washes occur in the study area. Jurisdictional waters delineations indicate that there are unlikely to be waters considered jurisdictional by the U.S. Army Corps of Engineers (USACE), but the USACE has not yet provided official concurrence. However, there are about 16.6 acres of washes that are potential State jurisdictional waters in the disturbance area and these washes will rerouted around the facility footprint washes will be rerouted around the facility footprint. A Streambed Alteration Agreement (SAA) will be required. Project impacts to State waters would be less than significant with implementation of avoidance, minimization, and mitigation.

Mojave creosote bush scrub dominates the Project site, Mojave Desert wash scrub occurs along portions of desert washes; unvegetated ephemeral dry wash and developed land also occur in the area. Mojave Desert wash scrub and unvegetated ephemeral dry wash are considered sensitive vegetation communities by CDFG. No special-status plants were observed within or adjacent to the study area. No potentially important wildlife movement corridors or habitat linkages, as identified in the BLM's West Mojave Plan (WEMO), occur within or adjacent to the study area.

With implementation of the avoidance, minimization, and mitigation measures that would reduce Project impacts to less than significant, the Project's contribution to significant cumulative impacts would be less than considerable.

1.3.3 Cultural Resources

With implementation of planned additional investigations and appropriate mitigation measures, Project impacts on cultural resources would be expected to be less than significant. Based on archival research, systematic field surveys, and consultation with interested parties, 63 new archaeological sites and three built environment resources were inventoried for the Project. None of the built resources are significant; the potential exists for significant impacts as defined by CEQA at nine of the archaeological sites. All nine sites are prehistoric and consist of lithic scatters, lithic and groundstone scatters, or rock features. Potential adverse effects to the nine archaeological sites, under the National Historic Preservation Act (NHPA) would be addressed through *California Archaeological Resources Identification and Data Acquisition Program: Sparse Lithic Scatters* (CARIDAP) or consultation between BLM, the State Historic Preservation Officer (SHPO), and interested parties.

The eastern portion of the Last Chance Canyon Archaeological District, which is listed on the National Register of Historic Places (NRHP), currently covers about one-third of the western portion of the Project. No list is available of the individual sites that were nominated to the NRHP; however, BLM Archaeologist Don Storm has organized available data and compiled a list of 79 sites, most of which have never received trinomial numbers and all of which are far to the southwest of the Project area.

If unanticipated archaeological and/or historical resources are discovered during construction, Project construction activities will be halted in the immediate vicinity so that the significance of these resources can be evaluated and appropriate mitigation measures implemented, if deemed necessary.

1.3.4 Geologic Resources and Hazards

The Project will not have significant adverse impacts due to geologic hazards nor will it have significant adverse impacts on geological resources. No major unique geologic or physical features have been identified in the Project area. No active fault zones are present within the Project boundaries or within a two-mile radius of the site; however, there is one inactive fault mapped through the center of the Project. This fault will be evaluated during the geotechnical investigation for final design work. The Project site is located in Seismic Zone 4, the zone with the highest seismicity. All Project structures will be designed to meet the strict seismic design standards established for Seismic Zone 4.

Evidence of ground subsidence (e.g., fractures possibly caused by historic groundwater extraction) has not been documented at the Project site. The preliminary geotechnical investigations found that the potential for ground subsidence, expansive and collapsible soils, liquefaction, seismic settlement, and slope failures at the Project site are low. Given the high historic use of local groundwater resources for agricultural and residential development with no subsidence reported, it is not anticipated that the Project's limited pumping program from the Indian Wells Valley Water District's wells will induce subsidence.

1.3.5 Hazardous Materials Handling

The Project would have no significant hazardous materials handling-related impacts. The Project will be designed, constructed, operated, and maintained to ensure the safe use and storage of hazardous materials and in compliance with applicable regulations. A wide variety of accident prevention and mitigation programs, plans, and procedures will be implemented, including hazards assessments, process management systems, release prevention and emergency response programs, employee training, and adherence to sound professional design standards and operating procedures.

Hazardous materials that will be used during Project operations include the solar heat transfer fluid (Therminol VP-1™, a synthetic hydrocarbon), propane, diesel fuel, mineral insulating oil, and lube oil, among others. Solar power plants use fewer (and smaller quantities of) hazardous materials than combined-cycle or other fossil-fuel fired power plants.

1.3.6 Land Use

Project land use impacts will be less than significant. The Project site is located almost entirely on BLM-managed land in the California Desert Conservation Area (CDCA), and is managed under the CDCA Plan (1980) as amended. Most of the site is classified by BLM as Multiple Use Class Limited, with the remainder unclassified; both allow for solar energy development. BLM's Westwide Energy Corridors Environmental Impact Statement (EIS) identified a portion of the Project site as a utility corridor. Because the Project was not identified in the CDCA Plan, a CDCA Plan Amendment will be required.

An offsite water pipeline will run along existing ROWs for Brown Road and China Lake Boulevard. Approximately 1.7 miles of the water pipeline that runs along China Lake Boulevard is located within unincorporated Kern County. This area is zoned Estate District, which permits underground water facilities. The Project is not within, and would not be expected to significantly affect designated wilderness areas, National Parks, Areas of Critical Environmental Concern, or other designated sensitive land uses. However, a portion of the Project facility footprint is within the boundaries of the Mohave Ground Squirrel Conservation Area. It is also commonly used for recreational purposes by local residents, including off-highway vehicle (OHV) usage. Impacts to recreational users are expected but the Applicant will work with BLM to reroute existing trail access to minimize these impacts.

The closest residence to the Project site is located approximately 3,200 feet from the northwestern Project site boundary. Several other residences are approximately 3,250 to 3,575 feet from the eastern site boundary. Besides these residences, U.S. Highway 395, Brown Road, and the railroad spur, the majority of the land is undeveloped desert. These nearby land uses may be temporarily inconvenienced by noise, dust, and traffic during Project construction, which will be mitigated to the extent practicable. However, there would be minimal impacts on nearby uses during Project operation.

Cumulatively, the proposed solar and other renewable energy projects, including wind projects, will unavoidably alter the land use patterns of portions of Kern County and within the West Mojave Plan (WEMO) area. Land will be converted from undeveloped desert to renewable energy facilities. Additionally, the City of Ridgecrest is expecting population growth as a result of the recent Base Realignment and Closure (BRAC) activities, the proposed Super Wal-Mart, and other projected growth in the area. However, renewable energy projects comply with Federal legislation (e.g., Energy Policy Act of 2005), Department of Interior policy (orders issued by the last two Secretaries of the Interior), and State law and policy (e.g., Renewable Portfolio Standards) that recognize the need to utilize the solar energy resource of the California desert.

1.3.7 Noise

Project noise impacts would be less than significant. There are few noise-sensitive land uses located in the Project site vicinity that potentially could be impacted by Project noise emissions. The residence nearest to the power block is approximately 3,200 feet east of the northern solar field, approximately 3,600 feet from the nearest solar collectors, and approximately 6,300 feet from the power block. Other residences are about 3,250 feet east of the northeastern site boundary, and over one mile from the power block. The predominant existing noise source in proximity to the site is vehicle traffic, primarily on U.S. Highway 395.

Temporary short-term construction noise would be generated from Project construction activities. However, the County Noise Ordinance does not limit construction noise levels; it limits construction hours if the construction is within 1,000 feet of an inhabited residence, which is not the case for the Project.

Project construction noise would be audible at 150 feet; however, the nearest inhabited residence is beyond 1,000 feet of the construction. As a result, Kern County noise ordinances will not restrict Project construction activities. However, construction noise will be noticeable at the nearest residence for a short time when construction activities are ongoing at/near the closest site boundary.

Operational noise levels from the Project would predominantly be from daytime operation of equipment in the power block of the plant (e.g., steam turbine, cooling tower). The modeled daytime operational plant noise levels are estimated to attenuate over approximately 6,300 feet to approximately 42 decibels absolute (dBA) Equivalent Continuous Noise Level (Leq) at the nearest residence; non-daylight noise levels would be approximately 20 dBA Leq lower because the primary noise sources would be in shutdown mode. The day/night average sound level (Ldn) at the nearest residence would be approximately 42 dBA Ldn. The ambient Ldn at the residence (without the Project) is 52 dBA Ldn. The 10 dBA difference between the two Ldns would result in a 1 dBA increase added to the higher of the Ldn (52 dBA), resulting in an Ldn with the project of 53 dBA at the nearest residence. This 1 dBA increase above ambient is less than perceptible.

When comparing the plant's estimated noise level at night (when the plant is shutdown) of 22 dBA Leq at the residence with the lowest measured L90 of 36 dBA at the quietest time of the night (3:00 A.M.) at the residence, the increase would be less than the CEC's significance criteria of 10 dBA above the lowest measured L90 at any noise sensitive receptor. Therefore, there would be no significant impact.

1.3.8 Paleontological Resources

With implementation of planned mitigation measures, the Project would have no significant impacts on paleontological resources. A comprehensive paleontological records search and literature review indicated that no fossil localities have been previously recorded in the Project area. No significant fossils were observed on the surface during the paleontological field survey that was conducted for the Project.

Geologic units underlying the Project site include areas of low sensitivity for paleontological resources, as well as areas with sensitivity that ranges from low to high with increasing depth. The planned mitigation includes a comprehensive professionally prepared monitoring and mitigation plan approved by the agencies before construction, including employee training; monitoring during excavations in locations of high paleontological sensitivity; and appropriate data recovery of fossil materials encountered, if any.

1.3.9 Public Health

Public health impacts would be less than significant. The focus of the analysis is human exposure to the toxic air contaminant emissions associated with Project operation. There are a total of 74 residential, 18 worker, and 4 sensitive receptors within a 3-mile radius of the Project right of way. Project emissions of toxic air contaminants are expected to be minimal. Estimated cancer risks at all receptors in the health risk analysis were very low, with a worst-case cancer risk of 0.09-in-one-million at the maximum exposed individual at an existing residential receptor (MEIR), which is significantly lower than the Kern County Air Pollution Control District (KCAPCD) CEQA significance criteria of 10-in-one-million. Based on results of the risk assessment, the operation of the Project poses an insignificant incremental cancer and non-cancer health risk.

1.3.10 Socioeconomics

Project development would cause minimal adverse socioeconomic impacts and substantial positive impacts on local socioeconomic conditions. Project construction and operation employment would provide additional income to Kern County and other nearby areas, as would local expenditures for materials and services. Project construction workforce would average 405 workers over a 28-month period (with a short term peak of 633) while the long-term operations work force will be 84 full-time employees. Construction will generate approximately \$59 million annually in economic benefit and operations will generate approximately \$9.7 million annually.

Most non-local construction workers are expected to commute rather than relocate to the Project area for an extended period of time. The closest housing opportunities and amenities to the Project site are in Ridgecrest, about five miles to the northeast; no other sizable communities are within approximately one hour from the site by car. Some workers may use RV parks, hotels, or motels in the Ridgecrest area or rent apartments. However, Project population and housing impacts would be very small. No significant impacts are expected on local public services or utilities during construction.

The Project's modest size operation work force of 84 employees would not lead to significant population growth or other effects that could adversely affect local socioeconomic conditions. The Project is not expected to have disproportionate impacts on minority or low income populations (i.e., adverse environmental justice impacts). The Project site is in an undeveloped area with very few nearby residents, regardless of ethnicity or economic standing, and no local residents would experience any significant adverse impacts.

In addition to increasing employment and local revenue, the Project would have beneficial socioeconomic impacts by ensuring an adequate supply of electrical power to fuel the State's economy, and by helping California meet its Renewable Portfolio Standard and greenhouse gas emissions reduction goals.

It is conceivable that there potentially could be cumulative adverse socioeconomic impacts in the Ridgecrest area if all the cumulative projects occur as proposed and on the proposed schedules. However, the Project's contribution to such impacts would not be cumulatively considerable.

1.3.11 Soils

The Project's impacts on soils resources would be less than significant. Because the Project will not be located on farmland, agricultural protection legislation (e.g., the federal Farmland Protection Policy Act and the Williamson Act) is not applicable. During construction, the Project footprint will be graded and the water pipeline route will be disturbed. With the implementation of best management practices (BMPs) provided in a construction Storm Water Pollution Prevention Plan (SWPPP) and Drainage, Erosion and Sediment Control Plan (DESCP), such as the use of straw bales and silt fences, and limiting exposed areas, the impacts of soil erosion during construction should be less than significant. There will be no fill disposal or fill procurement sites. A Phase I Environmental Site Assessment of the Project site concluded that contaminated soils that could be disturbed by Project construction are unlikely to be present.

1.3.12 Traffic and Transportation

Construction will involve a work force of approximately 405 workers average monthly (633 workers peak) whose commuting vehicles will increase traffic volumes on U.S. Highway 395, Brown Road, and China Lake Boulevard, the primary access routes to the site vicinity. All roadways are forecast to continue operating at their existing traffic flow conditions with no Project impacts on Level of Service (LOS) during peak Project construction activity. However, the intersection of U.S. Highway 395 with South China Lake Boulevard and Brown Road potentially could be impacted during peak construction periods. To mitigate this, the Applicant will implement measures to reduce the volume of workers arriving at the work site at the same time, such as temporarily staggered work shifts or approaches such as contractor-required van pools, car pools, shuttle buses, park and ride, etc. This will allow the westbound approach to operate at an LOS C or better during periods of peak construction activity. Because of the moderate size work force of 84 people associated with plant operation around the clock, traffic impacts will be minimal during Project operations.

The proposed construction schedule for the Project is not expected to overlap with other large construction projects in the area. Traffic volume models considered other cumulative traffic influences, such as increases in traffic that may result from the proposed Wal-Mart, growth from BRAC realignment, and continued development both locally and regionally. Even when considering these factors, the model demonstrates that the Project would not contribute significantly to potential cumulative impacts on

U.S. Highway 395 traffic in the Project vicinity. Subject to Kern County and Caltrans encroachment permits, acceptable access-related improvements and traffic management measures will be designed and implemented.

Traffic operations at the intersection of the westbound China Lake Boulevard would be congested (LOS E) during the morning peak period and moderate (LOS C) during afternoon peak period only at the peak construction periods (year 2011), if all 1,141 workers were to start work at the same time. However, by splitting the arrival of workers during peak periods to two shifts an hour apart, the intersection would operate at an acceptable level. Westbound China Lake Boulevard also currently operates at LOS A and is projected to operate at an acceptable level during periods of peak construction activity. The total operations work force of 84 people associated with 24-hour/7-days a week plant operation would have minimal traffic impacts.

The proposed construction schedule for the Project is not expected to overlap with other large construction projects in the area. Traffic volume models project through 2014 considered other cumulative traffic influences, such as increases in traffic may result from the proposed Wal-Mart, growth from BRAC activities, and continued development both locally and regionally. Even when considering these factors, models demonstrates that the Project would not contribute significantly to potential cumulative impacts on U.S. Highway 395 traffic in the Project vicinity.

The Project would not include structures of sufficient height to interfere with aviation activities; thus aviation impacts would not be significant. The solar troughs are constructed from parabolic mirrors that focus the sun's light on a central tube containing heat transfer fluid and the design minimizes extraneous reflections. Limited reflections and glare from the mirrors will occur but are expected to be comparable to the reflection of the sun off of a lake's surface and are not expected to produce a hazard to aviation.

1.3.13 Transmission System Safety and Nuisance

Project transmission line safety and nuisance impacts would be less than significant. Analyses indicate that neither Project construction nor operation would result in significant increases in EMF levels or audible noise. Because the Project transmission system will conform to applicable California Public Utilities Commission (CPUC) and other regulatory requirements, induced current and voltage are unlikely to lead to hazardous electrical shocks during construction or operation. Corona caused by power lines can cause interference with radio and television reception. Corona typically becomes a design concern for transmission lines with voltages of 345 kilovolts (kV) and above. Because the Project will be connected at 230 kV, it is expected that no corona-related design issues will be encountered. Due to the sparse development in the vicinity of the Project electric transmission facilities, no adverse effects to local communication networks are anticipated. Project design and construction will adhere to standards and procedures that minimize the likelihood of interference with aircraft communications or avionics.

1.3.14 Visual Resources

Project visual resources impacts are considered less than significant. During the Project construction period, construction activities and construction materials, equipment, trucks, and parked vehicles may be visible on the Project site, and along linear facility routes. These represent changes to the visual environment, but because they will be moderate in intensity and temporary in duration, they are less than significant.

The completed Project will change the visual appearance of the area, but impacts are less than significant. When viewed from eye level, during most hours of the day, the solar field would be relatively unobtrusive, with the power block visible above the solar field. Power block structures would have neutral colors and non-reflective surfaces to minimize their contrast with the natural background. From elevated locations, because of the movement of the sun and the changing orientation of the mirrors to track the sun's movement, the view would change over time. In afternoon hours when viewed from distant

elevated locations to the southwest, the reflective surface of the mirror would be oriented toward the viewer. At these times, on a sunny day, the solar collectors would create a visual impression that more closely resembles a body of water than a power plant or other industrial facility because the collectors would be reflecting the blue sky. On a cloudier day, the visual impression would appear grayer. In the morning hours viewed from the same elevated locations to the southwest, viewers would have the non-reflective backs of the mirrors toward them, in which case the visual contrast with the surrounding environment would be considerably less. Finally, viewers may find visually interesting this facility that will contribute to important societal goals (providing renewable energy and reducing greenhouse gases).

1.3.15 Waste Management

Project waste management impacts would be less than significant. Construction and operation will generate relatively modest quantities of non-hazardous solid waste (e.g., HTF-contaminated soils), liquid waste (e.g., residual solids from treatment of small quantities of makeup feed water), and small quantities of hazardous waste (e.g., used hydraulic fluids). Where practicable, waste materials will be recycled or reused. Project procedures and personnel training will ensure that waste generation is minimized, and that wastes generated are managed appropriately. Disposal of Project wastes will not significantly affect the capacity of available waste disposal facilities. HTF-contaminated soil will be managed in an onsite Land Treatment Unit (LTU) permitted by the Lahontan Regional Water Quality Control Board (RWQCB). A Phase I Environmental Site Assessment (ESA) did not identify any recognized environmental conditions on the Project site.

1.3.16 Water Resources

The Project would not have significant impacts on either groundwater or surface water resources. The Project is a dry-cooled facility that will use about 150 afy of groundwater supplied by the IWVWD. Water will be conveyed from wells north of the Project to the Ridgecrest Heights Booster Station. From there, a new five-mile long, 12-inch diameter pipeline will be constructed along China Lake Boulevard south to the Project site. A Memorandum of Understanding (MOU) has been approved by the IWVWD Board, and is in the process of being finalized. In total, the Project demand is about 1.6 percent of the total demand for water from IWVWD. In order to keep water use as low as practicable, the Project will recycle the process makeup water for a savings of about 25 percent of the annual consumptive use. Further, the Project is exploring several alternatives to offset the proposed operational water usage with the IWVWD and others within the valley.

As discussed in Section 4.0, Alternatives, there is no feasible water supply option other than groundwater to meet Project construction and operation supply requirements. The Project site is located in the Indian Wells Valley Groundwater Basin (IWV Groundwater Basin), which is part of the South Lahontan Hydrologic Region. According to the California Department of Water Resources (2004), based on a 1985 estimate there is less than approximately two million acre-feet of groundwater in storage, and the Basin is in overdraft. A numerical groundwater model that was developed by Brown and Caldwell (2009) for the IWVWD was used to assess impacts from proposed Project pumping. The modeling revealed that the operational use would not increase drawdown over the life of the Project (30-year period) in comparison to a non-Project condition.

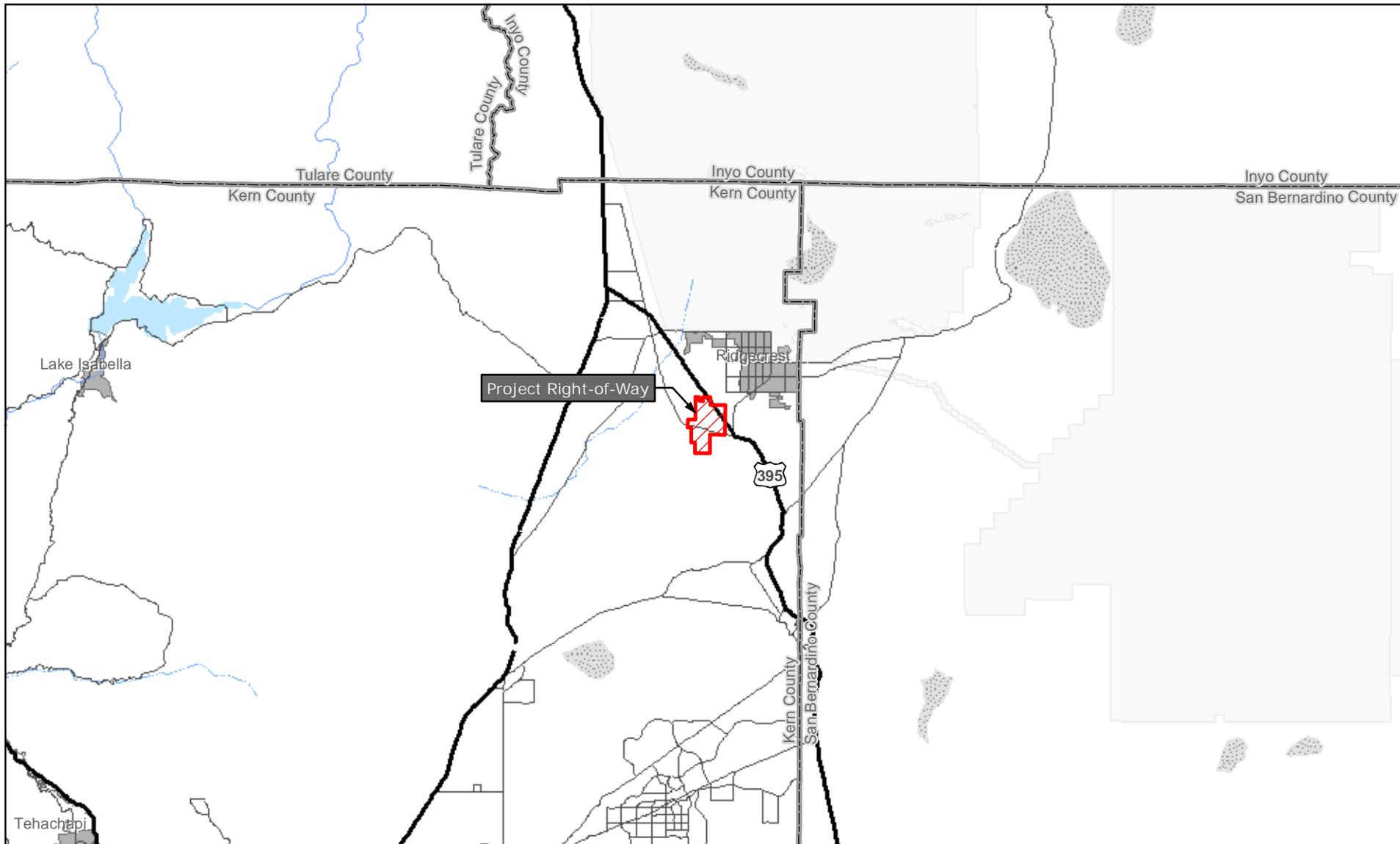
No significant impacts related to drainage, water quality or storm water runoff are expected. Several existing drainage courses will be rerouted in new channels around and through the Project plant site. Re-routed channels will return flow to their original courses prior to exiting the Project site. The new channels will be re-vegetated with native vegetation, designed to be wildlife friendly, and their condition restored as best as possible to their pre-existing condition. A Storm Water Pollution Prevention Plans (SWPPP) and a Drainage, Erosion, and Sediment Control Plan (DESCP), which contain Best Management Practices (BMPs), will be implemented to avoid significant runoff and water quality impacts during Project construction and operations.

1.3.17 Worker Safety

With implementation of the planned worker safety programs, no significant worker safety impacts are expected. Project construction and operations may expose workers to physical and chemical hazards. Worker exposure to such hazards will be minimized by adherence to appropriate engineering design standards and to sound construction, operations, and maintenance practices. During both construction and operations, the Project will implement appropriate safety and administrative procedures, safety training, use of personal protective equipment (PPE), and compliance with applicable health and safety-related regulations. Injury and Illness Prevention Plans (IIPPs) will be central to reducing worker hazards during both construction and operation. Site-specific Fire Protection and Prevention and Emergency Action Plans also will be implemented during both construction and operations.

1.4 Conclusion

In conclusion, the Project is not expected to have a significant impact on the environment. The Project has been carefully designed to avoid impacts to the greatest extent possible and to provide appropriate mitigation where impacts are unavoidable. The Project will provide a substantial benefit to the State and the nation in meeting renewable and other energy goals. The remainder of this AFC provides the information and analyses needed for the CEC and BLM to arrive at this conclusion.



Legend

 Project Right-of-Way

1:600,000

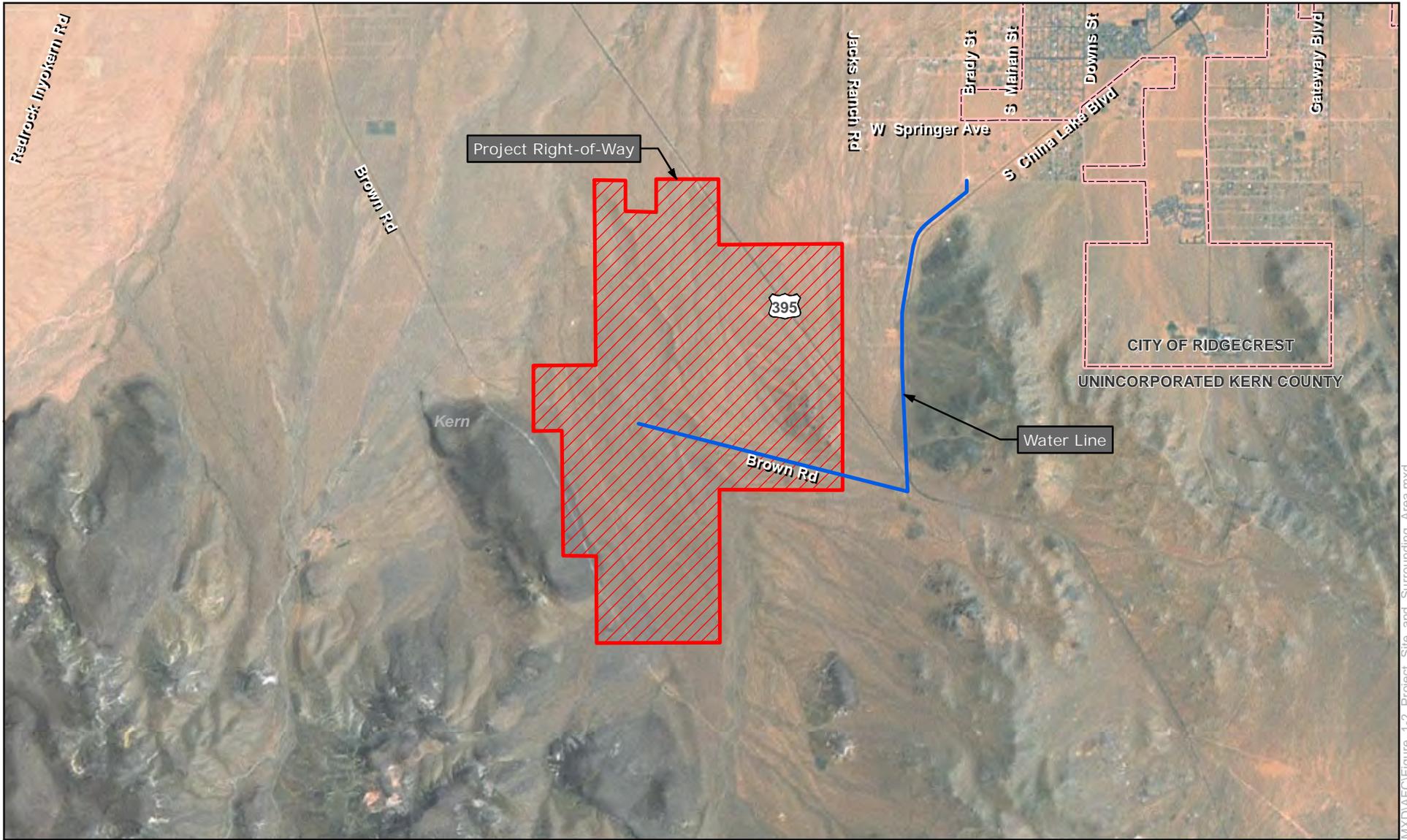
0 5 10 15 Miles



Ridgecrest Solar Power Project
Figure 1-1
Regional and Vicinity Map




Date: September 2009



Legend

-  Plant Site
-  City Limits
-  Water Line

1 inch = 6,000 feet




Ridgecrest Solar Power Project

Figure 1-2
Project Site and
Surrounding Area




Date: September 2009