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Playa Solar Project
(Dry Lake Solar Energy Zone Parcels 2, 3, & 4)

ENVIRONMENTAL ASSESSMENT

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BLM

BLM Mission Statement

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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Acronyms and Abbreviations

AC	alternating current
ACEC	Area of Critical Environmental Concern
AF	acre-feet
AFY	acre-feet per year
APLIC	Avian Power Line Interaction Committee
Applicant	Playa Solar, LLC
BA	Biological Assessment
BBCS	Bird and Bat Conservation Strategy
BLM	Bureau of Land Management
BMP	best management practice
BO	Biological Opinion
CFR	Code of Federal Regulations
DC	direct current
DOE	United States Department of Energy
DOI	United States Department of the Interior
DOT	United States Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	Federal Endangered Species Act
FLPMA	Federal Land Policy and Management Act of 1976
FONNSI	Finding of No New Significant Impact
gen-tie line	generation-tie transmission line
GHG	greenhouse gas
I-15	Interstate 15
KOP	key observation point
kV	kilovolt(s)
kVA	kilovolt-ampere(s)
LVFO	BLM Nevada Las Vegas Field Office
MBTA	Migratory Bird Treaty Act of 1918
MWac	megawatt alternating current
NDEP	Nevada Department of Environmental Protection
NDOW	Nevada Department of Wildlife

NEPA	National Environmental Policy Act
NHPA	Nevada Historic Preservation Act
NRHP	National Register of Historic Places
O&M	operation and maintenance
PA	Programmatic Agreement
PCS	Power Conversion Station
PEIS	Programmatic Environmental Impact Statement
POD	Plan of Development
PPE	Personal Protective Equipment
Project	Playa Solar Project (Dry Lake SEZ Parcels 2, 3 and 4)
Proposed Action	Playa Solar Project (Dry Lake SEZ Parcels 2, 3 and 4)
PV	Photovoltaic
PVCS	Photovoltaic Combining Switchgear
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
SHPO	State Historic Preservation Officer
SEZ	Solar Energy Zone
SRMS	Solar Regional Mitigation Strategy
SWPPP	Stormwater Pollution Prevention Plan
US-93	United States Route 93
USFWS	United States Fish and Wildlife Service
VRM	Visual Resource Management

CHAPTER 1
Purpose and Need

1.1 Introduction

The Las Vegas Field Office of the Bureau of Land Management (BLM) prepared this environmental assessment (EA) to analyze and disclose the environmental effects of developing parcels 2, 3, and 4 of the Dry Lake Solar Energy Zone Project (Proposed Action or Project) with a 200 megawatt alternating current (MWac) (nominal plant capacity)[1] photovoltaic (PV) solar generating facility as proposed by Playa Solar, LLC (Applicant), a wholly owned subsidiary of First Solar, Inc. This EA is a project-specific analysis of potential impacts of the Proposed Action within the Dry Lake Solar Energy Zone (SEZ), which was analyzed in the Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States (Solar PEIS) (BLM and U.S. Department of Energy [DOE] 2010; BLM and DOE 2012).

This EA will assist the BLM in project planning and compliance with the National Environmental Policy Act (NEPA) and Federal Land Policy and Management Act of 1976 (FLPMA). The EA is tiered to the Solar PEIS (BLM and DOE 2010; BLM and DOE 2012). Tiering allows for the preparation of an EA and Finding of No Significant Impact (FONSI) for the Proposed Action (also referred to as a "Finding of No New Significant Impact" (43 CFR 46.140(c)), so long as any significant effects of the individual action were analyzed in the Solar PEIS and any additional effects of the individual action not analyzed in the Solar PEIS are not significant. "Significance" is defined by the Council on Environmental Quality's NEPA implementing regulations found at 40 CFR 1508.27. The EA evaluates direct, indirect and cumulative impacts of the Proposed Action so that the BLM can determine whether they are consistent with the impact levels disclosed by the Solar PEIS or if any new significant impacts are expected. If the Proposed Action would result in significant effects not considered in the Solar PEIS, then those impacts either would need to be mitigated below significance or an EIS would need to be prepared before the BLM could authorize the Proposed Action (BLM NEPA Handbook H-1790-1, Section 5.2.2 [BLM 2008]). This EA, in combination with the analysis in the Solar PEIS, is intended to serve as the necessary NEPA documentation for the Project and to identify any recommended compensatory mitigation measures.

[1] Nominal plant capacity refers to generation and delivery of power under ideal conditions. The capacity of any solar energy facility is dependent on many factors and changes over a course of a day, a season, or year regardless of the technology, geographic location, or design. The nominal capacity of 200 MWac is understood to mean the peak power-generating capacity of the facility expressed in watts minus all auxiliary, internal (parasitic) loads. In this document, MWac is used synonymously with MW.

1.2 Background

Through the Solar PEIS and ROD, the BLM established a comprehensive Solar Energy Program (also known as the Western Solar Plan) for utility-scale solar energy development on BLM administered lands in six southwestern states: Nevada, Arizona, California, Colorado, New Mexico, and Utah. The Western Solar Plan defines utility-scale projects as those with capacities of 20 MW or greater that generate electricity that is delivered into the transmission grid. As part of the Western Solar Plan, the BLM identified specific locations that are well suited for utility-scale production of solar energy (Solar Energy Zones, or SEZs) where the BLM proposes to prioritize development, which included the establishment of the Dry Lake SEZ located in Clark County, Nevada. In accordance with the regulations that allow the BLM to resolve competition among right-of-way (ROW) applications (43 CFR 2804.23) by using competitive bidding procedures, the BLM held a competitive auction in June 2014 for the Dry Lake SEZ. The BLM offered six individual parcels totaling approximately 3,083 acres of public land (BLM 2014a). Three separate developers submitted successful bids and were selected by the BLM as preferred applicants to submit ROW applications and plans of development (PODs) for solar energy projects in the Dry Lake SEZ. The Applicant was the successful bidder on three of the parcels totaling approximately 1,700 acres. Two bidders were successful for the remaining three parcels, resulting in a total of three proposed projects within the Dry Lake SEZ, including the Project. A project-specific EA has been prepared for each of the three projects.

Playa Solar, LLC has applied for a ROW grant to construct, operate, maintain, and decommission a solar energy project on parcels 2, 3, and 4 of the Dry Lake SEZ. The Project would produce 200 MWac of electricity from a PV power generating facility. The Project site is located approximately 14 miles northeast of the City of Las Vegas and approximately 8 miles south and east of the Moapa River Indian Reservation in an unincorporated area of Clark County, Nevada. The Project lies within Sections 2 and 35, Township 17 South, Range 63 East Mount Diablo Meridian, and within Sections 2, 3, 11 and 12, Township 18 South, Range 63 East Mount Diablo Meridian. A record of survey including the Project boundary aliquot part legal description, as well as the Project boundary metes and bounds description is included in Appendix A.

In addition, through the Western Solar Plan, the BLM adopted a policy that it would develop regional mitigation plans or strategies for SEZs (BLM 2012). The BLM prepared the Solar Regional Mitigation Strategy (SRMS) for the Dry Lake SEZ, which it issued on March 17, 2014 (BLM 2014b). The SRMS for the Dry Lake SEZ presents an approach for compensating for the unavoidable impacts that are expected from development of the Dry Lake SEZ. The SRMS takes into account the resource conditions of the land and regional trends informed by the BLM's recent Rapid Ecoregional Assessments, and was developed in collaboration with stakeholders to address key issues such as offsite mitigation and the costs associated with implementation of mitigation.

1.3 Purpose and Need for Action and Decision to be Made

In accordance with FLPMA (Section 103(c)), public lands are to be managed for multiple use that takes into account the long-term needs of future generations for renewable and non-renewable resources. The Secretary of the Interior is authorized to grant rights-of-way on public lands for systems of generation, transmission, and distribution of electric energy (Section 501(a)(4)). Taking into account the BLM's

multiple use mandate, the purpose and need for the Proposed Action is to respond to a FLPMA ROW application submitted by the Applicant to construct, operate, maintain, and decommission a 200 MWac PV solar facility and associated infrastructure on public lands administered by the BLM in compliance with FLPMA, BLM ROW regulations, the applicable land use plan, and other applicable Federal laws and policies.

The lands associated with the Applicant's FLPMA ROW application have been identified as priority areas for solar energy development (i.e., SEZs) by the Solar PEIS ROD (BLM 2012). The subject lands are part of the 5,717-acre Dry Lake SEZ established through an amendment to the Las Vegas Field Office Resource Management Plan (BLM/LVFO 1998) by the Solar PEIS ROD (BLM 2012). A SEZ is defined by the BLM as an area that the BLM has determined is well suited for utility-scale production of solar energy and within which the BLM will prioritize and facilitate utility-scale production of solar energy and associated transmission infrastructure development. The policies that guide the processing of right-of-way applications in SEZs are outlined in the Western Solar Plan Policies (BLM Solar Policies) described in Appendix B of the Solar PEIS ROD (BLM 2012). The BLM Solar Policies provide that the BLM intends to proceed with a competitive process to facilitate solar energy development projects in SEZs.

On March 17, 2014, the BLM published a Notice Seeking Public Interest in Solar Energy Development on Public Lands in the Dry Lake Solar Energy Zone in Clark County, Nevada in the Federal Register (78 FR 14733). In response, the BLM received several solicitations of interest and ROW applications within the Dry Lake SEZ. The BLM's ROW regulations (43 CFR 2804.23(c)) authorize the BLM to use competitive bidding procedures if there are two or more competing ROW applications for the same facility or system. Applications for solar energy development are processed as ROW authorizations pursuant to Title V of the FLPMA. On May 30, 2014 the BLM published a Notice of Competitive Auction for Solar Energy Development on Public Lands in the State of Nevada in the Federal Register (79 FR 31129), which provided instructions on the competitive sealed and oral bid process that the BLM would use to select a preferred applicant to submit a ROW application and plan of development for solar energy development in the Dry Lake SEZ. In preparing the SEZ for competitive offer, the BLM reduced the developable acres in the SEZ by approximately 2,600 acres to avoid existing ROWs and potential resource conflicts (see Section 2.4, *Alternatives Considered but Eliminated from Further Analysis*, for more information).

The Federal Register notice published on March 17, 2014 also included the release of the Dry Lake SEZ SRMS that was prepared to meet a commitment from the ROD for the Solar PEIS to develop regional mitigation strategies for each of the SEZs (BLM 2014b). Preparation of the SRMS involved a significant amount of public involvement, including four public workshops, several web-based meetings, and several public comment opportunities. The SRMS describes unavoidable adverse impacts and makes recommendations for offsite mitigation actions and costs that the BLM will consider when processing ROW applications in the SEZ. The mitigation actions and costs identified in the strategy are recommended to compensate for loss of habitat, ecological services, and visual resources that are expected to occur from development of the Dry Lake SEZ. The elements of the Regional Mitigation Strategy are incorporated into this EA by reference.

On June 30, 2014, the BLM conducted a competitive auction for 3,083 acres of land (divided into six individual parcels) within the Dry Lake SEZ to select preferred applicants for submittal of ROW applications and plans of development for solar energy projects (BLM 2014a). The Applicant submitted a

preliminary ROW application to participate in the competitive auction and was the successful bidder on three of the parcels (parcels 2, 3, and 4) auctioned within the Dry Lake SEZ for a total application area of approximately 1,700 acres. The Applicant's competitive bids on parcels 2, 3, and 4 were based on an aggregate project size of 200 MWac consistent with its NV Energy requests for interconnection dated September 19, 2013 for Network Energy Resource Interconnection Service for the Harry Allen Substation (NV Energy 2014). As required, the Applicant submitted a supplemental ROW application and plan of development to develop a solar energy project on the applicable parcels.

In addition to FLPMA and the regulations implementing FLPMA, the BLM's applicable authorities and policies include the following:

1. Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the "production and transmission of energy in a safe and environmentally sound manner."

2. President Obama's Climate Action Plan, dated June 2013. In 2012 the President set a goal to issue permits for 10 gigawatts of renewables on public lands by the end of the year. The Department of the Interior achieved this goal ahead of schedule and the President has directed it to permit an additional 10 gigawatts by 2020.

3. The Energy Policy Act of 2005 (Public Law [P.L.] 109-58). Section 211 of the Act states, "It is the sense of the Congress that the Secretary of the Interior should, before the end of the 10-year period beginning on the date of enactment of this Act, seek to have approved non-hydropower renewable energy projects located on the public lands with a generation capacity of at least 10,000 megawatts of electricity."

4. Secretarial Order 3285A1, Renewable Energy Development by the Department of Interior (DOI), dated February 22, 2010. This Secretarial Order establishes the development of renewable energy as a priority for the DOI and creates a Departmental Task Force on Energy and Climate Change. It also announced a policy goal of identifying and prioritizing specific locations (study areas) best suited for large-scale production of solar energy.

5. Secretarial Order No. 3330, Improving Mitigation Policies and Practices of the DOI, dated October 31, 2013. The DOI's Energy and Climate Change Task Force (Task Force) which includes all Assistant Secretaries and Heads of Bureaus and chaired by the Deputy Secretary, is directed to develop a coordinated Department-wide, science based strategy to strengthen mitigation practices so as to effectively offset impacts of large development projects of all types through the use of landscape-level planning, banking, in-lieu fee arrangements, or other possible measures.

6. Instruction Memorandum (IM) 2011-59, National Environmental Policy Act Compliance for Utility-Scale Renewable Energy Right-of-Way Authorizations, dated February 7, 2011. This IM reiterates and clarifies existing BLM NEPA policy to assist offices that are analyzing externally-generated, utility-scale renewable energy ROW applications. It includes examples and guidance applicable to such applications that supplement information in the BLM's NEPA Handbook (H-1790-1) that reflect that utility-scale renewable energy projects are distinct from many other types of land and realty actions. This distinction is due to their size and potential for significant resource conflicts, as well as the priority that has been placed on them by the DOI.

The BLM will review the Applicant's proposal and, in accordance with NEPA, FLPMA, and other applicable laws, and in accordance with land use planning decisions in the Solar PEIS ROD, issue a decision to grant the proposed ROW; grant the ROW with modifications; or deny the ROW

(43 CFR 2805.10(a)(1)). Drawing upon the preliminary findings and recommendations in the SRMS for the Dry Lake SEZ, the BLM also will identify unavoidable impacts associated with solar development on parcels 2, 3, and 4, evaluate potential compensatory mitigation measures to address those impacts, and, in its decision, identify any compensatory mitigation measures that it determines are appropriate.

1.4 Resource Management Plan Conformance

The Proposed Action is located on federal lands managed by the BLM Southern Nevada District Office under the October 1998 Las Vegas Resource Management Plan (RMP)[2] (BLM/LVFO 1998). The Las Vegas RMP was amended through the Solar PEIS ROD in October 2012 to incorporate the designation of the Dry Lake SEZ. This amendment identified the following as applicable to all new utility-scale solar energy projects on BLM administered lands:

1. Priority areas for solar energy development that are well suited for utility-scale production of solar energy, including the 5,717-acre Dry Lake SEZ and the 8,479-acre Amargosa Valley SEZ (Solar PEIS ROD at Appendix A Table A-1, p. 32);

2. 873,518 acres as potentially available for utility-scale solar energy development outside of the Dry Lake and Amargosa Valley SEZs (i.e., variance areas) (Solar PEIS ROD at Appendix A Table A-1, p. 32);

3. 2,412,286 acres to be excluded from utility-scale solar energy development (i.e., exclusion areas) within the Las Vegas RMP area; and

4. Required programmatic and SEZ-specific design features for solar energy development on public lands to ensure the most environmentally responsible development and delivery of solar energy (Solar PEIS ROD at Appendix A Table A-5, p. 139 et seq.).

The Project is located in a SEZ and has been designed in accordance with the policies and procedures described for this particular land use allocation. See Appendix B of the Solar PEIS ROD (BLM 2012). According to Section B.4.2.1 of the Solar PEIS ROD, no additional land use plan amendments are expected to be required to approve projects in SEZs (BLM 2012).

The principles of multiple-use management for the BLM are established through FLPMA. The current BLM Las Vegas RMP is consistent with FLPMA and guides the decisions for the BLM. The Proposed Action is in conformance with the following management objectives and directions of the 1998 BLM Las Vegas RMP/EIS, as amended (BLM/LVFO 1998):

> **Objective LD-2.** "All public lands within the planning area, unless otherwise classified, segregated or withdrawn, and with the exception of Areas of Critical Environmental Concern and Wilderness Study Areas, are available at the discretion of the agency, for land use leases and permits under Section 302 of Federal Land Policy and Management Act…" (BLM/LVFO 1998, p. 18)

[2] On Friday, October 10, 2014, the BLM issued a Notice of Availability of the Las Vegas and Pahrump Field Offices Draft Resource Management Plan and Draft Environmental Impact Statement, Nevada (79 FR 61334-01). Following the conclusion of the public participation process for the proposed RMP revision and issuance of a Final Environmental Impact Statement, the RMP revision will replace the existing Las Vegas RMP.

> **Objective RW-1.** "Meet public demand and reduce impacts to sensitive resources by providing an orderly system of development of transportation, including legal access to private inholdings, communications, flood control, major utility transmission lines, and related facilities." (BLM/LVFO 1998, p. 19)
>
> **Management Direction RW-1-h.** "All public land within the planning area, except as stated in RW-1-c through RW-1-g, are available at the discretion of the agency for rights-of-way under the authority of the FLPMA." (BLM/LVFO 1998, p. 19)

In addition, the Project is located in a SEZ and has been designed in accordance with the policies and procedures described for this particular land use allocation in Appendix B of the Solar PEIS ROD (BLM 2012). According to Section B.4.2.1 of the Solar PEIS ROD (BLM 2012), no additional land-use plan amendments are expected to be required to approve projects in SEZs.

1.5 Relationship to Other Plans and Analyses

Utility-scale solar energy development projects in SEZs must comply with NEPA and other applicable laws, including, but not limited to, the Endangered Species Act (ESA), the National Historic Preservation Act (NHPA), and other applicable regulations and policies. The BLM has taken a number of steps through the Solar PEIS to facilitate future development in SEZs in a streamlined and standardized manner. Projects in SEZs will tier to and incorporate by reference the following foundational documents.

1.5.1 Solar PEIS

As part of the Solar PEIS, the BLM conducted a thorough environmental review of the SEZs so that future reviews of projects within SEZs can tier to the existing NEPA analysis, thereby limiting the required scope and effort of additional project-specific NEPA analyses. This evaluation included consideration of direct, indirect, and cumulative impacts for individual SEZs and the development of supporting documentation including but not limited to ethnographic studies, mineral reports, and groundwater modeling reports. Through the Solar PEIS the BLM also developed action plans for each SEZ that outlined additional SEZ-specific data and analysis that could be undertaken in order to more effectively facilitate future development in the SEZ. For example for the Dry Lake SEZ, the action plan recommended a Class III survey be completed for cultural resources which the BLM initiated prior to the competitive auction (BLM 2013). In addition, as part of the NEPA process, extensive public involvement specific to solar energy development in SEZs occurred. The BLM used this input on the Solar PEIS to inform its decision to designate the SEZs and it will be used to further evaluate project-specific development within those SEZs. Additional public involvement for projects in SEZs will be consistent with the requirements of NEPA.

1.5.2 ESA Programmatic Biological Opinion

The BLM completed programmatic consultation with the U.S. Fish and Wildlife Service (USFWS) on July 20, 2012 under Sections 7(a)(1) and 7(a)(2) of the ESA. The BLM, in consultation with the USFWS, completed a conservation review pursuant to Section 7(a)(1) of the ESA on the overall Western Solar Plan. The BLM also completed a programmatic consultation with the USFWS on the potential effects on listed (endangered and/or threatened) species and designated critical habitat from expected solar energy development within each of the designated SEZs under ESA Section 7(a)(2) (USFWS 2012). The

programmatic consultation between BLM and the USFWS was completed on July 20, 2012, with USFWS's issuance of a programmatic Biological Opinion and Conservation Review for the Solar PEIS (Programmatic BO) (USFWS 2012). The USFWS concluded in the Programmatic BO that the establishment of BLM's proposed Western Solar Plan, including the designation of the SEZs, is not likely to jeopardize the continued existence of ESA-listed species or destroy or adversely modify designated or proposed critical habitat. The Programmatic BO does not contain an incidental take statement for individual project-specific actions within SEZs, such as the Proposed Action within the Dry Lake SEZ, but envisioned that further Section 7(a)(2) consultation would occur, as necessary, at the level of individual solar energy projects and would tier to programmatic consultation and resulting programmatic Biological Opinion for SEZs.

1.5.3 NHPA Programmatic Agreement

The BLM has taken numerous actions to comply with requirements of the NHPA in relation to the Solar PEIS, including with regard to solar project development within SEZs. The BLM consulted with Indian Tribes, the State Historic Preservation Offices (SHPOs) from the six states, the Advisory Council on Historic Preservation (ACHP), and the National Trust for Historic Preservation (NTHP). A Solar Programmatic Agreement (PA) titled "Programmatic Agreement among the United States Department of Interior, Bureau of Land Management, the Arizona State Historic Preservation Officer, the California State Historic Preservation Officer, the Colorado State Historic Preservation Officer, the New Mexico State Historic Preservation Officer, the Nevada State Historic Preservation Officer, the Utah State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding Solar Energy Development on Lands Administered by the Bureau of Land Management" was fully executed by all parties on September 24, 2012 (BLM et al. 2012). For future project-specific federal undertakings proposed on lands administered by the BLM, the agency will consult with the SHPO, Indian Tribes, other consulting parties, and the ACHP regarding inventory, eligibility, effect, treatment, and the consideration of post-review discoveries in accordance with the terms of the PA.

1.5.4 Dry Lake Solar Regional Mitigation Strategy

The SRMS for the Dry Lake SEZ was released on March 17, 2014. The BLM will consider the findings and recommendations in the SRMS when evaluating mitigation measures for proposed solar projects in the Dry Lake SEZ. The Dry Lake SRMS preliminarily identified the following unavoidable impacts that may warrant regional mitigation:

- The loss of desert tortoise habitat and the potential loss of individual desert tortoises. The desert tortoise is listed as a threatened species under the ESA.
- The loss of habitat and the potential loss of individual animals for the following special-status species: Gila monster, Mojave Desert sidewinder, ferruginous hawk, golden eagle, loggerhead shrike, and Le Conte's thrasher.
- The loss of rosy two-toned penstemon (*Penstemon bicolor ssp. Roseus*) habitat and the potential loss of individual plants. The rosy two-toned penstemon is a BLM special-status species plant.
- The loss of ecosystem services and the human uses depending on them, as a result of development and until the lease expires and the site is restored. The primary components of an ecological system are: soils, vegetation, water, air, and wildlife.

- The visual impacts that will occur that may exceed the allowable level within the portion of the SEZ located within the area designated as visual resource management (VRM) Class III in the Las Vegas RMP.

The Dry Lake SEZ SRMS recommended a per-acre fee that developers would pay for acres disturbed by development. The BLM's selection of any compensatory mitigation measures will be consistent with the procedures described by IM 2013-142 (June 13, 2013) and draft Manual Section 1794, "Regional Mitigation," which includes guidance for management of funds collected as part of the restoration, acquisition, or preservation portion of the total mitigation fee by an independent third party. The Dry Lake SEZ SRMS is incorporated by reference into this EA, where relevant.

1.5.5 PEIS for Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States

The PEIS for vegetation treatments (BLM 2007a) addresses human health and ecological risk for the proposed use of chemical herbicides on public lands within 17 western states, including Nevada, and provides a cumulative impact analysis addressing the use of chemical herbicides in conjunction with other treatment methods. The ROD for the PEIS for vegetation treatments (BLM 2007b) outlines the herbicides that are approved for use on public lands, and approves the continued use of 14 herbicides, including those with the active ingredient glyphosate.

1.5.6 State of Nevada Renewable Portfolio Standard

The State of Nevada has established a Renewable Portfolio Standard (NRS 704.7821) for which energy providers must meet specific solar electrical generation capacities every year through the year 2025. By calendar year 2025, not less than 25 percent of the total amount of all electricity generated in Nevada must be derived from renewable sources. Nevada's renewable portfolio standard further requires that through 2015, 5 percent of all electricity generated by NV Energy in the state must come from solar power, with the requirement increasing to 6 percent from 2016 through 2025.Per Section 701.080 of the Nevada Revised Statutes, the Proposed Action is defined as a renewable energy generation project.

1.5.7 Clark County, Nevada Comprehensive Plan

The Clark County, Nevada Comprehensive Plan (Clark County Department of Comprehensive Planning 2014) supports multiple uses of public lands outside of special management areas which do not negatively impact the environment.

1.6 Identification of Issues

This EA focuses on the issues that have been identified through the public involvement processes attendant to the development and approval of the Solar PEIS, Dry Lake SRMS, Tribal consultation, and other actions that have been completed for the Dry Lake SEZ. See Chapter 4, *Coordination,* for more information on consultation and coordination completed as part of the Solar PEIS and the Proposed Action. In addition, on September 17, 2014, a description of the Proposed Action was presented to the

BLM Las Vegas Field Office Interdisciplinary Team and preliminary issues were identified. The following issues have been identified for further consideration in this EA:

Air Quality

- Temporary exceedances of Ambient Air Quality Standards (AAQS) for 24-hour and annual PM10 and 24-hour PM2.5 concentration levels at the SEZ boundaries and in the immediate surrounding areas during the construction of solar facilities.

Vegetation

- The spread of invasive and noxious weeds in disturbed areas and colonization of adjacent undisturbed habitats.
- The deposition of fugitive dust from large areas of disturbed soil onto habitats outside the Project area.
- Direct loss and cumulative loss and fragmentation of native plant communities and the ecosystem services they provide, including general and special-status wildlife species habitat.
- Direct loss and cumulative loss of habitat for the rosy two toned penstemon (*Penstemon bicolor ssp roseus*), a BLM special-status plant species.

Forestry:

- Direct impacts to special forest products (cactus and yucca) in the Project area.
- Direct and cumulative impacts to BLM lands used for commercial seed collection.

Wildlife

- Impacts to groundwater dependent species including the federally listed Moapa dace.
- Impacts to federally listed (threatened) Mojave desert tortoise (*Gopherus agassizii*), which would be impacted as a result of construction and operation activities and will need to be translocated from the development sites within the SEZ.
- Impacts to desert tortoise Critical Habitat (Coyote Springs Area of Critical Environmental Concern (ACEC)) from desert tortoise translocation.
- Impacts to wildlife habitat and individuals, including BLM sensitive species.
- Impacts to birds and bats, which may require a Bird and Bat Conservation Strategy (BBCS).
- Cumulative impacts to migratory birds.

Cultural Resources

- Indirect impacts to the visual setting of the congressionally designated Old Spanish National Historic Trail from the development of solar facilities.

Lands and Realty

- Existing ROWs and corridors that overlap with the Project area.

Native American Concerns

- Impacts to a traditional use area of the Southern Paiute (Salt Song Trail and other trail systems, mountain springs, mineral resources, burial sites, ceremonial areas, the Moapa Valley, and plant and animal resources).
- Need to continue government-to-government consultation with Tribes.

Soils:

- Direct loss and cumulative impacts to soils and ecosystem services they provide, including the loss of desert pavement and cryptobiotic crusts.

Specially Designated Areas and Lands with Wilderness Characteristics

- Visual resource impacts in Arrow Canyon and the Muddy Mountains Wilderness Areas.

Visual Resources

- Visual impacts of development in the SEZ from areas representative of places where the public perceives the landscape (known as Key Observation Points, or KOPs).

Water Resources

- Groundwater withdrawal impacts to the Garnet Basin could disrupt the groundwater flow patterns and adversely affect plant and/or animal communities on or near the SEZ or springs in the vicinity of the SEZ.

1.7 Summary

This chapter has presented the purpose and need for action, as well as the relevant issues, i.e., those elements of the human environment that could be affected by the implementation of the Project. Chapter 2, *Proposed Action and Alternatives,* provides a detailed description of the Proposed Action including design features intended to avoid and minimize potential impacts which were developed in accordance with the Solar PEIS ROD (BLM 2012) and any additional design features and/or mitigation measures identified through this NEPA and decision-making process. The affected environment and the potential environmental impacts resulting from the implementation of the Proposed Action and the No Action Alternative are discussed in Chapter 3, *Affected Environmental and Environmental Consequences*. To reduce paperwork and redundant analysis in the NEPA process, the information in Chapter 3 tiers to the analysis in the Solar PEIS (BLM and DOE 2010 2012) and incorporates by reference to the extent practicable. Chapter 4, *Coordination,* includes an overview of the involvement that took place as part of the Solar PEIS for the Dry Lake SEZ as well as the additional activities undertaken for the Project.

CHAPTER 2
Proposed Action and Alternatives

2.1 Introduction

This chapter describes the Proposed Action and the No Action Alternative. Through the July 2012 Final Programmatic Environmental Impact Statement for Solar Energy Development in Six Southwestern States (Solar PEIS) (BLM and DOE 2012) and October 2012 Record of Decision for the Solar PEIS (BLM 2012), the BLM established a comprehensive Solar Energy Program (i.e., the Western Solar Plan) for utility-scale solar energy development. Pursuant to that effort, the BLM identified specific locations that are well suited for utility-scale production of solar energy (Solar Energy Zones, or SEZs) where the BLM proposes to prioritize development, including the Dry Lake SEZ in Clark County, Nevada.[1] As the successful bidder on parcels 2, 3, and 4 of the Dry Lake SEZ (BLM 2014a), Playa Solar, LLC (Applicant) is seeking to develop an up to 200 megawatt alternating current (MWac) (nominal plant capacity) solar photovoltaic (PV) power generating facility in this specific location (Proposed Action or Project). Alternative locations, project sizes, and technologies are not analyzed in detail in this Environmental Assessment (EA). Unresolved resource conflicts associated with development on parcels 2, 3, and 4 would be addressed through Project design features and mitigation measures, including the analysis identified in the Dry Lake Solar Regional Mitigation Strategy (SRMS) (BLM 2014b). See Section 2.4, *Alternatives Considered but Eliminated from Further Consideration*, for additional information about the BLM's consideration of potential alternatives to the Project.

2.2 Proposed Action

2.2.1 Project Overview

The Applicant proposes to construct, operate, maintain, and decommission the Project, consisting of up to a 200 MWac solar PV power generating facility on approximately 1,700 acres of BLM-administered land located within parcels 2, 3, and 4 of the Dry Lake SEZ in Clark County, Nevada. Project components include onsite facilities, offsite facilities and temporary facilities needed to construct the Project. The major onsite facilities are comprised of solar array blocks of First Solar PV modules, a substation, and operation and maintenance (O&M) facilities. The offsite facilities include a 3,500-foot (0.7 mile) 230 kilovolt (kV) generation tie transmission line (gen-tie), access roads, well and water pipeline, and electric distribution and communication lines. Temporary facilities, which would be removed at the end of the construction period, include mobilization, laydown, and construction areas as well as one or more temporary ponds. Power produced by the Project would be conveyed to the Nevada Power bulk

[1] Through the Solar PEIS process, the BLM conducted a thorough environmental review of all SEZs, including the Dry Lake SEZ. This EA is tiered to the Solar PEIS and Solar PEIS ROD. As a new application, the Project is subject to the decisions adopted by the Solar PEIS ROD.

transmission system via the gen-tie, which would interconnect to NV Energy's existing Harry Allen Substation.

2.2.2 Project Location and Existing Land Use

The Project site is located approximately 14 miles northeast of the City of Las Vegas and south and approximately 8 miles south and east of the Moapa River Indian Reservation in an unincorporated area of Clark County, Nevada. U.S. Route 93 is located on the western boundary of the Project site and Interstate 15 (I-15) is located less than 1 mile east of the Project site. The NV Energy Harry Allen Substation and an NV Energy high-voltage transmission line are located immediately adjacent to the Project's northern boundary. See Figure 2-1, *Project Location Map*.

All lands for the proposed facilities, except the well and pipeline, are federal lands administered by the BLM under the 1998 Las Vegas Resource Management Plan (Las Vegas RMP) (BLM/LVFO 1998). The Project site is located within the boundaries of the Dry Lake SEZ (parcels 2, 3, and 4), identified through an amendment to the Las Vegas RMP by the ROD for the Solar PEIS (BLM, 2012). Existing uses of the site are managed by the BLM in accordance with the Las Vegas RMP. The well and water pipeline would be located on private land inside the Mountain View Industrial Park located south of Highway 93.

The Project site is located in T17S, R63E, in a portion of Section 35; and in T18S, R63E, sections or portions of sections 1, 2, 3, 10, 11, 12, 13, and 14, Mount Diablo Base and Meridian.

2.2.3 Key Project Elements

The Project would include the following key elements, the locations of which are shown in Figure 2-2, *Preliminary Site Plan*:

1. Onsite facilities (i.e., facilities proposed on parcels 2, 3, and 4) consisting of:
    a. Solar Array blocks consisting of First Solar PV modules mounted on fixed-tilt mounting systems and/or single-axis, horizontal tracker mounting systems supported by driven steel posts or other embedded foundation design (a typical panel array layout using fixed-tilt panels is shown in Figure 2-3, *Typical Array Configurations,* and Figure 2-4, *Typical Mounting System*);
    b. Meteorological stations within the solar field, and if tracker technology is utilized, up to 10 meteorological towers (steel lattice), approximately 30 feet high, mounted on concrete foundations would be installed around the perimeter of the solar field;
    c. Interior access ways and a perimeter road;
    d. Direct current (DC) collection system and Power Conversion Stations (PCSs) to collect power from the array blocks;
    e. Overhead 34.5 kV AC collection system to convey electricity from the PCSs to the onsite substation;
    f. Substation with one or more 34.5 kV to 230 kV step-up transformers, breakers, buswork, protective relaying and associated substation equipment, microwave tower, and a control house;

g. 1.7-acre O&M area that would accommodate an O&M building, parking area, and other associated facilities such as above ground water storage tanks, septic system, security gate, signage, lighting and flagpoles;

h. Project security using a combination of perimeter security fencing, controlled access gates, on-site security patrols, lighting, electronic security systems and/or remote monitoring;

i. A 10-foot wide firebreak outside the perimeter fence; and

j. Desert tortoise exclusion fencing around the Project perimeter; and

k. Drainage control structures, final design to be determined upon completion of a hydrologic study.

2. Offsite facilities (i.e., facilities proposed outside of parcels 2, 3, and 4), consisting of:

a. Approximately 0.5-mile long primary access road that would connect north of the existing gas line to the existing 2-mile paved road that provides access to the NV Energy Harry Allen Substation; alternatively, the primary access road would be located south of the exiting gas line and connect to the existing paved road for a total length of approximately 1-mile;

b. A Secondary Access Road (intended primarily for emergency access) approximately 1.5-miles in length.

c. Approximately 3,500-foot (0.7-mile) 230 kV gen-tie line to connect the onsite substation to the existing NV Energy Harry Allen Substation;

d. Fiber optic communications cable installed underground or on overhead lines along the Project access road or gen-tie transmission line;

e. Approximately 2-mile distribution power line for construction and operation of the Project from existing Nevada Power distribution system nearby; and

f. A groundwater well to be located on private land inside the Mountain View Industrial Park. A pipeline would connect the well to the on-site storage pond, crossing private land inside the Mountain View Industrial Park and a portion of either parcel 2 or parcel 3. The pipeline could extend up to approximately 6,750 ft into parcel 2 and up to approximately 2,000 ft into parcel 3 to reach the temporary water supply storage ponds.

3. Temporary facilities to be removed at the end of the construction period consisting of:

a. An approximately 10-acre temporary construction mobilization and laydown area, which would contain construction trailers, construction workforce parking, above ground water tanks, materials receiving, and materials storage. The temporary mobilization and laydown area would be graded/compacted earth;

b. An additional temporary construction area for construction offices and parking would be located within the eastern portion of the Project site for laydown. The temporary mobilization and laydown area would be graded compacted earth.

c. Temporary construction areas would be located at each tower location and at locations required for conductor stringing and pulling operations to accommodate construction of the gen-tie line. These areas would total approximately 4 acres.

d. One or more temporary ponds for construction water; and

e. Temporary generators may be used to provide construction power.

The total acreage of the Project facilities is summarized in Table 2-1, *Temporary and Permanent Disturbance*.

TABLE 2-1
TEMPORARY AND PERMANENT DISTURBANCE

Project Component	Temporary Disturbance (acres)	Permanent Disturbance (acres)
Solar Field and Ancillary Facilities	10	1,464
Access Roads (proposed primary, alternate primary, and proposed secondary)	0	24
230 kV Gen-Tie Line	4	19
Drainage Control Detention Basins	0	43
Water Well and Pipeline (max)	10	0
Total	**24**	**1,550**

2.2.4 Onsite Project Facilities

Onsite facilities would include First Solar PV modules configured within array as described in Section 2.2.4.1, the onsite collection system described in Section 2.2.4.2, site security and fencing described in Section 2.2.4.3, the O&M facility described in Section 2.2.4.4, and internal Project-related roads described in Section 2.2.4.5. Offsite linear facilities including the 230 kV gen-tie, the main and secondary site access roads, and electric distribution and communication lines described in Section 2.2.5. Other Project site arrangement, processes, systems, and equipment also are described in the following sections.

All Project components would be designed in accordance with applicable federal and industrial standards including American Society of Mechanical Engineers, National Electrical Code, International Energy Conservation Code, International Building Code, Uniform Plumbing Code, Uniform Mechanical Code, National Fire Protection Association, and Occupational Safety and Health Administration (OSHA).

2.2.4.1 Solar Panel Arrays

The proposed Project would utilize high-efficiency commercially available solar PV modules that are Underwriters Laboratory (UL)-listed or approved by another nationally recognized testing laboratory. Materials commonly used for solar PV modules include monocrystalline silicon, polycrystalline silicon, amorphous silicon, cadmium telluride (CdTe), and copper indium selenide/sulfide.

The Applicant will use First Solar's proprietary thin-film CdTe solar PV modules. The principal materials incorporated into the PV modules include glass, steel, and various semiconductor metals, including CdTe. The PV modules absorb over 90 percent of the light received.

The solar PV modules would be mounted on fixed-tilt mounting systems and/or single-axis, horizontal tracker mounting systems. Mounted PV modules, inverters, and transformers would be combined to form array blocks, 1.25 MWac to 2.5 MWac in size.

Fixed Tilt Mounting System

If a fixed-tilt mounting system is used, panel arrays would be constructed in east-west oriented rows. The fixed-tilt panels would be positioned to receive optimal solar energy at an angle of 20 to 25 degrees, and would not move. A typical panel array layout using fixed-tilt panels is shown in Figure 2-3. The vertical height of fixed-tilt panel arrays would be between 4 feet high and 10 feet high. If 10 feet high, then the arrays would be up to 13 feet above the ground surface at the highest point (Figure 2-4). The height of the panel array would vary depending on the panels used and on the site conditions, since the solar field would not be graded to a level surface. The mounting system for the fixed-tilt module includes steel posts driven into the ground (or other embedded foundation design), with steel table frames bolted to the driven posts. The modules then would be then mechanically fastened to the steel table frame.

Horizontal Tracker Mounting System

If a horizontal tracker mounting system is used, the panel arrays would be arranged in north-south oriented rows and drive motors would rotate the horizontally mounted solar panels from east to west to follow the sun (on a single axis) throughout the day. A typical panel array layout using horizontal trackers is shown in Figure 2-3. The highest point for a horizontal tracker would be achieved during the morning and evening hours when the trackers are tilted at their maximum angle, and would be a maximum of 13 feet above the ground surface depending on the grade where the posts are installed (Figure 2-4). When solar modules are roughly parallel to the ground, the overall height of the tracker unit would be a maximum of 10 feet above the ground surface depending on the grade where the posts are installed.

The vertical support legs for the tracker mounting system consists of foundations that may include concrete piers approximately 18 to 24 inches in diameter and 6 to 8 feet deep, or driven posts (wide flange I-beam) approximately 6 to 8 inches across and 6 to 12 feet deep. The preferred mounting configuration would use directly embedded driven posts; concrete piers would be used only if subsurface conditions do not support driven posts.

In this type of system, each tracker panel array is approximately 65 feet long and powered by a low-voltage, approximately 0.5 horsepower electric drive motor. The motors and actuator are mounted to one of the driven posts and do not require separate foundations for mounting. Hydraulic drive systems would not be used. The motors only would be operated for a few seconds every 5 to 10 minutes during daylight conditions to move the panels in approximately 1 degree increments. The sound from the tracker motors would be less than 70 decibels at a distance of 3 feet. This would equate to less than 30 decibels at 50 feet, which would be similar to that of the interior of a common library.

Meteorological stations located at the site would monitor wind speed and communicate with the tracker units. This would allow for the trackers to rotate to a flat position during high wind activity. The meteorological station towers would be located at multiple locations around the perimeter of the solar array. Meteorological station towers would be monopole or lattice design and would not exceed 30 feet in height. Each tower would require a small concrete foundation approximately 3 feet by 3 feet that would extend approximately 4 feet into the ground, depending on soil conditions.

Emergency Backup Power

If horizontal trackers are used, the PCSs would be equipped with emergency backup power required to rotate the tracker units to their stow position in the unlikely event of high winds and a loss of the primary 230 kV electrical connection from the Project to NV Energy's transmission system. The emergency back-up power system would consist of a15 kilovolt-ampere (kVA) battery-based uninterruptible power supply (UPS) at each PCS.

2.2.4.2 Onsite Electrical Collection System

PV modules convert sunlight into DC electricity. One or more combiner boxes would be located in the array block to collect the DC electricity from PV modules. The electricity would be delivered through underground cables to an inverter that changes the DC electricity to AC electricity and a medium-voltage transformer that steps up the voltage to 34.5 kV. This converted electricity then would be delivered to the onsite substation, where the electricity again would be stepped up to 230 kV for delivery to NV Energy's transmission grid.

Inverters, Transformers, and Medium Voltage Switchgear

Each array block would have a Power Conversion Station (PCS) containing inverters and medium voltage transformers, as well as other electrical equipment. Each PCS also would contain communication equipment to wirelessly communicate with the tracker units to control operation and detect anomalous conditions. Photovoltaic Combining Switchgear, or PVCS, will be located along the 34.5 kV collector line. All electrical equipment would be housed in protective enclosures on concrete pads.

34.5 kV Collection System

The 34.5 kV collection system would comprise both underground and aboveground cabling. From the medium-voltage transformers to the PVCSs, the 34.5 kV system would be installed underground using 35 kV-rated medium voltage cables listed for direct buried applications except that overhead cabling would be installed where necessary to avoid existing underground facilities. Underground 34.5 kV cables would be installed to comply with the minimum burial depth in accordance with the National Electrical Code.

From the PVCSs to the onsite substation, the 34.5 kV system would be installed overhead. Overhead 34.5 kV collector lines would be installed as double circuit lines on wood poles with post insulators (typical of medium voltage installations in electric distribution systems). Pole height would be up to 75 feet above grade.

Onsite Substation

The approximately 110,500 square-foot (2-acre) onsite substation would be located in the northeastern portion of the Project site and constructed based on applicable electrical safety codes. The substation would be separately fenced to provide increased security around the medium and high voltage electrical equipment. The onsite substation area would include a transformer containment area, a microwave tower, a control house, and one or more transformers.

The transformer containment area would be lined with an impermeable membrane covered with gravel, and would include a drain with a normally closed drain valve.

2.2.4.3 Site Security and Fencing

Security at the Project site would be achieved by fencing, lighting, security patrols, and electronic security systems. The Project site would be monitored 24 hours per day, seven days per week during all phases. Lighting would be provided at the O&M building and Project entrance gate. The solar field and support facilities perimeter would be secured with chain link metal-fabric security fencing. Controlled access gates would be located at the site entrance. The perimeter fence would be an approximately 6 to 7-foot-high chain link fence with 1-foot-high barbed-wire security strands at the top; a 10-foot-wide fire break would be maintained around the exterior of the perimeter fence. Approved desert tortoise exclusion fencing also would be utilized and would be installed outside the perimeter security fence.

2.2.4.4 Operation and Maintenance Facilities

An approximately 1.7-acre O&M area would be located in the northeastern portion of the Project site, adjacent to the temporary construction mobilization and laydown area. The O&M area would accommodate a permanent O&M building, parking area, and other associated facilities such as above ground water storage tanks, septic system, security gate, signage, and flagpoles. The permanent O&M building would house administrative, operation, and maintenance equipment and personnel, and would be up to approximately 20,000 square feet in size, with a maximum height of approximately 34 feet, and would have an adjacent parking area. The O&M building would include communication equipment, a storage and equipment area, offices, restrooms, and other features necessary for habitation on a daily basis. The design and construction of this building would be consistent with applicable Clark County building standards.

2.2.4.5 Internal Project-Related Roads

Project-related roads within the solar plant site would include the perimeter road and solar field access ways as described below. The proposed primary and secondary site access roads are described in Section 2.2.5.2, *Project Access Roads*. Similar to the disturbance that would occur from other Project components (based on the assumption that all acreage within the fenced perimeter would be disturbed), the acreage identified for roads also is considered to be permanent disturbance.

Perimeter Road

A new 20-foot wide, approximately 7-mile-long perimeter road would be located just inside the site's perimeter fence and within the solar field area around specific blocks of equipment. The perimeter road would be constructed to allow access by maintenance and security personnel. The perimeter road would be approximately 20 feet wide and would be composed of native graded and compacted dirt. Alternatively, the perimeter road may use an aggregate base in some or all areas to meet Project dust and flood control requirements.

Solar Field Access Ways

Within the solar field, new access ways would be built to provide vehicle access to the solar equipment (PV modules, inverters, transformers) for O&M activities. These access ways would be approximately 20 feet wide and approximately every 500 to 1,300 feet across the solar field. The existing surface area would be graded and compacted using onsite materials to facilitate use by two-wheel-drive vehicles.

2.2.5 Offsite Linear Facilities

2.2.5.1 230 kV Gen-Tie Transmission Line

The Project would require the construction of an approximately 3,500-foot (0.7-mile) 230 kV gen-tie for interconnection to the utility transmission grid system. The overhead 230 kV lines would be installed on approximately nine steel monopole structures of up to approximately 130 feet above grade with 15-foot spacing between conductors and minimum ground clearance of 26 feet, per local and national electrical code requirements. Monopole structures would be galvanized steel with a dull gray appearance similar to existing steel poles installed adjacent to the Project and would be used to support interconnection to the NV Energy transmission system (see Figure 2-5, *Power Line Details*).

All overhead electrical lines would be designed and installed in accordance with the Avian Power Line Interaction Committee's (APLIC) Suggested Practices for Avian Protection on Power Lines (APLIC 2006). The Applicant also would prepare a Bird and Bat Strategy to address potential impacts to birds and bats during the construction, operations, and maintenance phases of the Project.

2.2.5.2 Project Access Roads

The proposed primary access road for the Project would include a new approximately 52-foot wide, 0.5-mile road that would connect north of the existing gas line to the existing 2-mile paved road currently providing access to NV Energy's Harry Allen Substation. Alternatively, the primary access road would be located south of the exiting gas line and connect to the existing paved road for a total length of approximately 1-mile (Figure 2-2, *Preliminary Site Plan*). Only one primary access road would be required; it would be selected based on input received from Kern River, NV Energy, and the BLM. The primary access road would be utilized for delivery of all Project components, and would be used by workers traveling to and from the site for construction. The primary access road would be comprised of native graded and compacted dirt and may be improved to aggregate rock or paved, if necessary, to comply with Clark County requirements. In addition, road improvements to Harry Allen Road may be required to facilitate construction of the new Project access road.

A 1.5-mile secondary access road would be located south of the existing gas line and connect to the existing paved road (Figure 2-2, *Preliminary Site Plan*). The secondary access road would provide alternative access for emergency vehicles in the event that the primary access road could not be used during an emergency.

2.2.5.3 Electric Distribution Line

A new distribution line (up to approximately 2 miles in length) interconnecting to the existing NV Energy distribution service would be installed to provide electricity during construction and operation and would be located between the construction trailer area and the NV Energy point of interconnection. Poles would be spaced between 55 feet high from ground surface and an average of 300 feet from one another. Alternatively, generators may be used to provide temporary construction and operation power. During operational daylight hours, the Project would generate its own power for equipment operation. During non-daylight hours, the Project would require power to keep transformers energized, maintain communications to Project equipment, and provide power for heating, ventilation, air conditioning, and

lighting at the O&M building. The total power consumption of the Project during non-daylight hours would be approximately 13,000 megawatt hours per year (MWh/year).

2.2.6 Water and Wastewater

All Project-related water use and facilities are described below.

2.2.6.1 Water

An estimated 1,350 acre-feet (AF) of water would be required over an approximately 18-month period for construction-related activities, including dust control. After construction is complete, the Project's water consumption during operation would require up to 15 acre-feet per year. Water would not be used for panel washing but would be used in conjunction with dust palliatives during operation see Section 2.2.14, *Operation and Maintenance*. The Project would not require process water; however, the administrative area would require domestic potable water service.

The BLM has allowed the use of several dust palliatives on other projects within the Southern Nevada District. If dust palliatives are used in place of water for the Project, the total amount of water needed during construction would be reduced. The Applicant may opt to use such palliatives, as authorized by the BLM for the Project. The soil binder/dust palliatives that are proposed for the Project, and which BLM previously has allowed are:

- Road Bond 1000
- For roads and heavy traffic areas: Soil Cement
- For non-traffic areas on finer soils: Formulated Soil Binder FSB 1000
- For non-traffic areas on sandier/rockier soils: Plas-Tex

Water supply for the Proposed Action would be met through purchases of water from holders of existing water rights. Specifically, up to 900 AF of water for construction would be purchased from the City of North Las Vegas and up to 450 AF from a private holder of water rights. A new well would be constructed on private property inside the Apex Industrial Park south of Highway 93. The proposed well would serve the Project's construction water needs and would remain in place after construction to serve the Project's operational needs The proposed well would be designed to produce approximately 250 gallons per minute (gpm). The remainder of the Project's construction water requirements, if any, would be met by transporting water to the site from water sources in the Las Vegas Metropolitan Area. As necessary, a water services memorandum of agreement/contract would be established with retail water purveyors before use. The Applicant would prepare a Groundwater Monitoring and Reporting Plan to be reviewed and approved by the BLM if groundwater is used.

The well would require approvals of the Nevada State Engineer. It is anticipated that the City of North Las Vegas would file an application for the new well. Following approvals by the State Engineer, the Applicant would construct the well and operate it during our construction period, then turn it over to the City.

Delivery of water to the site from the proposed well would either be by truck or a permanent pipeline constructed along an existing unpaved road. Three potential well locations and two potential pipeline

routes are shown on Figure 2-1, *Project Location Map*. The northern pipeline route would be up to 1-mile long on private land [and up to 5 miles] on parcels 2, 3, and 4; the southern pipeline route would be up to 0.6-mile on private land and up to 5 miles on parcels 2, 3, and 4. The third well location is adjacent to Highway 93 and would require a short pipeline up to 200 feet to reach the Project site with up to 5 miles on parcels 2, 3, and 4.

An alternative and/or supplement to the new well for all or a portion of the water needed for construction is to truck water to the site from water sources in the Las Vegas Metropolitan Area, located approximately 7 – 20 miles south of the Project site. The source of the water would be from existing wells and water rights. Trucks would transport water from the fill point to the Project site. The maximum potential water use at the Project site during construction would be approximately 1 million gallons per day (gpd). If trucked, the Project would use trucks with a capacity of 6,000 gallon. Each truck would be capable of making four trips a day. Water would be delivered to the site at a maximum rate of one truck every 4.5 minutes (assuming a 12 hour work day). All such trips would be dispersed between Las Vegas and the Project site. The highest volume of water use would occur during the site preparation phase.

2.2.6.2 Wastewater

Wastewater generated during construction and operation would include sanitary waste from the O&M building, stormwater runoff, equipment washdown water, and water from excavation dewatering during construction (if dewatering is required). These wastewaters may be classified as hazardous or nonhazardous depending on their chemical quality and handled and disposed of in accordance with applicable law. A septic tank and drain field system would be used for collection, treatment, and disposal of sanitary sewer waste.

2.2.7 Lighting

Permanent lighting would be provided within the O&M area, and the O&M and substation buildings would be equipped with exterior building lighting. Lighting also would be provided at the Project entrance gate. Lighting for facilities and associated infrastructure would be down-shielded to keep light within the boundaries of the Project site and the minimum amount and intensity necessary for the intended use. Nighttime activities would be performed with temporary lighting. Night lighting used during construction, operation, and maintenance of the Project would be controlled or reduced using directed lighting, shielding, and/or reduced lumen intensity. The Applicant would prepare a Lighting Management Plan for construction and operation of the Project.

2.2.8 Waste and Hazardous Materials Management

The primary wastes generated at the Project during construction, operation, and maintenance would be nonhazardous solid and liquid wastes. The types of wastes and their estimated quantities are discussed below and summarized in Table 2-2 *Wastes Potentially Generated by the Project*. The Applicant would prepare a Hazardous Materials and Waste Management Plan, as well as an Spill Prevention and Emergency Response Plan, which would address waste and hazardous materials management, including Best Management Practices (BMPs) related to storage, spill response, transportation, and handling of materials and wastes.

TABLE 2-2
WASTES POTENTIALLY GENERATED BY THE PROJECT

Waste	Origin	Composition	Estimated Quantity	Classification	Disposal
Scrap wood, steel, glass, plastic, paper	Construction activities	Normal refuse	400 tons	Nonhazardous	Recycle and/or dispose of in industrial or municipal landfill
Scrap metals	Construction activities	Parts, containers	<4 tons	Nonhazardous	Recycle and/or dispose of in industrial or municipal landfill
Empty hazardous material containers	Operation and maintenance of plant	Drums, containers, totes*	<2 tons	Hazardous and nonhazardous solids	Containers <5 gal would be disposed as normal refuse. Containers >5 gal would be returned to vendors for recycling or reconditioning.
Waste oil filters	Construction equipment and vehicles	Solids	1000 lbs	Used Oil	Recycle at a permitted Treatment, Storage, and Disposal Facility (TSDF)
Oily rags, oil sorbent excluding lube oil flushes	Cleanup of small spills	Hydrocarbons	200 cubic ft	Used Oil	Recycle or dispose at a permitted TSDF
Spent lead acid batteries	Construction machinery	Heavy metals	20	Hazardous	Store no more than 10 batteries (up to 1 year)–recycle off site.
Spent alkaline batteries	Equipment	Metals	100 lbs	Universal waste solids	Recycle or dispose offsite at a Universal Waste Destination Facility
Waste oil	Equipment, vehicles	Hydrocarbons	1000 gallons	Used Oil	Dispose at a permitted TSDF
Sanitary waste	Portable toilet holding tanks	Solids and liquids	400,000 gallons	Nonhazardous liquid	Remove by contracted sanitary service

* Containers include <5-gallon containers and 55-gallon drums or totes

2.2.8.1 Nonhazardous Wastes

The Project would produce wastes typically associated with O&M activities. These would include defective or broken electrical materials, empty containers, the typical refuse generated by workers and small office operations, and other miscellaneous solid wastes.

2.2.8.2 Hazardous Materials and Hazardous Waste

Limited quantities of hazardous materials would be used and stored on site for O&M activities. Table 2-3, *Hazardous Materials That May Be Used During Operation*, lists the hazardous materials anticipated that would be stored and used on site. Material Safety Data Sheets (MSDSs) for each of these materials would be provided in the Spill Prevention and Emergency Response Plan.

2.2.9 Fire Protection

The Project's fire protection water system would be supplied from a water storage tank located near the O&M building. During construction, one electric and one diesel-fueled backup firewater pump would deliver water to the fire protection water-piping network. The electrical equipment enclosures that house the inverters and transformers would be either metal or concrete structures. Any fire that could occur

TABLE 2-3
HAZARDOUS MATERIALS THAT MAY BE USED DURING OPERATION

Hazardous Material	Storage Description; Capacity	Storage Practices and Special Handling Precautions
Mineral Insulating Oil	Carbon steel transformers; total onsite inventory of 80,000 gallons.	Used only in transformers, secondary containment for each transformer would be managed in accordance with the Spill Response and Emergency Response Plan.
Batteries, lead acid based and/or lithium ion	Battery-based emergency back-up power at each of the PCS.	Sufficient cooling capacity to maintain ambient temperatures appropriate for the selected battery would be provided.
Propane	Generator-based emergency back-up power at each of the nine PCS shelters (or one centralized generator); tanks at PCS will be sized between 20 and 100 gallons (or 1000 gallons if one centralized tank).	Would be managed in accordance with the Spill Response and Emergency Response Plan.
Herbicide Roundup® (glyphosate) or equivalent; Pesticide	Brought on site by licensed contractor, used immediately.	No mixing will occur onsite and no herbicides will be stored onsite.

would be contained within the structures, which would be designed to meet National Electric Manufacturers Association (NEMA) 1 or NEMA 3R IP44 standards for electrical enclosures (heavy duty sealed design to withstand harsh outdoor environmental conditions). The Applicant would prepare and implement a Fire Management Plan.

2.2.10 Health and Safety Program

The Applicant would require that all employees and contractors adhere to appropriate health and safety plans and emergency response plans. All construction and operations contractors would be required to operate under a Health and Safety Program (HASP) that meets industry standards. All site personnel would be required to go through a new hire orientation and follow a Worker Education and Awareness Plan (WEAP), which would address Project-specific safety, health, and environmental concerns.

2.2.11 Stormwater Management

All major existing drainages on the Project site would be avoided and the Project would be designed and engineered to maintain the existing hydrology. Generally, offsite flows to the Project site come from the southern side of US-93. In most cases, the runoff generated from these offsite areas flows onto the site through culverts crossing under US-93 or by overtopping it. A lessor source of storm flows comes from the northwest. These flows also cross US-93 and a portion of them is directed south toward the Project site.

A series of proposed channels would be constructed to convey water flows from culverts under US-93 across the site where these flows could be discharged to existing drainages or by spreading the flows to allow them to leave the site as sheet flow. The proposed channels would be rip-rapped and grouted as required to reduce erosion. One or more detention basins may be located above the channels or to intercept flows at the top of the site to manage stormwater entering the site. Spreader basins and or riprapping may be located below each channel to reduce flow velocity before stormwater enters existing downstream drainages or allow offsite flows to be discharged as sheet flow. Runoff generated onsite would be conveyed as sheet flow across the site. This would maintain existing terrain.

2.2.12 Vegetation Management

The site would be allowed to re-vegetate following construction. Vegetation would typically be maintained to a height of no more than approximately 12 inches as needed for site maintenance and fire-risk management using mechanical and chemical controls. Project roads and the O&M area would remain free of vegetation. The Applicant will address post construction vegetation management including invasive and noxious weed control as part of a BLM approved Integrated Weed Management Plan for the Project.

2.2.12.1 Noxious Weed and Pest Control

The Applicant would prepare an Integrated Weed Management Plan for the Project that would follow the Las Vegas RMP (BLM/LVFO 1998), Noxious Weed Plan (BLM 2006), and the interagency guidance Partners Against Weeds (BLM 2007) for an active integrated weed management program. BLM-approved herbicides such as Roundup (glyphosate) would be used to control noxious weeds, if required. Pest control may also be required, including control of rodents and insects inside of the buildings and electrical equipment enclosures.

2.2.13 Construction

2.2.13.1 Overview

Construction is expected to take approximately 18 months and would include the major phases of mobilization, construction grading and site preparation, installation of drainage and erosion controls, PV panel/tracker assembly, and solar field construction. The Applicant expects that Project construction would commence in summer 2015.

2.2.13.2 Temporary Construction Workspace, Laydown and Mobilization Areas

The Project construction contractor would develop an approximately 10-acre temporary construction mobilization and laydown area within the northeastern portion of the Project site (Figure 2-2, *Preliminary Site Plan*) that would include temporary construction trailers with administrative offices, construction worker parking, temporary water service and fire water supply holding tanks, temporary construction power services, tool sheds and containers, as well as a laydown area for construction equipment and material delivery and storage.

In addition, temporary construction areas would be located at each tower location and at locations required for conductor stringing and pulling operations to accommodate construction of the gen-tie. These areas, totaling approximately 4 acres, would be required for staging equipment and materials for foundation construction and tower installation.

2.2.13.3 Site Preparation

A geotechnical investigation and environmental clearance surveys would be performed at the Project site prior to commencement of construction activities. During the environmental clearance phase, the boundaries of the construction area would be delineated and marked. The site then would be prepared for

use; existing vegetation removal and grading would be minimized to the extent reasonably practicable. Site preparation techniques are described below.

Surveying and Staking

Prior to construction, the limits of construction disturbance areas would be determined by surveying and staking. Where necessary, the limits of the ROW also would be flagged. All construction activities would be confined to these areas to prevent unnecessary impacts affecting sensitive areas. These areas, which would include buffers established to protect biological resources, also would be staked and flagged. The locations of underground utilities would be located and staked and flagged in order to guide construction activities.

Clearance Surveys and Fencing

Approved tortoise fencing would be installed around the perimeter of the construction area to prevent tortoise from moving onto the site from adjacent areas. Authorized biologists would be retained to survey and relocate desert tortoise, and perform other sensitive species removal and mitigation in accordance with an approved Desert Tortoise Translocation Plan.

Vegetation Removal and Treatment

Within the solar field areas that would be graded, existing vegetation would be worked into the underlying surface soils. Vegetation would be permanently cleared from roadways, access ways, and where concrete foundations are used for the inverter equipment, substations, and O&M facilities. A 10-foot-wide fire break would be established around the outside of the perimeter fence and maintained clear of vegetation. Vegetation Management is discussed in Section 2.2.12, *Vegetation Management.*

Site Clearing, Grading, and Excavation

All earthwork required to install drainage control detention basins, access roads, and foundations for Project-related buildings would be balanced on site. Trenching would be required for placement of collector lines. The solar field would require a positive natural terrain slope of less than 5 percent. The disk and roll technique would be used generally to prepare the surface of the solar field for post and PV panel installation. The disk and roll technique uses conventional farming equipment to prepare the site for construction. Typical farming equipment includes: rubber tired tractors with disking equipment and drum rollers with limited use of scrapers to perform micrograding. In areas where the terrain is not suitable for disk and roll, conventional cut and fill grading would be used to prepare the relevant area.

Solar Field and Internal Roads. Within the solar field, some grading would be required for roads and access ways between the solar arrays, and for electrical equipment pads. In general, the design standard for the roads and access ways within the solar field would be consistent with the amount and type of use they would receive.

Onsite Substation. The onsite substation would require a graded site to create a relatively flat surface for proper operation, with approximately 1 percent maximum slope in either direction. The substation interior would be covered with aggregate surfacing for safe operation.

O&M Area. O&M area grading would include the area where the O&M building would be constructed. The remaining area would be graded and appropriately surfaced for parking, roads, material storage and the erection of a temporary assembly structure for use during the construction phase of the Project.

Gravel, Aggregate, and Concrete Needs and Sources

A small amount of concrete would be poured in place for equipment and building foundations, fence footing and miscellaneous small pads. Aggregate material would be used for the trench backfill, parking lot and substation area (and if determined necessary, for the perimeter road and access roads). Riprap material would be required for erosion control. The Applicant would determine a source for these materials that would be presented for BLM review and approval, as necessary.

2.2.13.4 PV Solar Array Assembly and Construction

Prior to any construction in PV equipment areas, the clearance and site preparation steps for those areas would be completed. Within each area designated for PV equipment, the construction sequence would follow a generally consecutive order.

1. The construction of the solar field would proceed by arrays. Each array would contain solar panels, a PCS, and a step-up transformer. Within each array, materials for each row of PV modules would be staged next to that row. Prepare trenches for underground cable;
2. Install underground cable;
3. Backfill trenches;
4. Install steel posts and table frames;
5. Install PV modules;
6. Install concrete footings for inverters, transformers, and substation equipment;
7. Install inverter and transformer equipment;
8. Perform electrical terminations; and
9. Inspect, test, and commission equipment.

Cable trenches would be used to provide underground connection of Project equipment. Trenches would contain electrical conductors for power generation and fiber optic cables for equipment communication. Trenches would vary between 2 to 3 feet wide and 2 to 3 feet deep depending on the number of conductors and voltage of equipment to comply with applicable electrical codes.

The assembled solar equipment would be installed on steel posts to which steel table frames would be attached. Trucks would be used to transport the PV modules to the solar field. A small mobile crane may be used to assist construction workers in setting the solar modules on the driven steel posts. Final solar field assembly would require small cranes, tractors, and forklifts.

2.2.13.5 Electrical Collection and Transmission System Construction

Electrical construction would consist primarily of the following elements:

1. **Equipment**—Installation of all electrical equipment including DC combiner boxes, PCS Shelters (including inverters), transformers, circuit breakers, disconnect switches, switchgear and distribution panels, lighting, communication, control, and SCADA equipment.

2. **Cables**—Installation of all cables necessary to energize the Project equipment including instrument control wiring. High, medium, and low voltage cables would be routed via cable trays, above-grade conduits, below-grade conduit in duct bank, and overhead structures as necessary.
3. **Grounding**—All equipment and structures would be grounded as necessary. Within the solar field, an appropriate grounding system would be engineered and constructed in order to maintain personnel safety and equipment protection.
4. **Telecommunications**—Multiple communication systems would be required for the Project to properly operate, including T-1 internet cables, fiber optic, and telephone. All communications would be installed during electrical construction.

Standard Transmission Line Construction Techniques

The Project would include an overhead 34.5 kV collection system and an overhead 230 kV gen-tie. Standard transmission line construction techniques would be used to construct the gen-tie and 34.5 kV collector lines. Primary stages in transmission line construction are foundation installation, tower installation, and conductor stringing. An approximately 100 foot by 150 foot temporary laydown or staging area would be required at each 230 kV tower location for equipment, towers, and hardware. In general, little to no grading is expected to be required for these areas. Typical equipment expected to be used for transmission line construction includes: backhoe, truck-mounted tower hole auger, forklift, crane, line truck with air compressor, various pickup and flatbed trucks, conductor reel and tower trailers, bucket trucks, and truck-mounted tensioner and puller.

Foundation Installation. The steel towers used for the gen-tie would be supported by steel-reinforced poured pier concrete foundations suitable for the sandy soils conditions at the site. These foundations are constructed by auguring a cylindrical hole using a truck-mounted drilling rig. Reinforcing steel and anchor bolt cages would be installed in the hole and then the hole would be backfilled with concrete. Steel tower foundations would range in size from approximately 4 to 7 feet in diameter, and in depth from 12 to 30 feet. Wood poles used for the overhead 34.5 kV collector line would be embedded into the ground to a depth of at least 10 percent of the pole height plus 2 feet. Installation of wood poles is anticipated to require auguring holes approximately 2 feet in diameter and 8 feet deep. Aggregate or high-strength backfill would be used to stabilize the installed poles.

Tower/Pole Installation. Poles would be placed onto their foundations (for wood, placed into their holes) using backhoes or heavy lifter vehicles for the smaller, lighter poles, or a crane for longer poles. The poles would be supported, as necessary, during backfilling or bolting to the foundation to ensure correct pole seating.

Conductor Stringing. Conductor stringing would likely be conducted one phase at a time, with all equipment in the same operational place until all phases of that operation are strung.

Grounding. Ground rods would be hammered into the earth with a jackhammer device attached to a small excavator (such as a Bobcat). Typically, the rods are 8 to 12 feet long and can be longer if needed by joining multiple rods. For the 34.5 kV wood poles, a 3-foot square by 2-foot-deep area would be excavated to expose the ground rod for connection to the plant's grounding grid.

2.2.13.6 Road System Construction

Preconstruction activities for the Project-related roads would include installation of tortoise fencing, relocation of desert tortoise, and meeting any necessary cactus and yucca salvage requirements. The construction entrance and exit gates would be established. The Project's main access road would be graded and constructed in order to facilitate travel to the Project site and would connect to the existing Harry Allen Road. Within the solar field, some grading would be required for roads and access ways between the solar arrays. All Project-related roads are proposed to be native graded/compacted dirt; however, roads may alternatively use an aggregate base in some or all areas to meet Project dust and flood control requirements.

2.2.13.7 Onsite Building Construction

O&M Building Construction

Following environmental clearance and site preparation of the O&M area, construction in the O&M area would commence. Concrete foundations would be poured to support the permanent O&M building and an area adjacent to the building may be paved for parking. The modular steel approximately 20,000 square-foot building would be erected. A 4-inch aggregate base would be installed on all unpaved areas within the O&M area. The active and reserve septic fields would be established and connected to O&M buildings waste system. Temporary construction power would be connected to the O&M building. The potable water treatment equipment would be installed in the O&M building and the water pump and line would be connected to the potable water well.

Onsite Substation Construction

The onsite substation would be constructed in compliance with applicable electrical safety codes. Substation construction would consist of site grading, concrete equipment foundation forming and pouring, crane-placed electrical and structural equipment, underground and overhead cabling and cable termination, ground grid trenching and termination, control building erection, and installation of all associated systems including, but not limited to heating, ventilating, and air conditioning (HVAC) system components; distribution panels; lighting; communication and control equipment; and lightning protection.

The substation area would be excavated to a depth of 10 feet. A copper grounding grid designed to meet the requirements of IEEE 80, "IEEE Guide for Safety in AC Substation Grounding," would be installed and the foundations for transformers and metal structures would be prepared.

After installation of the grounding grid, the area would be backfilled, compacted and leveled followed by the application of 6 inches of aggregate rock base. Equipment installation of the transformers, breakers, buswork and metal dead-end structures would follow. The transformer containment area would be lined with an impermeable membrane covered with gravel. A pre-fabricated control house would be installed to house the electronic components required of the substation equipment.

2.2.13.8 Water Well and Pond Construction

To provide sufficient water for construction activities, one water well located in the Mountain View Industrial Park would be developed. Three potential well locations inside the Mountain View Industrial

Park and associated pipeline routes are shown on Figure 2-1. Alternatively or as a supplemental water source, water may be trucked to the site. Up to two temporary storage ponds would be installed onsite by the Applicant.

The water well would be drilled to a depth of up to 800 feet using a truck-mounted drilling rig with supporting equipment for water supply and drilling fluid management. Estimated well depth is based on existing groundwater basin information and actual depth may vary.

The construction water storage pond(s) would be excavated and lined for the temporary storage of water during the construction period and have a capacity up to one million gallons. After the construction period, the construction water storage pond would be re-leveled to grade and the lining removed.

2.2.13.9 Site Stabilization, Protection, and Reclamation

Appropriate water erosion and dust-control measures would be implemented to prevent an increased dust and sediment load to ephemeral washes around the construction site and to comply with Clark County dust control requirements. Dust during construction would be controlled and minimized by applying water and/or BLM-approved palliatives discussed in Section 2.2.6.1, *Water*. If palliatives are used, the Applicant would contribute funds to a BLM study to understand the effects of dust palliatives on the health of desert tortoises.

The Applicant would employ BMPs to protect the soil surface by covering or binding soil particles. The Project would incorporate erosion-control measures required by regulatory agency permits and contract documents as well as other measures selected by the contractor. Project-specific BMPs would be designed by the contractor and included in the Project SWPPP.

The Applicant would prepare a Site Rehabilitation and Restoration Plan. This plan would be implemented immediately after construction for the areas that are temporarily disturbed, such as portions of the transmission line route that involve disturbance.

2.2.13.10 Workforce, Schedule, Equipment, and Materials

The onsite construction workforce would consist of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel. The onsite construction workforce is anticipated to be an average of 700 to 800 construction workers with a peak not expected to exceed 1,200 workers at any given time. Most construction staff and workers would commute daily to the jobsite from within Clark County, primarily from the Las Vegas area.

Construction generally would occur between 5:00a.m. and 5:00 p.m., and may occur seven days a week. Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities. For instance, during hot weather, it may be necessary to start work earlier (e.g., at 3:00 am) to avoid work during high ambient temperatures. Further, construction requirements would require some night-time activity for installation, service or electrical connection, inspection and testing activities.

Construction activities would follow a generally consecutive order, however, most construction activities associated with each construction component would overlap to some degree and would include the following:

1. Installation of tortoise fencing and security fencing;
2. Construction of the access road, laydown areas, substation concrete pad and distribution line;
3. Site preparation activities, and construction of drainage control detention basins;
4. Erection of collection system and substation; and
5. PV solar array assembly, construction and commissioning.

Table 2-4 below provides a description of the onsite equipment expected to be used for solar panel array and collection system construction (Table 2-4A), onsite substation construction (Table 2-4B), and gen-tie line construction (Table 2-4C). Actual construction equipment details and durations may vary.

TABLE 2-4A
ESTIMATED ON-SITE EQUIPMENT FOR SOLAR PANEL ARRAY AND COLLECTION SYSTEM CONSTRUCTION

Equipment Description	Daily Quantity	Horsepower	Fuel Type	Equivalent Full-Load Operating Time (hr/day)	Vehicle Miles (VMT) per Day on Unpaved Surface
Install BMP Measures (Part of Site Preparation)					
Rough Terrain Forklift	4	75	Diesel	1.7	10
Delivery / Work Trucks	6	200	Diesel	2	5
Site Prep – Solar Arrays					
Truck, Pick-Up (Survey Crew)	4	180	Gas	1.7	5
Grader	12	200	Diesel	6.8	20
Backhoe/Front Loader	4	120	Diesel	3.4	20
Tractor / Disc	6	210	Diesel	6.8	40
Scraper	8	265	Diesel	3.4	30
Compactor	4	120	Diesel	1.7	10
Water Truck	4	175	Diesel	6.8	N/A
Site Prep – Roads					
Grader	6	200	Diesel	6.8	20
Backhoe/Front Loader	2	120	Diesel	6.8	10
Compactor	4	120	Diesel	6.8	20
Water Truck	4	175	Diesel	6.8	N/A
Dump Truck	10	235	Diesel	2.7	10
Install Fencing					
Rough Terrain Forklift	4	75	Diesel	1.7	10
Delivery / Work Trucks	6	200	Diesel	1	5
Post Installation					
Delivery / Work Trucks	4	200	Diesel	1	5
Post Machine	14	45	Diesel	8.1	1
Rough Terrain Forklift	4	75	Diesel	6.8	10
Install Support Structure					
Rough Terrain Forklift	12	75	Diesel	6.8	10
Delivery / Work Trucks	4	200	Diesel	1	5
Install Inverters and Switchgear & sub-structure					
Crane	4	125	Diesel	4.5	1
Backhoe/Front End Loader	4	120	Diesel	6.8	10
Delivery / Work Trucks	4	200	Diesel	1	5

TABLE 2-4A (Continued)
ESTIMATED ON-SITE EQUIPMENT FOR SOLAR PANEL ARRAY AND COLLECTION SYSTEM CONSTRUCTION

Equipment Description	Daily Quantity	Horsepower	Fuel Type	Equivalent Full-Load Operating Time (hr/day)	Vehicle Miles (VMT) per Day on Unpaved Surface
DC and AC Wire Installation (UG)					
Backhoe/Front Loader	8	120	Diesel	6.8	10
Crawling Trencher	4	100	Diesel	4.1	1
Mini-Excavator	8	42	Diesel	6.8	10
Delivery / Work Trucks	4	200	Diesel	1	5
DC and AC Wire Installation (AG)					
Rough Terrain Forklift	6	75	Diesel	1.7	10
Delivery / Work Trucks	4	200	Diesel	1	5
Module Installation					
Rough Terrain Forklift	30	75	Diesel	1.7	10
Delivery / Work Trucks	10	200	Diesel	1	5
O&M Building					
Rough Terrain Forklift	2	75	Diesel	1	1
Manlift	4	110	Diesel	3	1
Misc. (Across Project Site)					
Crane, Hydraulic, Rough Terrain	2	125	Diesel	1.5	N/A
Delivery: Truck, Semi, Tractor	2	310	Diesel	0.5	5
Delivery: Truck, Flatbed, 1 Ton	2	180	Diesel	0.5	5
Forklift, less than 5 Ton	6	75	Diesel	3.8	5
Forklift, greater than 5 Ton	4	85	Diesel	3.8	5
Motor, Auxiliary Generator Power for trailers	8	24	Diesel	8	N/A
Trailer, Office, 40’	28	N/A	N/A	N/A	N/A
Trailer, Office, 20’	8	N/A	N/A	N/A	N/A
Skid Steers	10	75	Diesel	1.7	5
AWD Gator/Cart	40	15	Diesel	8.1	10
Water Truck	8	175	Diesel	6.8	N/A
Delivery / Work Trucks	20	200	Diesel	1	5
Electrical Generators/Pumps	8	50	Diesel	8.1	N/A

TABLE 2-4B
ESTIMATED ON-SITE EQUIPMENT FOR ONSITE SUBSTATION CONSTRUCTION

Equipment Description	Daily Quantity	Horsepower	Fuel Type	Equivalent Full-Load Operating Time (hr/day)	Vehicle Miles (VMT) per Day on Unpaved Surface
Steel Structures					
Boom Truck - 33 Ton	2	290	Diesel	1.5	1
Manlift	2	110	Diesel	1.2	1
Material Delivery - Hwy Tractor w 40’ Flat	6	220	Diesel	0.2	4
Insulators, Bus, & Electrical Equipment					
Boom Truck	2	220	Diesel	1.5	1
Manlift	4	110	Diesel	1.2	1
Welder Truck	4	210	Diesel	1.2	4
Material Delivery - Hwy Tractor w 40’ Flat	8	310	Diesel	0.2	4
Material Delivery - Heavy Haul	2	300	Diesel	1.5	4
Crane	2	500	Diesel	1	N/A

TABLE 2-4B (Continued)
ESTIMATED ON-SITE EQUIPMENT FOR ONSITE SUBSTATION CONSTRUCTION

Equipment Description	Daily Quantity	Horsepower	Fuel Type	Equivalent Full-Load Operating Time (hr/day)	Vehicle Miles (VMT) per Day on Unpaved Surface
Control Wiring					
Boom Truck	2	220	Diesel	0.6	1
Manlift	4	110	Diesel	0.8	1
1 ton crew vehicle	2	260	Diesel	0.2	4
Fiber Splicer Van	2	180	Gas	0.6	4
Test Equipment Van	2	180	Gas	1.7	4
Rough Terrain Forklift	2	75	Diesel	1.7	6

TABLE 2-4C
ESTIMATED ON-SITE EQUIPMENT FOR GEN-TIE LINE CONSTRUCTION

Equipment Description	Daily Quantity	Horsepower	Fuel Type	Equivalent Full-Load Operating Time (hr/day)	Vehicle Miles (VMT) per Day on Unpaved Surface
Steel (Hauling, Shake-Out, Assembly and Erection)					
Crane, Hydraulic, 150/300 Ton	2	250	Diesel	1.8	5
Crane, Hydraulic, Rough Terrain, 25 Ton	2	125	Diesel	1.8	5
Truck, Flatbed w/Boom, 12 Ton	2	235	Diesel	1	10
Truck, Crew Cab, Flatbed, 1 Ton	12	180	Gas	1.1	10
Truck, Semi Tractor	2	310	Diesel	6	10
Trailer, Flatbed, 40’	2	N/A	N/A		10
Water Truck	2	175	Diesel	4.5	N/A
Motor, Auxiliary Power	2	5	Gas	1	0
Compressor, Air	2	75	Gas	2	15
Conductor / Shield Wire / OPGW (Stringing, Sagging, Deadending and Clipping)					
Truck, Flatbed, w/ Bucket	3	235	Diesel	3	15
Tension Machine, Conductor	2	135	Diesel	1.5	1
Tension Machine, Static	2	135	Diesel	0.2	1
Truck, Sock Line, Puller, 3 Drum	2	310	Diesel	2.3	1
Truck, Wire Puller, 1 Drum	2	310	Diesel	2.3	1
Truck, Semi, Tractor	4	310	Diesel	6	10
Water Truck	2	175	Diesel	4.5	N/A
Truck, Crew Cab, Flatbed, 1 Ton	6	180	Gas	1.4	10
Back Hoe, w/ Bucket	2	85	Diesel	3	1
Truck, Mechanics	2	260	Diesel	3	15
Crane, Hydraulic, Rough Terrain	2	125	Diesel	1	10
Motor, Auxiliary Power	4	5	Gas	2.3	N/A
Cleanup					
Truck, Flatbed, w/ Bucket, 5 Ton	2	235	Diesel	2	5
Excavator, Bucket Type	2	165	Diesel	4.5	5
Truck, Semi, Tractor	2	310	Diesel	4.5	10
Truck, Dump, 10 Ton	2	235	Diesel	3	10
Motor Grader	2	110	Diesel	8	20
Truck, Flatbed	2	210	Diesel	2.1	10
Truck, Pick-Up	2	210	Diesel	2.1	10
Motor, Auxiliary Power	2	5	Gas	0.5	N/A

2.2.13.11 Construction Traffic

Typical construction traffic would consist of trucks transporting construction equipment and materials to and from the site and vehicles of management and construction employees during the construction period. Most construction staff and workers would commute daily to the jobsite from within Clark County, primarily from the Las Vegas area. All traffic would use I-15 and/or U.S. Route 93 to access the site. The Applicant would prepare a Traffic Management Plan to address Project-related traffic.

2.2.13.12 Construction Power

Construction power would be provided by a connection to the local NV Energy distribution service in the area via a new distribution line (up to approximately 2-miles in length). The distribution line would be located between the construction trailer area and the NV Energy point of interconnection. The construction power service would be left in place once construction is completed to provide operational power. Alternatively, generators may be used to provide temporary construction power until interconnection occurs.

2.2.14 Operation and Maintenance

Operation of the Project would require a workforce of up to 5 full time-equivalent (FTE) positions. This workforce would include administrative and management personnel, operators, and security and maintenance personnel. Employees would be based at the O&M building.

A solar PV project uses no process water, gas, or fuels for the power generation process. The maintenance protocol is mainly routine inspections. The frequency and type of maintenance is described in Table 2-5, *Routine Maintenance Protocol*. During the first year of operation, the frequency of inspections would be increased to address settling and electrical termination torque (e.g., for year 1, inspections shown as semi-annually are performed quarterly, inspections shown as annual are performed semi-annually). At designated intervals, approximately every 10 to 15 years, major equipment maintenance would be performed.

Operation and maintenance would require the use of vehicles and equipment including crane trucks for minor equipment maintenance. Additional maintenance equipment would include forklifts, manlifts, and chemical application equipment for weed abatement and soil stabilizer treatment in the bioremediation area. Pick-up trucks would be in daily use on the site. No heavy equipment would be used during normal plant operation.

Dust during operations and maintenance would be controlled and minimized by applying water and/or BLM-approved palliatives (See Section 2.2.13.9, *Site Stabilization, Protection, and Reclamation*).

2.2.15 Decommissioning and Site Reclamation

The anticipated operational life of the Project would be at least 30 years. Although the possibility of subsequent repowering exists and the Project facilities would have an expected useful life of 50 years or more, it is likely that after that time the site would be decommissioned and existing facilities and equipment would be removed.

TABLE 2-5
ROUTINE MAINTENANCE PROTOCOL

Equipment	Maintenance Interval	Task
PV Modules	Quarterly	• Visually inspect panels for breakage and secure mounting • Visually inspect modules for discoloration • Visually inspect wiring for connections and secure mounting • Visually inspect mounting structure for rust and erosion around foundations • Manually clean localized debris from bird droppings, etc.
	Semi-Annually	• Clean modules if determined necessary
Inverters	Semi-annually	• Perform temperature checks on breakers and electrical terminations • Visual inspection of all major components and wiring harnesses for discoloration or damage • Measure all low voltage power supply levels • Inspect/remove any dust/debris inside cabinet • Inspect door seals • Check proper fan operation • Inspect and clean (replace if necessary) filters • Check electrical termination torque • Check the operation of all safety devices (e-stop, door switches, ground fault detection)
	Annually	• Check all nuts, bolts and connections for torque and heat discoloration • Calibrate control board and sensors • Inspect air conditioning units for proper operation
Medium voltage transformers	Semi-annually	• Perform temperature check • Inspect door seals • Record all gauge readings • Clean any dirt/debris from low voltage compartment
Substation transformers	Semi-annually	• Inspect access doors/seals • Inspect electronics enclosure and sensor wiring • Record all gauge readings
	Annually	• Inspect fans for proper operation • Calibrate temperature and pressure sensors • Pull oil sample for oil screening and dissolved gas analysis.
Breakers and switchgear	Semi-annually	• Inspect for discoloration of equipment and terminations • Inspect door seals
	Annually	• Check open/close operation
Overhead transmission lines	Annually (and after heavy rains)	• Inspect guy wires and tower angle • Visual inspection of supports/insulators • Visual inspection for discoloration at terminations
Roadways	Annually (and after heavy rain)	• Inspect access ways and roads that cross drainage paths for erosion
Vegetation	Semi-annually	• Noxious weed inspections would be conducted in accordance with the BLM-approved Integrated Weed Management • Inspect for localized vegetation control to restrict height to less than 12 inches to address faster growth vegetation • Apply herbicides as necessary to control noxious weeds
	Every 3 years	• Mowing as required to reduce vegetation height to 9 inches
Water Wells	Annually	• Visual inspection • Pressure test
O&M Building	Semi-annually	• Check smoke detectors • Apply pesticides as necessary to control rodents and insects
	Annually	• Check weather stripping and door/window operation • Check emergency lighting • Inspect electrical service panel
Backup Power	Annually	• Visually inspect backup power system • Perform functional test of backup power system
Fencing	Quarterly (and after heavy rain)	• Inspect fence or vandalism and erosion at base • Desert tortoise fence inspections would be conducted in accordance with the terms and conditions of the Project-specific BO,

Project decommissioning would involve removal of the solar arrays and other facilities, with some buried components potentially remaining in place. Following decommissioning, the area would be reclaimed and restored according to applicable regulations at the time of decommissioning.

In order to ensure that the permanent closure of the facility does not have an adverse effect, the Applicant would prepare a Decommissioning and Site Reclamation Plan. The plan would be developed in coordination with the BLM, with input from other agencies as appropriate. The plan would address future land use plans, removal of hazardous materials, impacts and mitigation associated with closure activities, schedule of closure activities, equipment to remain on the site, and conformance with applicable regulatory requirements and resource plans.

2.2.16 Permits and Approvals

Table 2-6 provides a list of federal, state, and local permits, authorizations, or inter-agency consultations that may be required for the Project.

2.2.17 Protective Measures

2.2.17.1 Design Features

In accordance with the Solar PEIS ROD, the Applicant would incorporate design features into the Project development process to avoid and minimize impacts to the surrounding environment. As evidenced by other projects on BLM-administered lands, the Applicant would make a substantial effort to minimize potential impacts to sensitive resources. Such measures are implemented through the design process, to minimize such impacts or avoid them altogether, and also through the development of site-specific management and operation plans. The Applicant also would comply with all resource protection measures identified in permit conditions and mitigation plans developed as required by permits and authorizations.

The BLM's decision in the Solar PEIS ROD includes amending land use plans in the six-state study areas with: (1) programmatic design features that would be required for all utility-scale solar energy projects on BLM-administered lands (BLM 2012, p. 51 et. Seq.) ; and (2) SEZ-specific design features that would be required for projects in individual SEZs. Table 2-7 provides a list of programmatic design features, as well as descriptions of how and where they are addressed.

In accordance with the design features and other requirements, the Applicant will be required to prepare the following management plans, which would be submitted to the BLM for approval:

1. Bird and Bat Conservation Strategy
2. Decommissioning and Site Reclamation Plan
3. Desert Tortoise Translocation Plan
4. Dust Abatement Plan
5. Spill Prevention and Emergency Response Plan
6. Health and Safety Program
7. Groundwater Monitoring and Reporting Plan
8. Fire Management Plan
9. Lighting Management Plan
10. Integrated Weed Management Plan

TABLE 2-6
FEDERAL, STATE, AND LOCAL PERMITS AND AUTHORIZATIONS

I. Federal Permits, Authorizations or Inter-Agency Consultations
U.S. Department of the Interior, BLM
• ROW grant under Title V of FLPMA
• Finding of No Significant Impact (FONSI) and Decision Record to support issuance of ROW grant
U.S. Department of the Interior, BLM and State Historic Preservation Office/Advisory Council on Historic Preservation
• BLM/SHPO, NHPA Section 106 Consultation
U.S. Department of the Interior, Fish and Wildlife Service
• Endangered Species Act Section 7 Consultation and Biological Opinion/Incidental Take Statement
II. State of Nevada Permits or Authorizations
Nevada Department of Wildlife
• Scientific Collection Permit (for subcontractor)
Nevada Division of Environmental Protection
• NPDES Temporary Groundwater Discharge Permit
• Construction Stormwater General Permit
• Temporary Permit for Working in Waterways (formerly known as “Rolling Stock Permit”)
• Groundwater Well Approval (Point of Diversion; temporary or permanent)
Nevada Public Utilities Commission
• Nevada Utility Environmental Protection Act Permit (for solar facilities 70MW or greater and transmission lines 230 kV or greater)
Nevada Division of Water Resources (State Engineer)
• Water Rights Modifications, Possible Change of Place of Use, and Manner of Use Point of Diversion.
Southern Nevada Health District
• Small Commercial Septic System Permit
III. Clark County Permits
Clark County Department of Air Quality
• Dust Control Permit
Clark County Regional Flood Control District
• Drainage Study Approval
Clark County Department of Comprehensive Planning
• Development Agreement
• Special Use Permit
Clark County Building Department
• Grading Permit
• Building Permit

NOTES: FLPMA = Federal Land Policy and Management Act
NHPA = National Historic Preservation Act
SHPO = State Historic Preservation Office

11. Raven Management Plan
12. Site Rehabilitation and Restoration Plan
13. Stormwater Pollution Prevention Plan
14. Site Drainage Plan
15. Traffic Management Plan
16. Surface Water Quality Management Plan
17. Worker Education and Awareness Plan (WEAP)

TABLE 2-7
DRY LAKE PROGRAMMATIC DESIGN FEATURES

Resource Type	Design Feature	Where Addressed	How Addressed
Lands and Realty	LR1-1; LR2-1	EA Section 2.0 EA Section 3.16 Plan of Development (POD)	1. The Applicant has consulted with the BLM in the early phases of project planning to identify potential land use conflicts and constraints. 2. Prior to construction, disturbance areas will be surveyed and staked to identify the limits of construction. 3. The effects on the manageability and uses of public lands around the boundaries of the Project, including public access have been considered. 4. A WEAP will be prepared for BLM review and approval. The WEAP will address all applicable laws and regulations and be provided to all employees prior to construction. 5. The Applicant has held discussions with NV Energy and other ROW holders that may be affected by the Proposed Action.
Specially Designated Areas (including Areas of Critical Environmental Concern) and Lands with Wilderness Characteristics	LWC1-1; LWC2-1	EA Section 3.16	1. The Project site has been inventoried for wilderness characteristics and does not contain any. 2. The Project is not sited in an ACEC. 3. Indirect effects to ACECs are fully evaluated in this EA.
Rangeland Resources-Grazing	RG1-1; RG2-1	n/a	1. There are no grazing activities or allotments within the Project site.
Wild Horses and Burros	WHB1-1; WHB2-1	n/a	1. There are no wild horse or burro herds in the Project area.
Wildland Fire	WF1-1; WF2-1	EA Section 2.2.3 EA Section - POD	1. The Applicant has coordinated with the BLM and the Clark County Fire Department to determine Project design features to prevent the increase of wildland fire. 2. The Applicant will prepare a Fire Management Plan, for BLM review and approval, which will identify fire protection features during construction and operation of the Project. 3. The Applicant will prepare a WEAP, for BLM review and approval, which will be provided to employees to address several topics including wildland fires. 4. A 10-foot wide fire break around the perimeter of the Project site. 5. The Applicant will prepare an Integrated Weed Management Plan for BLM review and approval to identify methods for controlling noxious weeds along the ROW.
Recreation	R1-1; R2-1	EA Section 3.18	1. There are no recreational resources within the Project site. 2. The Project has been sited and designed to not restrict access to offsite lands containing recreational opportunities. 3. Impacts to recreation resources are fully evaluated in this EA.
Military and Civilian Aviation	MCA1-1	EA Section 3.17	1. The Project does not include structures taller than 200 feet in height and the Project is not located under any military airspace or in a U.S. Department of Defense (DoD) Consultation Area. 2. The Federal Aviation Administration (FAA) and the Nellis Air Force Base were consulted early in the siting of the Project. 3. Impacts to military and civilian aviation are fully evaluated in this EA.

TABLE 2-7 (Continued)
DRY LAKE PROGRAMMATIC DESIGN FEAUTRES

Resource Type	Design Feature	Where Addressed	How Addressed
Soil Resources and Geologic Hazards	SR1-1; SR2-1;SR3-2;SR4-1; SR4-2; SR4-3; SR3-1	EA Section 2.2.13 EA Section 3.13 EA Section 3.14 POD	1. To develop a geological profile of the area underlying the Project site, the Applicant will conduct a geotechnical investigation prior to construction to determine the engineering characteristics of local soils and geology. 2. The Applicant will prepare the following plans (to be reviewed and approved by the BLM) to address measures to control soil erosion, stormwater runoff and water quality during all phases of the Project: a. Site Drainage Plan; b. Stormwater Pollution Prevention Plan; c. Surface Water Quality Management Plan; d. Spill Prevention and Emergency Response Plan; and e. Decommissioning and Site Rehabilitation Plan. 4. Appropriate water erosion and dust-control measures would be implemented to prevent an increased dust and sediment load to ephemeral washes around the construction site and to comply with Clark County dust control requirements. 5. All Best Management Practices (BMPs) and measures within these plans will be implemented to reduce effects to soil resources and geologic hazards. 6. Effects to soil and geologic hazards are fully evaluated in this EA.
Mineral Resources	MR1-1; MR1-2;MR2-1	EA Section 3.13	1. There are no mining claims, mineral claims, or mineral leases within the Project site. 2. The Project has been sited and designed to avoid conflicts with mining activities in the vicinity of the Project. 3. The Dry Lake SEZ has been classified as no surface occupancy areas for oil and gas and geothermal leasing.
Water Resources	WR1-1; WR1-2;WR1-3; WR1-4; WR2-1; WR3-1; WR4-1	EA Section 2.2.11 EA Section 3.14 EA Section 3.22 POD	1. The Applicant is coordinating with the Nevada Division of Water Resources (State Engineer) and Clark County to obtain required permits. 2. The Applicant is negotiating to purchase existing water rights held by the Southern Nevada Water Authority/City of North Las Vegas and the Black Mountain Water Company. 3. The Applicant conducted a hydrologic study to gain a complete understanding of the local surface water and groundwater hydrology. 4. The Applicant will avoid all drainages and surface water features. 5. The Applicant has designed the Project such that one or more detention basins may be located above the channels or to intercept flows at the top of the site to manage stormwater entering the site. 6. Water sources used for potable water service would meet federal, state and local water quality standards. 7. The Applicant will prepare a Surface Water Quality Management Plan, a Site Drainage Plan, and a Stormwater Pollution Prevention Plan for BLM review and approval, which will address stormwater runoff and water quality concerns.

TABLE 2-7 (Continued)
DRY LAKE PROGRAMMATIC DESIGN FEAUTRES

Resource Type	Design Feature	Where Addressed	How Addressed
Water Resources (cont.)			8. The Applicant will prepare a Spill Prevention and Emergency Response Plan for BLM review and approval that will identify measures to prevent potential groundwater and surface water contamination. 9. An analysis of the Project site has been conducted in accordance with the Clark County Regional Flood Control District's Hydrologic and Drainage Design Manual and local entity requirements. 10. The Applicant will prepare a Groundwater Monitoring and Reporting Plan, for BLM review and approval. 11. The Applicant will prepare a Decommissioning and Site Reclamation Plan, for BLM review and approval, which will address water resource requirements and BMPs during decommissioning.
Ecological Resources	ER1-1; ER2-1; ER3-1; ER3-2; ER4-1	EA Section 2.2.16 EA Section 3.7 EA Section 3.8 EA Section 3.9 EA Section 3.10 Section 3.11 POD	1. The Applicant has consulted with the BLM and other federal, state, and local agencies in the early phases of Project planning to help ensure compliance with federal regulations that address the protection of fish, wildlife, and plant resources. 2. The Applicant will prepare the following plans, for BLM review and approval, to address these concerns: a. Desert Tortoise Translocation Plan; b. Bird and Bat Conservation Strategy; c. Raven Management Plan; d. Integrated Weed Management Plan; e. Site Rehabilitation and Restoration Plan; and f. Decommissioning and Site Reclamation Plan. 3. Impacts to ecological resources are being minimized and/or avoided and mitigation would follow the SRMS. 4. A Biological Assessment was prepared to address impacts to federally listed species. The effects to ecological resources are fully analyzed in this EA.
Air Quality and Climate	AQC1-1; AQC2-1; AQC3-1; AQC4-1	EA Section 2.2.16 EA Section 3.3	1. The Applicant has consulted with the BLM and Clark County in the early phases of Project planning to determine the potential conformance to air quality standards and all applicable federal, state and local standards will be implemented and met. 2. Air-emission control devices will be used on all construction equipment. 3. A Clark County Dust Control Permit will be obtained for the Project.
Visual Resources	VR1-1;VR2-1;VR2-2; VR2-3; VR2-4; VR3-1; VR4-1	EA Section 3.21 POD	1. The Applicant has consulted with the BLM in the early phases of Project planning to help determine the Project's potential conformance to Visual Resource Management (VRM) class designations and other potential constraints. 2. The Project site is located in an area of low scenic quality and is managed as VRM Class III and IV which allow for a moderate and major level of change to the characteristic landscape, respectively. In addition, significant human disturbances are already present in the surrounding area (e.g., transmission lines, roads, utility infrastructure).

TABLE 2-7 (Continued)
DRY LAKE PROGRAMMATIC DESIGN FEAUTRES

Resource Type	Design Feature	Where Addressed	How Addressed
Visual Resources (cont.)			3. The solar generating facility has been sited and designed to minimize effects to visual resources including glint and glare and night-sky effects, and a Lighting Management Plan has been prepared for the Project. All other visual resource-related design features will be implemented, as appropriate. 4. The effects to visual resources are fully analyzed in this EA.
Acoustic Environment (Noise)	N1-1; N2-1; N3-1; N4-1	EA Section 3.7	1. The nearest noise receptor (wildlife) would be 0.25 mile away from the Project site in the Coyote Springs Area of Critical Environmental Concern (ACEC). 2. The effects related to noise impacts are fully analyzed in this EA.
Paleontological Resources	P1-1; P2-1; P2-2	N/A	1. No paleontological resources are located within the Project area.
Cultural Resources	CR1-1;CR2-1; CR3-1; CR3-2; CR3-3	EA Section 3.5 POD	1. A records search was performed for the Proposed Action's APE and a 1-mile radius. It identified 89 resources recorded within 1-mile, of which 53 are prehistoric archaeological sites, 32 are historic period sites, three are multi-component sites, and one is of unknown origin. None of the 89 resources are located within the Project. 2. A BLM approved WEAP will be prepared by the Applicant and provided to Project employees to address paleontological concerns. 3. If any resources are found during construction of the Project, all construction will stop and appropriate agencies will be contacted. 4. A Decommissioning and Site Reclamation Plan and Site Rehabilitation and Restoration Plan will be prepared for the Proposed Action and submitted for BLM approval. 5. The BLM would be notified prior to the demolition or substantial alteration of any building or structure, and structures would be evaluated for listing in the National Register of Historic Places (NRHP). 6. Soil-disturbing reclamation and decommissioning activities would be confined to previously disturbed areas to the extent possible.
Native American Resources	NA1-1; NA2-1; NA3-1; NA3-2; NA4-1; NA4-2	EA Section 3.6	1. An ethnographic study of the Project site was conducted to identify impacts to Native American resources. The BLM will consult with Tribes. 2. The Applicant will train facility personnel during operations and maintenance regarding their responsibilities to protect resources of importance to Indian Tribes through implementation of a WEAP. 3. A Decommissioning and Site Reclamation Plan and Site Rehabilitation and Restoration Plan will be prepared for BLM review and approval that will consider impacts to Native American resources.

TABLE 2-7 (Continued)
DRY LAKE PROGRAMMATIC DESIGN FEAUTRES

Resource Type	Design Feature	Where Addressed	How Addressed
Transportation Impacts	T2-1	EA Section 2.2.13.11 EA Section 3.20 POD	1. The Applicant will prepare a Traffic Management Plan for BLM review and approval, to address Project-related traffic. 2. All traffic will be limited to Project-related access roads. 3. A Decommissioning and Site Reclamation Plan, and Site Rehabilitation and Restoration Plan will be prepared for BLM review and approval, which will address roads as well.
Hazardous Materials and Waste	HMW1-1; HMW2-1;HMW3-1; HMW4-1; HMW4-2	EA Section 2.2.8 EA Section 2.2.14 EA Section 3.15 POD	1. The Applicant will prepare the following plans for BLM review and approval, which will contain several BMPs relating to hazardous materials and management: a. Surface Water Quality Management Plan; b. Health and Safety Plan; c. Spill and Emergency Response Plan; d. Fire Management Plan; e. WEAP; f. Decommissioning and Site Reclamation Plan; and g. Site Rehabilitation and Restoration Plan. h. Hazardous Materials and Waste Management Plan 2. MSDSs for all hazardous materials will be provided and hazardous materials will be disposed of in accordance with all applicable regulations. 3. Maintenance protocol for the solar generating facility will consist of routine inspections to ensure equipment is functioning properly and to check for hazards such as overheating batteries. The frequency and type of maintenance by equipment type is described in Table 2-5, *Routine Maintenance Protocol*, of this EA.
Health and Safety	HS1-1;HS2-1; HS3-1	EA Section 2.0 EA Section 3.15 POD	1. The Applicant has consulted with the BLM and other federal, state, and local agencies early in the planning process to identify Project-related health and safety risks. 2. All Project components will be designed in accordance with applicable federal and industrial standards. 3. Appropriate Personal Protective Equipment (PPE) will be worn at all times, as necessary. 4. In addition to implementation of all design features outlined for hazardous materials and waste, the Applicant will prepare the following plans for BLM review and approval, which will address health and safety: a. Health and Safety Plan; b. WEAP; and c. Traffic Management Plan. 5. All Project-related hazards are discussed and analyzed in this EA.
National Scenic and Historic Trails, Suitable Trails, and Study Trails	NSHT1-1	EA Section 3.13 EA Section 3.16 EA Section 3.18	1. The Applicant has consulted with the BLM to help determine the Project's conformance with trail management prescriptions and other potential trail-related constraints for the Old Spanish National Historic Trail.

2.2.17.2 Resource Surveys

Through the Solar PEIS, the BLM conducted a thorough environmental review of all SEZs, including the Dry Lake SEZ. As necessary, the Applicant has conducted additional supplemental surveys and prepared relevant reports which include, but are not limited to surveys for desert tortoise, cactus and yucca, and invasive and noxious weeds, as well as visual resources assessments.

2.3 No Action Alternative

In the absence of the Proposed Action there would be no direct or indirect impacts from this particular Project, and therefore no opportunity for the Project to cause or contribute to cumulative effects. However, the site is located in a SEZ, and so has been identified as a priority area for utility-scale solar energy development where the BLM will prioritize solar energy and associated transmission infrastructure development (BLM and DOE 2012). Based on the auction the successful bidders have demonstrated a substantial commitment to developing the solar resource in this SEZ (BLM 2014a). Accordingly, it is reasonably foreseeable that some form of utility-scale solar development would occur in this location in the future in the absence of the Proposed Action. These impacts would vary depending on the type of utility-scale solar energy development pursued, project size, and project schedule as described briefly below. The Solar PEIS provides a comprehensive evaluation of environmental impacts associated with different technologies for the Dry Lake SEZ (see, e.g., Final Solar PEIS Section 5.10.3.2 regarding technology-specific impacts to ecological resources [BLM and DOE 2012] and Draft Solar PEIS Chapter 5 regarding the impacts of solar energy development and potential mitigation measures [BLM and DOE 2010]).

The potential environmental effects of solar power generation facilities can vary widely depending on the technology. For example, the Draft Solar PEIS (BLM and DOE 2010) analyzes technology-specific differences in the types and severity of impacts to wildlife in Section 2.10.2.2; vegetation in Section 5.10.1.2, visual resources in Section 5.12.2, and water resources in Section 5.9.2. Furthermore, alternative project size and the associated layout could cause location-specific impacts that differ from those of the Proposed Action (such as incursions into washes that are avoided by the Proposed Action). Depending on the construction schedule for a future project or projects on parcels 2, 3, and 4, it is possible that anticipated solar development under the No Action Alternative would cause impacts that could overlap with the construction or operation and maintenance related impacts of other proposed developments in the SEZ to cause or contribute to cumulative impacts.

It is assumed that a different PV development proposal on the Project site would cause impacts that would be substantially similar in type and severity to the impacts analyzed for the Proposed Action in Chapter 3, *Affected Environment and Environmental Consequences.* No specific details are available about the any potential development of a project using solar thermal parabolic trough or tower technology or a solar dish engine facility on the Project site; accordingly, the analysis of the No Action Alternative in this EA relies on and tiers to the distinctions in impacts caused by these other technologies as identified in the Solar PEIS (BLM and DOE 2010, BLM and DOE 2012).

2.4 Alternatives Considered but Eliminated from Further Analysis

As the successful bidder on parcels 2, 3, and 4 of the Dry Lake SEZ, the Applicant is seeking to develop a nominal 200 MWac utility-scale PV solar project in this specific location as identified and approved by the BLM pursuant to the Solar PEIS (BLM and DOE 2012) and ROD (BLM 2012). In light of the location within an approved SEZ, alternative locations, project sizes, and technologies are not analyzed in detail in this Project-specific EA but, rather, are addressed and analyzed in the Solar PEIS to which this EA is tiered.

This EA incorporates by reference the alternatives analysis completed in the Solar PEIS for the Dry Lake SEZ. As published in the Draft Solar PEIS (BLM and DOE 2010), the proposed Dry Lake SEZ had a total area of 15,649 acres. In the Supplement to the Draft Solar PEIS (BLM and DOE 2011), the size of the SEZ was reduced, eliminating 9,463 acres to include only the southernmost area that is northwest of I-15. Eliminating the northern portion of the SEZ was primarily intended to avoid or minimize some potential impacts from development in the SEZ, including impacts on desert tortoise and other wildlife and on military operations. In addition, 469 acres of floodplain and wetland were identified as non-development areas. The remaining developable area within the Dry Lake SEZ totaled 5,717 acres.

Prior to the Dry Lake competitive auction held on June 30, 2014 (BLM 2014a), the BLM further refined the developable acres in the SEZ and decided to offer for competitive auction six parcels totaling 3,083 acres out of the original 5,717 acres. This was in recognition of existing rights-of-way in the SEZ, desert tortoise connectivity, and other wildlife presence and use in the northwestern corner of the SEZ. These adjustments to the developable area were discussed with stakeholders as part of the Dry Lake SRMS (BLM 2014b). In its May 30, 2014 notice of competitive auction, the BLM also indicated that solar PV and parabolic trough technologies were the preferred technologies for solar development in the Dry Lake SEZ (79 FR 31129). This was in recognition that solar power tower development could potentially impact military operations in the area.

The Proposed Action, combined with the two other proposed solar energy projects on parcels 1, 5, and 6 of the Dry Lake SEZ, are within the development assumptions analyzed in the Solar PEIS (see BLM and DOE 2012, Section 11.3.1.2). Maximum solar development of the Dry Lake SEZ was assumed to be 80 percent of the developable SEZ area (5,717 acres) over a period of 20 years, for a maximum of 4,574 acres. Full development of the Dry Lake SEZ would allow development of facilities with an estimated total of 508 MW for power tower, dish engine, or PV technologies (9 acres/MW). Based on the submitted plans of development, development in the Dry Lake SEZ is expected to be approximately 460 MWs (NV Dry Lake, LLC 2014; NV Energy 2014a; SWCA 2014).

The Applicant's competitive bids on parcels 2, 3, and 4 were based on a project size of 200 MWac, consistent with its NV Energy requests for interconnection dated September 19, 2013 for Network Energy Resource Interconnection Service for the Harry Allen Substation (NV Energy 2014b). The Proposed Action on parcels 2, 3, and 4 has been designed to avoid non-development areas associated with floodplains and wetlands identified in the Solar PEIS, and has been further reduced in size to avoid larger topographic draws that may convey surface waters and an existing natural gas line (see Figure 2-2, *Preliminary Site Plan*). This has resulted in an area of disturbance of approximately 1,550 acres as

compared to the 1,700 acres competitively bid on. Any additional unresolved resource conflicts associated with development on parcels 2, 3, and 4 will be addressed through the Project design features summarized in Section 2.2.17.1, *Design Features*, of this EA and mitigation measures recommended in Chapter 3, *Affected Environment*, of this EA, including the analysis identified in the Dry Lake SRMS (BLM 2014b).

CHAPTER 3

Affected Environment and Environmental Consequences

3.1 Introduction

Sections of this Chapter 3 tier to and incorporate by reference descriptions, data, analysis, and conclusions from the Draft Solar PEIS (BLM and DOE 2010) and Final Solar PEIS (BLM and DOE 2012)[1] that cover the issues, effects and/or resources that are relevant to this EA's project-specific analysis of potential impacts of the proposed solar development of Dry Lake SEZ parcels 2, 3, and 4. Information tiered to and incorporated by reference is cited in this EA by section and page number and summarized as appropriate. The analysis, and other information provided in the Draft Solar PEIS and Final Solar PEIS, remains applicable except as detailed in this chapter based on site-specific and Project-specific information applicable to the Proposed Action.

The following resource areas were considered in the Solar PEIS and further evaluated in the Affected Resources Form prepared for the Project by the BLM (Appendix C) and determined not to be present in the area affected by the Proposed Action: BLM Natural Areas; Farmlands (Prime or Unique); Floodplains; Livestock Grazing; Paleontological Resources; Threatened, Endangered or Candidate Plant Species; Wetlands/Riparian Zones; Wild and Scenic Rivers; Wilderness and Wilderness Study Areas; Wild Horses and Burros; and Areas with Wilderness Characteristics.[2] The Project would not cause direct or indirect effect to these resources, or contribute to any potential cumulative impacts. Accordingly, these resources are not discussed further in this EA.

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1 The Draft and Final Solar PEIS are posted on the internet and will be available for inspection by potentially interested parties for the duration of the BLM's consideration of the Proposed Action. The Draft PEIS is available here: http://solareis.anl.gov/Documents/dpeis/index.cfm. The Final PEIS is available here: http://solareis.anl.gov/Documents/fpeis/index.cfm. The Draft and Final Solar PEIS also are available for inspection at the BLM's Southern Nevada District Office, which is located at 4701 North Torrey Pines Drive, Las Vegas, Nevada 89130.

2 The Affected Resource Form for the Proposed Action also determined that there are no environmental justice communities within a 50-mile (80-kilometer) radius around the boundary of the SEZ. However, because the census data relied on in the PEIS has been updated, this EA considers potential Environmental Justice impacts in Section 3.15, *Socioeconomics and Environmental Justice*.

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3.2 Cumulative Scenario

Section 11.3.22 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-96 et seq.) describes NEPA's requirements for a cumulative effects analysis and documents the analysis that was conducted in the vicinity of the proposed Dry Lake SEZ in Clark County, Nevada, for up to 20 years in the future. This EA tiers to that analysis, which remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of parcels 2, 3, and 4.

3.2.1 Geographic Extent of the Cumulative Impact Analysis

The geographic extent of the cumulative impact analysis described in Section 11.3.22.1 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-96) has been refined based on updated information to more closely conform the geographic scope for specific resource considerations in order to assess the potential that the Project could result in cumulative effects when added to other past, present or reasonably foreseeable future actions.

3.2.2 Ongoing and Reasonably Foreseeable Actions

Section 11.3.22.2 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-96) identifies 12 ROW applications that were pending for solar facilities within 50 miles (80 km) of the Dry Lake SEZ (described in Final Solar PEIS Appendix B, Table B-2, p. B-4). The Final Solar PEIS also identified ongoing and reasonably foreseeable future actions that relate to energy production and distribution (Section 11.3.22.2.1, p. 11.3-97) and those that relate to other activities, including to electric power generation, water management, natural gas and petroleum distribution, communication systems, residential development, and mining (Section 11.3.22.2.2, p. 11.3-99). General trends also are described (Section 11.3.22.3, p. 11.3-99). These ongoing and reasonably foreseeable future actions and trends remain applicable to the analysis in this EA except as updated in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ*, to reflect the current status of those projects, identify new pending projects[1] that subsequently have been proposed, and remove projects that since have been abandoned or withdrawn.[2]

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1 Projects identified subsequent to the issuance of the Final Solar PEIS include the following projects identified in Table 3.2-1: 1. Mountain View Solar, 2. Apex Solar Power, 25. Moapa Solar Energy Center, 26. Nellis Air Force Base Area II Solar, 40. Centennial II Project, and 41. Transmission line project.

2 A number of projects described as pending or reasonably foreseeable in the Draft and Final PEIS have been cancelled or delayed indefinitely such that they no longer are considered reasonably foreseeable. These are: NVN 83083, NVN 83129, NVN 85612, and NVN 85773 (Cogentrix Solar Services, LLC); NVN 84052 (NV Power Co.); NVN 84236 (First Solar); NVN 84467 (Pacific Solar Investments, Inc.); NVN 85117 and NVN 85774 (Bull Frog Green Energy); NVN 86156, NVN 86158, and NVN 86159 (Power Partners Southwest, LLC); NVN 82311 (Competitive Power Vent); NVN 85746 (Desert Research Institute); AZA 34201 (Boulevard Assoc., LLC); NVN 90360 (Hidden Hills Solar); Coyote Springs and Overton projects (BrightSource Energy); Chinook Transmission Line Project (TransCanada); Mesquite Nevada General Aviation Replacement Airport (City of Mesquite); Flat Top Mesa Solar (Sithe Global); and Dry Lake Groundwater Testing and Monitoring Wells (SNWA). Additionally, several other projects from the PEIS have been removed from consideration for other reasons. The Southwest Intertie Project (SWIP) has been modified since publication of the Final PEIS, and the portion within the geographic scope for cumulative impacts is now called the ON Line Project, described in Table 3.2-1. The application AZA 32315AA (BP Wind Energy) remains pending, but is greater than 50 miles from the SEZ. NV Energy's Microwave and Mobile Radio Project is completed, but no new facilities were built within 50 miles of the SEZ. Finally, the Sunrise Generating Station natural gas plant has been decommissioned.

TABLE 3.2-1
ONGOING AND REASONABLY FORESEEABLE ACTIONS NEAR THE DRY LAKE SEZ

	Project Name / Owner	Description	Status	Primary Impact Location
1	Mountain View Solar (NVN 90989) / NextEra	20 MW PV on 146 acres of private land; 3.75 miles of 34.5 kV transmission line on BLM-administered land (NextEra Energy Resources 2014; BLM 2014a)	Existing	2 miles southwest of SEZ
2	Apex Solar Power (NVN 88313) / Fotowatio Nevada Solar, LLC	20 MW PV on 154 acres of private land; 1.52 acres of ROW on BLM-administered land for 69 kV gen-tie (BLM 2010a)	Existing	Near Apex, NV, 2 miles southwest of SEZ
3	Copper Mountain Solar 1 / Sempra U.S. Gas and Power (Sempra)	48 MW expansion of original 10 MW PV plant. 380 acres.	Existing	Southwest of Boulder City, NV; 45 miles south of SEZ
4	ON Line Project (NVN 085210) / Great Basin Transmission South LLC & NV Energy	New Robinson Summit Substation and a 230-mile 500 kV transmission and fiber optic line to existing Harry Allen Substation.	Existing.	Passes through SEZ
5	El Dorado Solar / Sempra	10 MW PV on 80 acres	Existing	45 mi south of SEZ
6	Nellis Air Force Base Solar	13.5 MW PV on 140 acres	Existing	Nellis AFB, 10 mi south of SEZ
7	Nevada Solar One / Acciona	64 MW solar thermal parabolic concentrators on 2380 acres	Existing	40 mi south of SEZ
8	Apex Generating Station / Mirant	600 MW combined cycle natural gas plant at I-15 and NV 93	Existing	Adjacent to SEZ
9	Chuck Lenzie Generating Station/ NV Energy	1,102 MW combined cycle natural gas plant	Existing	Adjacent to SEZ
10	El Dorado Energy Generating Station / Sempra	480 MW combined cycle natural gas plant	Existing	45 mi south of SEZ
11	Edward W. Clark Generating Station / NV Energy	1,102 MW combined cycle/peaking natural gas plant	Existing	25 mi southwest of SEZ
12	Goodsprings Waste Heat Recovery Generation Facility / NV Energy	7.5 MW waste heat recovery plant on 5 acres	Existing	50 mi southwest of SEZ
13	Harry Allen Generating Station and Substations / NV Energy	628 MW combined cycle natural gas plant with 500/345/230 kV substation facilities	Existing	Within SEZ
14	Saguaro Power Company	93+ MW natural gas and heat recovery plant	Existing	20 mi south of SEZ
15	Silverhawk Generating Station / NV Energy	520 MW combined cycle natural gas plant	Existing	Adjacent to SEZ
16	Sunpeak Generating Station	Three 73 MW natural gas peaker plants	Existing	20 mi south of SEZ
17	Kern River Gas Transmission System	Two natural gas pipelines from Wyoming to Las Vegas/San Bernardino	Existing	Pipeline passes through SEZ
18	Communication Sites / Arizona Nevada Tower Corporation (ANTC)	Seven cellular telephone signal relay towers, 125 – 195 ft height (BLM 2007)	Existing (ANTC 2014)	Lincoln County along the U.S. 93 corridor between Coyote Springs Valley and the town of Pioche
19	Meadow Valley Gypsum Project	Open pit mine, processing plant and ancillary facilities; a 7,800-foot access road; and a low-water crossing across Meadow Valley Wash. 47 acres of public land.	Existing	35 mi northeast of SEZ

TABLE 3.2-1 (Continued)
ONGOING AND REASONABLY FORESEEABLE ACTIONS NEAR THE DRY LAKE SEZ

	Project Name / Owner	Description	Status	Primary Impact Location
20	Lincoln County Land Act (LCLA) Groundwater Development and Utility ROW (NVN 79734) / LCWD	75 mi of water collection and transmission pipeline, 30 wells, 5 storage tanks, 4 booster stations, 24 miles of 138 kV power transmission lines, substation, and a natural gas pipeline	ROD issued 2010. Under construction. (BLM 2010b)	45 mi northeast of the SEZ
21	Reid Gardner Generating Station / NV Energy	557 MW coal plant, 240-acre fly ash landfill and 315-acre evaporation pond	In process of decommissioning. Nevada Senate Bill 123[3] (2013) accelerated the retirement of Reid Gardner Station. Three of the plant's four units will close in 2014, and the remaining unit will close in 2017.	20 mi northeast of the SEZ
22	Copper Mountain Solar 2 / Sempra	150 MW PV on 1,100 acres private land	Under construction, expected complete in 2015 (Sempra 2014)	South of Boulder City, NV; 40 mi south of SEZ
23	Moapa Solar Project (NVN 89176) / First Solar	250 MW, 2,000 acres on the Moapa River Indian Reservation plus 153 acres for gen-tie and access road/pipeline.	Construction began March 2014, expected to be completed by end of 2015 (First Solar 2013)	5 mi east of the SEZ
24	Moapa Solar Energy Center (NVN 88870) / RES Americas	200 MW PV solar project on 850 acres on the Moapa River Indian Reservation, with a 7.5-mile 230kV transmission line on BLM-administered lands connecting to Harry Allen Substation.	ROD issued in May 2014, construction expected to begin early 2015. (Bureau of Indian Affairs 2014)	Transmission line passes through the SEZ
25	Nellis Air Force Base Area II Solar / NV Energy	15 MW PV on 160 acres	Construction expected to start late 2014 or early 2015, contingent on Nevada PUC contract approval (NV Energy 2014)	Nellis AFB, 10 mi south of the SEZ
26	UNEV Pipeline Project / Holly Energy	425 mile, 12-inch diameter common carrier refined products pipeline from Salt Lake City to Las Vegas	Scheduled to be completed in 2014 (Holly Energy, 2014)	Corridor passes through the SEZ
27	Coyote Springs Investment (CSI) Development Project	New master-planned community on 21,000 to 43,000 acres. 111,000 to 159,000 residential units and additional amenities/facilities.	USFWS issued a ROD in 2008. The golf course has been constructed, but no other construction has occurred. Land has been transferred among holding companies, there appear to be no immediate plans to continue construction.	Junction of U.S. 93 and SR 168, 15 mi north of the SEZ
28	Mohave County Wind Farm (AZA 032315)/BP Wind Energy	500 MW, 335 wind turbines and ancillary facilities on 31,388 acres public land. 169 acres permanent disturbance, 507acres temporary. Construction 100-200 workers, operations 10-20 workers (BLM 2013)	ROD signed June 2013	Arizona, 40 mi south of the SEZ

[3] The text of Senate Bill 123 can be accessed online at the following address: https://www.leg.state.nv.us/Session/77th2013/Bills/SB/SB123_EN.pdf.

TABLE 3.2-1 (Continued)
ONGOING AND REASONABLY FORESEEABLE ACTIONS NEAR THE DRY LAKE SEZ

	Project Name / Owner	Description	Status	Primary Impact Location
29	One Nevada Transmission Line Project (NVN 82076) / NV Energy	236 mi single-circuit 500 kV transmission line between Harry Allen and Robinson Summit Substations.	ROD issued March 2011. ROW in abeyance.	In SWIP utility corridor passing through SEZ
30	Clark, Lincoln, and White Pine Counties Groundwater Development Project / SNWA	Transport approximately 122,755 ac-ft/yr of groundwater. Production wells, 306 mi (490 km) of buried water pipelines, 5 pumping stations, 6 regulating tanks, 3 pressure reducing stations, a buried storage reservoir, a water treatment facility, and about 323 mi (517 km) of 230-kV overhead power lines, 2 primary and 5 secondary substations.	ROD signed December 2012, ROWs issued May 2013. Construction expected to be complete by 2022.	The project would develop groundwater in the following amounts in two hydraulically connected valleys that are up-gradient of the Dry Lake SEZ: Dry Lake Valley (11,584 ac-ft/yr) and Delamar Valley (2,493 ac-ft/yr). In addition, an undetermined amount of water could be developed and transferred from Coyote Spring Valley, which is north of the SEZ and downgradient of the other two basins.
31	Toquop Energy Project / EWP Renewable Corporation	1,100 MW combined cycle natural gas plant on up to 640 acres	NTP issued, ROW for water development expected in 2014 (BLM 2014b).	50 mi northeast of the SEZ
32	TransWest Transmission Project (WYW 177893, COC 72929, UTU 87238, NVN 86732) / TransWest Express	725 mi single-circuit 600 kV line with terminals in Sinclair, Wyoming and south of Las Vegas, Nevada (BLM 2014c).	DEIS published July 2013.	Pass southern boundary of the SEZ
33	Zephyr Transmission Lines Project / Duke American Transmission Co (DATC)	500 kV transmission lines from Wyoming to El Dorado Valley	Acquired by DATC in 2011, in early NEPA review. Target construction 2017-2020 (DATC 2014)	Pass near or through the SEZ
34	Southern Nevada Intertie Project (SNIP) (NVN 86359)/ Great Basin Transmission South LLC	60-mile 500kV line in Clark County, NV from Harry Allen Substation to Eldorado Substation	Pending. EA published May 2012. Decision expected late 2014.	Passes through the SEZ
35	Harry Allen Solar Energy Center Project (NVN 93321) / Invenergy	130 MW PV on up to 715 acres of BLM-administered land.	Pending	Parcel 1 of the SEZ
36	Intentionally left blank			
37	Dry Lake Solar Energy Center (NVN 93337) / NV Energy	150 MW PV on 815 acres of BLM-administered land.	Pending	Parcels 5 and 6 of the SEZ
38	Centennial II Project (NVN 90148)/ NV Energy	56 mi 500kV line between Harry Allen Substation and Eldorado Substation in Clark County, NV	Application in process. Target construction 2019-2020 (WECC 2014).	Passes through the SEZ
39	NVN 83914/ Bright Source Energy	10,000 acre, 500 MW CSP	Pending	25 mi northeast of the SEZ
40	NVN 84232/ First Solar	5,500 acre, 400 MW PV	Pending	Adjacent to the SEZ

TABLE 3.2-1 (Continued)
ONGOING AND REASONABLY FORESEEABLE ACTIONS NEAR THE DRY LAKE SEZ

	Project Name / Owner	Description	Status	Primary Impact Location
41	NVN 84631/ Bright Source Energy Solar	2,000 acre, 1,200 MW CSP	Pending	5 mi northeast of the SEZ
42	NVN 87907/ Pacific Wind Development	2,200 acre wind testing	Pending	40 miles northeast of the SEZ
43	NVN 87970/ Pacific Wind Development	5,089 acre wind testing	Pending	40 miles northeast of the SEZ
44	NVN 89219/ Pioneer Green Energy	20,680 acre wind testing	Pending	5 miles southeast of the SEZ
45	NVN 83041/ Table Mtn Wind	11,570 acre wind testing	Pending	50 miles southwest of the SEZ
46	NVN 73726 / Table Mtn Wind	8,320 acre wind development	Pending	50 miles southwest of the SEZ
47	NVN 90476 / BrightSource	750 MW CSP on 16,617 acres	Pending (BLM 2014a)	50 miles southeast of the SEZ
48	NVN 90788 / Boulevard Assoc. (Sandy Valley Solar)	250 MW PV on 3,217 acres	Pending (BLM 2014a)	50 miles southwest of the SEZ

SOURCES: BLM and DOE 2012, Table 11.3.22.2-1 (p. 11.3-98), Table 11.3.22.2-2 (p. 11.3-101 et seq.), and Table B-2 (p. B-4); also as indicated.

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3.3 Air Resources

This section tiers to Section 11.3.13 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-201 et seq.) and Section 11.3.13 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-59 et seq.), both of which relate to air resources. The analysis and other information provided in those documents remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of parcels 2, 3, and 4.

3.3.1 Affected Environment

Section 11.3.13 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-201 et seq.) and Section 11.3.13 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-59 et seq.) describe the air resources within and adjacent to the Dry Lake SEZ. This analysis of the Proposed Action and No Action Alternative relies on those discussions, and describes changes that have occurred since publication of the Final Solar PEIS.

3.3.1.1 Existing Air Emissions

The Draft Solar PEIS presented Clark County mass emissions data for the year 2002. More recent data for 2011 (USEPA 2013) were reviewed and are depicted below in Table 3.3-1, *2011 Annual Emissions of Criteria Pollutants in Clark County, Nevada.* As noted in the Draft Solar PEIS and still true at the time of this writing, the Dry Lake SEZ is located within an area of Clark County designated "Maintenance" for the 1997 ozone National Ambient Air Quality Standard (NAAQS) and "Attainment" for all other criteria pollutant NAAQS. The NAAQS and Nevada State Ambient Air Quality Standards (SAAQS) for criteria pollutants and updated background concentration data for 2013 are presented in Table 3.3-2.

TABLE 3.3-1
2011 ANNUAL EMISSIONS OF CRITERIA POLLUTANTS IN CLARK COUNTY, NEVADA

Pollutant[a]	Emissions (tons/yr)
SO_2	7,186
NO_x	53,562
CO	288,266
VOCs	165,417
PM_{10}	38,957
$PM_{2.5}$	10,544

NOTE:
[a] Notation: CO = carbon monoxide; NO_x = nitrogen oxides; $PM_{2.5}$ = particulate matter with a diameter of ≤ 2.5 micrometer (μm); PM_{10} = particulate matter with a diameter of ≤ 10 μm; SO_2 = sulfur dioxide; and VOCs = volatile organic compounds.

SOURCE: USEPA, 2013

In the more recent data, all pollutant emissions were lower than the 2002 data. These changes would not affect modeled air quality impacts presented in this EA because the impacts are based on actual ambient air pollutant concentrations data for the area collected in 2013.

TABLE 3.3-2
NAAQS, SAAQS, AND BACKGROUND CONCENTRATION LEVELS REPRESENTATIVE OF THE PROJECT AREA IN CLARK COUNTY, NEVADA, YEAR 2013

Pollutant[a]	Averaging Time	NAAQS	SAAQS	Background Concentration Level	
				Concentration[b]	Measurement Location, Year 2013
SO_2	1-hour	75 ppb	NA[c]	9 ppb	Sunrise Manor
	3-hour	0.5 ppm	0.5 ppm	NA	NA
	24-hour	NA	0.14 ppm	0.005 ppm	Sunrise Manor
	Annual	NA	0.030 ppm	NA	NA
NO_2	1-hour	100 ppb	NA	61 ppb	North Las Vegas
	Annual	53 ppb	0.053 ppm	NA	NA
CO	1-hour	35 ppm	35 ppm	3.3 ppm	North Las Vegas
	8-hour	9 ppm	9 ppm	2.4 ppm	North Las Vegas
O_3	1-hour	NA	NA	0.082 ppm	North Las Vegas
	8-hour	0.075 ppm	0.075 ppm	0.074 ppm	North Las Vegas
PM_{10}	24-hour	150 µg/m^3	150 µg/m^3	105 µg/m^3	North Las Vegas
	Annual	NA	50 µg/m^3	NA	NA
$PM_{2.5}$	24-hour	35 µg/m^3	NA	27.6 µg/m^3	North Las Vegas
	Annual	12.0 µg/m^3	NA	9.3 µg/m^3	North Las Vegas
Pb	Rolling 3-month	0.15 µg/m^3	NA	NA	NA

NOTES:

a Notation: CO = carbon monoxide; NO_2 = nitrogen dioxide; O_3 = ozone; Pb = lead; $PM_{2.5}$ = particulate matter with a diameter of ≤2.5 µm; PM_{10} = particulate matter with a diameter of ≤10 µm; and SO_2 = sulfur dioxide.

b Monitored concentrations are the second-highest for all averaging times less than or equal to 24-hour averages, except fourth-highest daily maximum for 8-hour O_3 and the 98th percentile for 24-hour $PM_{2.5}$ and arithmetic mean for annual SO_2, NO_2, PM_{10}, and $PM_{2.5}$. Concentrations exclude exceptional events (e.g., high winds, wildfires).

c NA = not applicable or not available.

SOURCES: USEPA, 2012; USEPA, 2014; State of Nevada, 2014.

Regarding greenhouse gases (GHGs) and climate change, Nevada produced about 45 million metric tons (MMt) of gross[1] carbon dioxide equivalent (CO_2e)[2] in 2010, which was about 0.7 percent of total U.S. GHG emissions in that year (Nevada Division of Environmental Protection [NDEP] 2012). In 2010, electrical generation (38 percent) and transportation (34 percent) were the primary contributors to gross GHG emission sources in Nevada. Residential, commercial, and industrial sectors combined accounted for about 22 percent of total state emissions. Agriculture and waste management accounted for the remaining 6 percent of total state emissions. Nevada's net emissions were about 39 MMt CO_2e in 2010, after considering carbon sequestration from forests throughout the state.

1 Excluding GHG emissions removed as a result of forestry and other land uses and excluding GHG emissions associated with exported electricity.

2 A measure used to compare the emissions from various GHGs on the basis of their global warming potential, defined as the cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas, CO_2. The CO_2e for a gas is derived by multiplying the mass of the gas by the associated global warming potential.

3.3.2 Applicable Laws, Regulations, Plans, and Standards

The USEPA promulgated the General Conformity Rule on November 30, 1993 in Volume 58 of the Federal Register (58 Fed. Reg. 63214) to implement the conformity provision of Title I, section 176(c)(1) of the Clean Air Act (CAA). Section 176(c)(1) requires that the Federal government not engage in, support, or provide financial assistance for licensing, permitting, or approving any activity not conforming to an approved CAA implementation plan.

The Proposed Action would be subject to the General Conformity Rule, given that the area of Clark County in which it would be developed is a maintenance area for the 1997 8-hour ozone NAAQS. The applicable ozone precursor *de minimis* thresholds for that area of Clark County are 100 tons per year of volatile organic compounds (VOC) and 100 tons per year of nitrogen oxides (NO_x).

3.3.3 Methodology

Construction-related criteria pollutant and precursor emissions, including VOCs, NO_x, carbon monoxide (CO), particulate matter with a diameter of less than or equal to 2.5 µm ($PM_{2.5}$), and particulate matter with a diameter of less than or equal to 10 µm (PM_{10}) were estimated based on the equipment list provided in Chapter 2, *Proposed Action and Alternatives*, and using USEPA emission factors for Tier 2 engines. An average of 750 workers (with two workers per vehicle) was assumed per day, with emissions estimated using factors from the USEPA AFLEET spreadsheet based on the MOVES model.

For fugitive dust quantification, except for the assumption for area disturbed at any one time during construction, the methods and modeling assumptions have not changed substantially from those presented in the Draft or Final Solar PEIS. Air quality modeling for PM_{10} and $PM_{2.5}$ emissions associated with construction activities was performed using the USEPA-recommended AERMOD model. Estimated air concentrations were compared with the applicable NAAQSs at the site boundaries and nearby communities and with Prevention of Significant Deterioration (PSD) increment levels at the closest Class I area (Grand Canyon National Park). Fugitive dust impacts for the Project were modeled based on vehicle-miles travelled (VMT) for equipment and trucks provided in the Section 2.2.13.10, *Workforce, Schedule, Equipment, and Materials*, assuming VMT would occur on unpaved surfaces. The maximum daily area of disturbance for the Proposed Action was assumed to be 38 acres, based on the quantity of earthmoving equipment and the assumption that earthmoving equipment (e.g., graders, scrapers, excavators) would each disturb 1-acre per day. The total area of disturbance for the Project would be 1,150 acres, whereas the Draft and Final Solar PEIS assumed disturbance of a maximum of 6,000 acres and 3,000 acres at any one time, respectively.

Modeling results and assumptions are included in Appendix E, *Air Quality Modeling Results and Assumptions*.

3.3.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features, resource surveys, and management plans that are proposed to avoid or reduce potential impacts of the Proposed Action.

3.3.5 Environmental Consequences

This analysis of environmental consequences tiers to Section 11.3.13 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-201 et seq.) and Section 11.3.13 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-59 et seq.). The analysis and other information provided in those documents remains applicable except as detailed below for purposes of this EA.

3.3.5.1 Proposed Action

Direct and Indirect Effects

Construction

The short-term use of onsite construction equipment and vehicles would produce criteria pollutant emissions. Construction traffic offsite would involve construction worker commute vehicles, periodic truck deliveries of materials and supplies, trash and other truck shipments, and miscellaneous trips by staff. See Table 2-4 in Chapter 2, *Proposed Action and Alternatives*, for the types of equipment expected to be necessary for construction of the PV areas. Actual construction equipment details and durations may vary depending on factors such as equipment availability. Construction was assumed to begin with the PV areas and continue with the substation and gen-tie; however, as described in the Section 2.2.13, *Construction*, most construction activities associated with each construction component would overlap.

Onsite construction-related criteria pollutant and precursor emissions, including VOCs, NO_x, CO, PM_{10}, and $PM_{2.5}$ are summarized in Table 3.3-3. Emissions were estimated using USEPA emission factors based on the equipment list in Table 2-4, as well as an assumed average of 750 daily workers and a maximum daily disturbance area of 38 acres due to earthwork activities (with 50 percent control efficiency from fugitive dust control). Off-road equipment load factors were based on research from an Eastern Research Group study, California Air Resources Board (CARB) Mobile Source Control Division testing data, data from equipment manufacturers, and the USEPA (CARB 2010).

TABLE 3.3-3
ANNUAL CONSTRUCTION EMISSIONS (tons per year)

Year	VOC	NO_x	CO	PM_{10}	$PM_{2.5}$
2015	3.2	63.8	55.7	30.2	9.4
2016	5.7	94.8	94.7	52.1	16.7

NOTATION: VOC = volatile organic compounds; NO_x = nitrogen oxides; CO = carbon monoxide; $PM_{2.5}$ = particulate matter with a diameter of ≤ 2.5 µm; and PM_{10} = particulate matter with a diameter of ≤ 10 µm.

As depicted in Table 3.3-3, *Annual Construction Emissions*, heavy construction equipment and vehicle exhaust emissions would not exceed the federal General Conformity *de minimis* thresholds of 100 tons per year VOC or NO_x. These types of emissions could cause impacts on air quality related-values (AQRVs) (e.g., visibility and acid deposition) at the federal Class I area associated with the Grand Canyon National Park. However, SO_x emissions from engine exhaust would be very low, because programmatic design features would require ultra-low-sulfur fuel with a sulfur content of 15 ppm. NO_x emissions from engine exhaust would be the primary contributors to potential impacts on AQRVs.

Construction-related emissions are temporary in nature and thus would cause short-term impacts consistent with those described in the Solar PEIS. No new significant impact would occur.

Table 3.3-4, *Maximum Air Quality Impacts from Emissions Associated with Construction Activities for the Proposed Action,* presents the maximum modeled concentrations from construction fugitive dust. Maximum concentrations would be to the northwest of the Project site, where there are no sensitive receptors. Project-generated concentrations of PM_{10} and $PM_{2.5}$ would not exceed the NAAQS. However, when Project maximum concentrations are combined with background concentrations of particulates, the combined emissions for PM_{10} and $PM_{2.5}$ averaged for 24 hours could exceed the respective NAAQSs. Other locations modeled in the Draft Solar PEIS include Moapa, Moapa Valley, Overton, and the nearest residences near North Las Vegas. The analysis conducted for the Final Solar PEIS predicted concentrations lower than those presented in the Draft Solar PEIS, and the updated analysis conducted for the Project estimated concentrations lower than those in the Final Solar PEIS. These updated predictions are consistent with the conclusion in the Solar PEIS, where high particulate concentrations would be limited to the vicinity of the Project boundary and would decrease quickly with distance. No new significant impact would occur.

TABLE 3.3-4
MAXIMUM AIR QUALITY IMPACTS FROM EMISSIONS ASSOCIATED WITH CONSTRUCTION ACTIVITIES FOR THE PROPOSED ACTION

		Concentration (μg/m^3)				Percentage of NAAQS	
Pollutant[a]	Averaging Time	Maximum/ At Class I[b]	Background[c]	Totals	NAAQS	Increments	Totals
PM_{10}	24 hours	55.3/1.0	105	160.3/106.0	150	36.9/0.7	106.9/70.7
$PM_{2.5}$	24 hours Annual	15.9/0.3 0.9/0.0	27.6 9.3	43.5/27.9 10.2/9.3	35 15	45.4/0.9 6.0/0.0	124.3/79.7 68.0/0.0

NOTES:
a $PM_{2.5}$ = particulate matter with a diameter of ≤ 2.5 μm; PM_{10} = particulate matter with a diameter of ≤ 10 μm.
b Maximum concentrations would be northwest of the Project site. Concentrations at the nearest area of the Grand Canyon are also provided (Class I area).
c See Table 3.3-2 above. These background concentrations (North Las Vegas) were conservatively assumed to represent concentrations at the Grand Canyon Class I area as well.

As shown in Table 3.3-3, *Annual Construction Emissions* above, predicted particulate matter concentrations associated with Project development are anticipated to contribute negligible increments to existing pollutant concentrations. The conclusion in the Draft Solar PEIS that the 24-hour PM_{10} Class I PSD increment could be somewhat exceeded in the Grand Canyon National Park was updated in the Final Solar PEIS to conclude that all Class I PSD increments for particulates would be met at the nearest Class I area. The updated particulate dispersion modeling for the Project supports that conclusion, no new significant impact would occur.

Operation and Maintenance

Criteria pollutant and GHG emissions associated with operation and maintenance activities would be generated primarily by vehicles that provide operation and maintenance support. These long-term emissions would be negligible as compared to the short-term construction emissions. The Project in

operation would generate up to 200 MW of clean energy. As explained in the Draft Solar PEIS, the estimated amount of emissions that would be avoided associated with operation of the solar technologies depends only on the megawatts of conventional fossil fuel-generated power that would be avoided.

Decommissioning and Reclamation

Decommissioning and reclamation activities would be of short duration, and their associated potential air impacts would be minor and temporary. The Solar PEIS fully analyzed the effects of decommissioning and reclamation, and no new significant impacts would occur.

Mitigation Measures

Because no new significant impacts to air quality and climate change would occur relative to those considered in the Solar PEIS, no additional mitigation measures to control construction emissions are recommended.

Cumulative Effects

This cumulative effects analysis tiers to Section 11.3.22.4 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-356) and Section 11.3.22.4 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-104). A complete list of cumulative projects is included in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ*. Adjacent projects in the Dry Lake SEZ include the Harry Allen Solar Energy Center and the Dry Lake Solar Energy Center. As described above, the Project would comply with the programmatic design features identified in the ROD. Compliance with these measures would ensure that impacts related to air quality and climate impacts would be minimized to the extent feasible. The two other solar projects that would be developed in the Dry Lake SEZ would be subject to the same programmatic design features. Even after implementation of these measures, the Proposed Action and other projects in the cumulative scenario would generate criteria pollutant and GHG emissions.

As described above, when Project maximum concentrations are combined with background concentrations of particulates, the combined emissions for PM_{10} and $PM_{2.5}$ averaged for 24 hours could exceed the respective NAAQSs. However, high particulate concentrations would be limited to the vicinity of the Project boundary and would decrease quickly with distance, indicating that particulate emissions from other projects within the SEZ may contribute to cumulative particulate concentrations in the immediate vicinity, but that other projects further from these projects' boundaries likely would not. The Proposed Action and other renewable energy projects would have beneficial operational impacts with respect to both criteria pollutant and GHG emissions because they would replace emissions associated with fossil fuel-fired power plants. These impacts are consistent with the conclusions regarding cumulative effects on air quality and the climate in the Solar PEIS, and no new significant cumulative impact would occur.

3.3.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts related to air resources from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012) and because the successful bidders at the Dry Lake SEZ auction have demonstrated

a substantial commitment to the solar resource (BLM 2014), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

Specific locations of activity, necessary equipment and other sources of emissions associated with their operation, and related details about possible future solar development at the site are not available, and so it is only possible at this time to provide a general analysis of potential future solar development that could occur on the site. If the Proposed Action was not constructed, a different PV project could be constructed and presumably would have substantially similar effects on air resources as those of the Proposed Action. If a different type of solar power generation facilities is built under the No Action Alternative, it could affect the size and capacity of the facility, its construction-related air emissions, and the volume of emissions that would be avoided by solar power generation.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts related to air resources, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts to air resources from that development would likely be similar to those described in the Proposed Action section above.

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3.4 Areas of Critical Environmental Concern

This section tiers to Section 11.3.3 of the Solar PEIS (BLM and DOE 2010, p. 11.3-21 et seq.; BLM and DOE 2012, p. 11.3-6 et seq.), regarding specially designated areas. The analysis and other information provided there remains applicable except as detailed below for purposes of this analysis of impacts of the proposed development of parcels 2, 3, and 4.

3.4.1 Affected Environment

As discussed in Section 11.3.3.1 of the Solar PEIS (BLM and DOE 2010, p. 11.3-21 et seq.; BLM and DOE 2012, p. 11.3-6 et seq.), there are several specially designated areas within 25 miles of the Dry Lake SEZ. Specially designated areas in the vicinity of the Project site include the Desert National Wildlife Range, located approximately 2.5 miles west; the congressionally designated portion of the Old Spanish National Historic Trail, located approximately 2 miles east; and the Coyote Springs Area of Critical Environmental Concern (ACEC), located adjacent to the SEZ and within 0.25-mile of the Project site.

Consistent with the Solar PEIS findings, the Proposed Action is not expected to have adverse impacts on the Desert National Wildlife Refuge or the Old Spanish Trail and therefore those resources are not discussed further in this section; rather, the focus is on the Coyote Springs ACEC. It is not anticipated that the Proposed Action would result in a significant effect on recreational use of the Wildlife Refuge given the lack of any direct impact to use of the Refuge or its associated resources. This finding is consistent with the analysis in the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-26). The visual contrast created by the Proposed Action on the Old Spanish National Historic Trail would be minimal or very weak, and the purpose of the trail would not be disrupted by the proposed solar facilities. This finding is consistent with the Draft Solar PEIS (BLM and DOE 2010, p.11.3-23 et seq.).

The Coyote Springs ACEC is designated as Critical Habitat for desert tortoise and is being managed by the BLM for the recovery of the species (see Figure 3.9-,1 *Desert Tortoise Translocation*). The ACEC is intended to provide functional corridors of habitat between desert tortoise recovery units in order to enhance long-term persistence of the species. It consists of the western portion of the Mormon Mesa Critical Habitat Unit, protecting moderate to high densities of desert tortoise between the Desert National Wildlife Refuge, the Arrow Canyon Wilderness, and the Mormon Mesa ACEC (BLM/LVFO 1998). Although the ACEC is largely separated from the Project area by the southern end of the Arrow Canyon Range, there is a pass where U.S. 93 crosses that provides connectivity from the ACEC to the Dry Lake Valley. The portion of the ACEC closest to the Project area, including the proposed translocation area, currently is used for dispersed recreation. Although there is no quantitative recreation use data collected for the ACEC, target shooting and casual off-highway vehicle (OHV) use have been observed there, and portions of the area are littered with old targets, trash, and spent shells.

3.4.2 Applicable Laws, Regulations, Plans, and Standards

An ACEC is a designation given by BLM to lands that meet special relevance and importance criteria set forth by the BLM. The area must have special relevance to natural, cultural, or historic resources and importance such that special management is required to protect the value of these resources (BLM 1988).

3.4.3 Methodology

Appendix M of the Solar PEIS describes the impact assessment methodology relied upon to analyze impacts for the Western Solar Plan on specially designated areas. This EA tiers to that methodology to evaluate impacts to specially designated areas.

3.4.4 Proposed Design Features

All appropriate design features outlined in Section 11.3.10.3 and in Section A.2.2 of Appendix A in the Solar PEIS (BLM and DOE 2012) would be implemented. Through the Solar PEIS, the BLM reduced the developable area within the Dry Lake SEZ, which resulted in increased distance from the Project area to the ACEC.

3.4.5 Environmental Consequences

This analysis tiers to Section 11.3.3.2 of the Solar PEIS (BLM and DOE 2010, p. 11.3-23 et seq.; BLM and DOE 2012, p. 11.3-7). The analysis and other information provided there remains applicable except as detailed below.

3.4.5.1 Proposed Action

Direct and Indirect Effects

The Project site does not contain any specially designated areas. Therefore, the Proposed Action would not cause direct effects to specially designated areas including ACECs. There is potential for indirect impacts to the Coyote Springs ACEC however from dust, runoff, spread of weeds, accidental spills, and noise given its close proximity to the Project site. With respect to noise, as described in detail in Section 3.7,*Wildlife, Excluding the Federally Listed Species*, the construction noise level at the Coyote Springs ACEC would exceed the terrestrial wildlife exposure threshold of approximately 55 dBA Lmax identified in Section 11.3.15.2.1 of the Solar PEIS (BLM and DOE 2012, p. 11.3 75) as the sound level corresponding to the onset of adverse physiological impacts to terrestrial wildlife in areas of special concern, but would not exceed the 90 dBA Lmax as the threshold at which adverse impacts to wildlife species in the ACEC would result (BLM and DOE 2010, p. 11.3-271).

Potential indirect effects from the Proposed Action would be addressed through implementation of Project design features that control impacts such as soil erosion, dust, stormwater runoff, and water quality during all phases of the Project. In addition, the Applicant would prepare and implement a Worker Education and Awareness Plan, Integrated Weed Management Plan, Herbicide Use Proposal, Spill Prevention and Emergency Response Plan, Hazardous Materials and Waste Management Plan, and Lighting Management Plan.

Approximately 1,500 acres of the proposed desert tortoise translocation area identified by the BLM and the USFWS occurs partially within the southern end of the Coyote Springs ACEC (see Figure 3.9-1, *Desert Tortoise Translocation*). Translocation of desert tortoise under the Proposed Action would not impact the relevance and importance criteria of the ACEC to manage desert tortoise habitat for the recovery of the species. There would be no development, and no manipulation of habitat within the ACEC. Although there

would be no change to the ACEC designation, there could be impacts to desert tortoise as a result of translocation as described under Section 3.9, *Threatened, Endangered, and Candidate Animal Species*.

Mitigation Measures

Because no new significant impacts related to specially designated areas would occur as a result of the Proposed Action, no mitigation measures are recommended.

Cumulative Effects

This cumulative effects analysis tiers to Section 11.3.22.4.2 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-350 et seq.) and Section 11.3.22 of the of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-104 et seq.). This analysis relies on those discussions, and updates them to describe changes in the cumulative scenario that have occurred since issuance of the Solar PEIS.

As described in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ*, in addition to the application for the Proposed Action and since publication of the Final Solar PEIS, there have been three additional solar development authorizations within 5 miles of the SEZ (i.e., the Mountain View Solar, Apex Solar Power, and Moapa Solar Energy Center projects), three applications for linear transmission facilities, and two other active solar applications within the SEZ. These existing and reasonably foreseeable actions are considered in this cumulative effects analysis.

The indirect effects of the Proposed Action on the Coyote Springs ACEC (dust, runoff, spread of weeds, accidental spills, and noise) could combine with similar effects of other nearby utility-scale solar and other types of projects identified in the cumulative scenario. It is assumed that all reasonably foreseeable development on BLM lands in the Dry Lake SEZ and surrounding public lands would be subject to the same design features that reduce the potential cumulative impacts to the coyote Springs ACEC. Assuming up to two other construction projects (e.g., proposed solar development of Dry Lake SEZ parcels 1, 5, and 6) would occur at the same time and within the same general vicinity as the Project, the combined noise level at the Coyote Springs ACEC would be up to approximately 64 dBA, which would be below the 90 dBA Lmax threshold that would adversely affect wildlife. Therefore, Project construction noise levels in combination with other projects at the Coyote Springs ACEC would not result in any new significant cumulative impacts. The development of Dry Lake SEZ parcels 1, 5, and 6 may result in additional translocation of desert tortoise into a portion of the Coyote Springs ACEC. Limits for translocation would be established in a USFWS approved Desert Tortoise Translocation Plan.

Although the list of specific projects in the cumulative scenario has been updated since the Final Solar PEIS, the scope of potential cumulative effects on specially designated areas, specifically the Coyote Springs ACEC, is within that analyzed in the Final Solar PEIS. No new or increased significant cumulative effects would occur to specially designated areas as a result of the Proposed Action.

3.4.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts to special designations from the Project. However, because the site is located in a SEZ where solar development is a designated

priority (BLM 2012) and because the successful bidders at the Dry Lake SEZ auction have demonstrated a substantial commitment to the solar resource (BLM 2014), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

Specific locations of activity and associated sights, sounds, and related details about possible future solar development at the site are not available, and so it is only possible at this time to provide a general analysis of potential future solar development that could occur on the site. If the Proposed Action was not constructed, a different solar project could be constructed that presumably would have substantially similar effects to the Coyote Springs ACEC as those of the Proposed Action.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts to special designations, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts to special designations from that development would likely be similar to or greater than those described in the Proposed Action section above.

3.5 Cultural Resources

This section tiers to Section 11.3.17 of the Solar PEIS (BLM and DOE 2010, p. 11.3-279 et seq.; BLM and DOE 2012, p. 11.3-78 et seq.). The analysis and other information provided in there remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of parcels 2, 3, and 4.

3.5.1 Affected Environment

Section 11.3.17.1 of the 2010 Draft Solar PEIS (BLM and DOE 2010, p. 11.3-279 et seq.) describes the affected environment for the BLM's analysis of potential effects of the Western Solar Plan to cultural resources relative to the Dry Lake SEZ, including prehistoric and regional ethnographic background information.

3.5.1.1 Area of Potential Effects

The BLM is conducting consultation under Section 106 of the National Historic Preservation Act (NHPA) concurrently for all three projects proposed within the Dry Lake SEZ, including the Proposed Action. The Area of Potential Effects (APE) for projects within the Dry Lake SEZ has been defined by BLM as follows:

1. For direct effects, the APE is defined as the area included within the Dry Lake SEZ.
2. For indirect effects, the APE is defined as "in the valley area and valley-facing slopes between Arrow Canyon and Dry Lake Ranges (East-West) and five miles north-south of the project area," to take into account potential indirect (i.e., visual or auditory) effects to historic properties, including ethnographic or tribal resources (Johnson and Jeppson 2014).

3.5.1.2 Cultural Resources Inventory

A Class III cultural resources inventory of the Dry Lake SEZ was performed for the Dry Lake SEZ in 2013 and 2014 (Johnson and Jeppson 2014). The study consisted of a records search, pedestrian survey, a Class I Inventory of the indirect APE, and an indirect effects analysis. The purpose of the inventory was to identify, record, and evaluate any cultural resources within the Dry Lake SEZ for their eligibility to the National Register of Historic Places (National Register).

A records search for the Dry Lake SEZ was performed for the direct APE and a 1-mile radius. Eighty-nine resources have been recorded within 1 mile of the direct APE, of which 53 are prehistoric archaeological sites, 32 are historic period sites, three are multi-component sites, and one is of unknown origin. Although two of these resources are located within the Dry Lake SEZ, neither is located within the Project site.

The entire Dry Lake SEZ was subject to intensive pedestrian survey using transect intervals that did not exceed 30 meters. Three resources (two prehistoric lithic scatters and one historic-period road) were identified; however, none is located within the Project site.

To identify cultural resources that could be visually affected by projects located within the SEZ, a Class I inventory (literature review) of the Nevada Cultural Resource Information System (NVCRIS) database and other research and literature for the direct and indirect APEs was conducted to locate historic properties (defined as resources eligible for listing in the National Register) that could be indirectly affected by the construction of projects within the SEZ.

Subsequent to Sagebrush's Class III Study (Johnson and Jeppson 2014), the BLM conducted a GIS viewshed analysis for the Dry Lake SEZ. The analysis was based on a 5 meter height of facilities in the SEZ and a "seen/not seen" raster was created. This raster was converted to a GIS shapefile and polygons within the "seen" portion of the analysis area were joined to the NVCRIS site shapefile. The study determined that 22 cultural resources in the NVCRIS database were located within the viewshed of the Dry Lake SEZ. Of these, three are eligible for or listed in the National Register under Criteria A, B, or C. These sites are 26CK3848 (the Old Spanish Trail/Mormon Road), 26CK5685 (the San Pedro, Los Angeles, and Salt Lake Railroad), and 26CK7793 (the Arrowhead Highway). An additional 4 resources, consisting of a prehistoric rock shelter, two prehistoric camps, and a prehistoric lithic reduction station, have been determined eligible for listing in the National Register under Criterion D alone. Nine resources have been determined ineligible for listing in the National Register. The remaining six sites have not been evaluated for eligibility for listing in the National Register (Marrs-Smith, 2014).

The BLM has made a finding of adverse effect for resources 26CK3848 (the Old Spanish Trail/Mormon Road), 26CK5685 (the San Pedro, Los Angeles, and Salt Lake Railroad), and 26CK7793 (the Arrowhead Highway), as there will be adverse visual effects to these three resources as result of the Proposed Action. The SHPO has concurred with the BLM's findings.

Following the publication of Sagebrush's Class III inventory report (Johnson and Jeppson 2014), three alternative well locations and two alternative pipeline routes located on private property were added to the Project. On October 29, 2014, archaeologists from Environmental Science Associates conducted a pedestrian survey of the three alternative well locations and two alternative pipeline routes, along with a 100-foot survey buffer around the pipeline routes and 400-by-400-foot survey area around the well locations (Bray et al., 2014). One resource, a pedestrian trail segment designated 26CK9997, was recorded within the survey area for the northern pipeline option. The trail segment is relatively well embedded into loosely to moderately consolidated desert pavement. Pavement in this area is characterized by small to large pebbles and sparse small cobbles exhibiting various degrees of patination. The trail measures approximately 30 to 35 centimeters in width, is bordered by a slight build-up of pebbles on either side, and is relatively well embedded into the desert pavement. The trail is oriented northwest to southeast and is bisected by a dirt road in the vicinity of the survey area. The segment of the trail recorded in the field measures a total of 1,440 feet in length; however, the trail is visible on satellite photographs for a length of approximately 1.6 miles. Satellite photographs also indicate that traces of the trail are present within some portions of the survey area for the central pipeline; however, no surface manifestation of the trail was observed during survey of these areas.

Disturbances to the resource include the dirt road and a variety of two-wheel tracks. Aside from one solder-top can, no artifacts or archaeological sites were observed in the vicinity of the trail. The width of the trail, the degree of embedding, and the lack of visible rutting typically associated with single track vehicles suggests the trail is most likely a pedestrian trail that has been in use for a lengthy period of time.

Based on their review of evidence, BLM has determined that the trail is not eligible for listing in the National Register (Plum, 2014).

3.5.2 Applicable Laws, Regulations, Plans, and Standards

Applicable laws, regulations, plans, and standards protecting cultural resources include NEPA, the National Historic Preservation Act (NHPA), and the National Register. NEPA focuses in part on the preservation of "important historic, cultural and natural aspects of our national heritage" (42 USC §4331(b); 40 CFR 1508.27(b)). NHPA Section 106 requires a federal agency with jurisdiction over a proposed federal action (referred to as an "undertaking" under the NHPA) to take into account the effects of the undertaking on historic properties[1] (16 USC §470f; 36 CFR Part 800).

The National Register identifies "the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment" (36 CFR 60.2). To be eligible for listing in the National Register, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established criteria (36 CFR 60.4):

A. Are associated with events that have made a significant contribution to the broad patterns of our history;

B. Are associated with the lives of persons significant in our past;

C. Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. Have yielded, or may be likely to yield, information important in prehistory or history.

Unless the property possesses exceptional importance, it must be at least 50 years old to be eligible for National Register listing (36 CFR 60.4). In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as "the ability of a property to convey its significance" (NPS 1995). The National Register recognizes seven qualities that, in various combinations, define integrity: location, design, setting, materials, workmanship, feeling, and association. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its significance (36 CFR 60.4).

3.5.3 Methodology

This EA tiers to the methodology used in the Solar PEIS (BLM and DOE 2010, Appendix M, Section M.17, p. 50 et seq.) to evaluate impacts to cultural resources. Supplemental data also was reviewed, including the Dry Lake SEZ-specific Class III archaeological study (Johnson and Jeppson 2014) and documentation related to the Project-specific Section 106 consultation process) and additional study was conducted of Project components that would be located on private land outside the SEZ (Bray et al. 2014).

[1] The term "historic properties" refers to "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register" (36 CFR 800.16(*l*)(1)).

3.5.4 Proposed Design Features

Programmatic Project Design Features for Cultural Resources are described in the ROD for the Final Solar PEIS (BLM 2012, Section A.4.1.16), and are summarized in Table 2-7, *Dry Lake Programmatic Design Features*. In addition, several design features specific to the Dry Lake SEZ are described in the Solar PEIS ROD (BLM 2012, Section A.4.2). For cultural resources, avoidance of the National Register-eligible listed Old Spanish Trail/Mormon Road and coordination with the Trail Administration for the Old Spanish Trail and Old Spanish Trail Association was recommended in order to identify potential mitigation strategies for avoiding or minimizing potential impacts on the congressionally designated Old Spanish National Historic Trail and also on any remnants of the National Register-eligible sites associated with the Old Spanish Trail/Mormon Road that may be located within the Dry Lake SEZ.

3.5.5 Environmental Consequences

This analysis tiers to Section 11.3.17 of the Solar PEIS (BLM and DOE 2010, p. 11.3-279 et seq.; BLM and DOE 2012, p. 11.3-78 et seq.). The analysis and other information provided in there remains applicable except as detailed below.

Ground-disturbing construction activities associated with the Proposed Action could have a direct impact on cultural resources and historic properties by damaging and displacing artifacts, diminishing site integrity, and altering the characteristics that make the resources significant. Indirect effects to cultural resources could include visual, auditory, and atmospheric effects. Impacts can occur to the setting of a resource even if the resource is not physically damaged. Indirect effects to historic properties could result from a change in the historic setting of historic properties through visual or auditory intrusions. Indirect impacts to archaeological resources also may result from increased erosion due to site clearance and preparation, or from inadvertent damage or outright vandalism to exposed resource components due to improved accessibility.

3.5.5.1 Proposed Action

The Proposed Action would disturb the ground within the same area evaluated in the Solar PEIS and to similar depths as those evaluated in the Solar PEIS. The offsite linear facilities described in Section 2.2.5, *Offsite Linear Facilities*, are within the original Dry Lake SEZ analyzed in Section 11.3.7 of the Solar PEIS, but are considered offsite now because the Proposed Action only includes parcels 2, 3, and 4 of the Dry Lake SEZ. The total ground disturbance analyzed in the Solar PEIS was 5,717 acres. The Proposed Action would disturb approximately 1,550 acres within the same area analyzed in the Solar PEIS. One offsite Project component, a proposed water well and pipeline, would be located on private land outside of the Dry Lake SEZ.

In general, direct impacts to cultural resources from the Proposed Action would be substantially similar to those described in the Solar PEIS. Impacts associated with the Proposed Action that would be different from those evaluated in the Solar PEIS are discussed below.

Direct and Indirect Effects

The Solar PEIS identified potential direct impacts to cultural resources, archaeological resources, historic properties, and visual impacts to the National Register-listed Old Spanish Trail/Mormon Road.

One cultural resource has been identified within the Proposed Action area. Resource 26CK9997 is a pedestrian trail of unknown date and affiliation that the BLM, based on their review of information, has determined to be not eligible for listing in the National Register (Plum, 2014). Grading and excavation for installation of the proposed well and pipeline could directly affect resource 26CK9997. Although resource 26CK9997 has been determined not to be a historic property under Section 106 of the NHPA, avoidance measures could feasibly reduce potential impacts to this cultural resource and would be accomplished through the implementation of Mitigation Measure CR-1.

Unknown subsurface archaeological resources also may be located within the Proposed Action area. These resources could be encountered and directly impacted by ground disturbing activities associated with the construction of the Proposed Action. Programmatic design feature CR2-1 requires the use of monitoring and measures to halt ground disturbance and implement curation and/or other appropriate mitigation measures in the event of the discovery of a currently unknown subsurface resource.

GIS analysis determined that 22 cultural resources, including seven historic properties, are located within the viewshed of the Dry Lake SEZ and could sustain indirect visual effects as a result of the Proposed Action. Of these, three resources are eligible for or listed in the National Register under Criteria A, B, or C (26CK3848 [Old Spanish Trail/Mormon Road], 26CK5685 [San Pedro, Los Angeles, and Salt Lake Railroad], and 26CK7793 [Arrowhead Highway]). The settings of these three historic properties have already been modified by past development of roads (including I-15) and numerous transmission lines. However, the BLM has determined that there will be adverse visual effects to resources 26CK3848 (the Old Spanish Trail/Mormon Road), 26CK5685 (the San Pedro, Los Angeles, and Salt Lake Railroad), and 26CK7793 (the Arrowhead Highway) as result of the Proposed Action. The SHPO has concurred with BLM's findings.

An additional four archaeological sites located within the viewshed of the SEZ, consisting of a prehistoric rock shelter, two prehistoric camps, and a prehistoric lithic reduction station, have been determined eligible for listing in the National Register under Criterion D (has yielded or has the potential to yield important information). The Proposed Action would not have an adverse effect to these four historic properties, as the visual effects of the Proposed Action are unlikely to adversely affect an archaeological site's potential to yield important scientific information. Nine resources have been determined ineligible for listing in the National Register, and six sites have not been evaluated for eligibility for listing in the National Register (Marrs-Smith 2014). The BLM has not made findings of effects determinations under NHPA Section 106 for these resources. However, they could sustain adverse effects as a result of visual impacts from the Proposed Action.

Mitigation Measures

Adverse effects that the Proposed Action may have on cultural resources would be resolved through compliance with the terms of a Memorandum of Agreement (MOA) and Historic Properties Treatment Plan (HPTP) prepared and executed under Section 106 of the NHPA and through compliance with the programmatic and Dry Lake SEZ-Specific design features identified in Section 3.5.4, *Proposed Design Features*. Although resource 26CK9997 has been determined not to be a historic property under Section 106 of the NHPA, avoidance and minimization measures could feasibly reduce impacts to this cultural resource. If one of the pipeline alternatives in proximity to 26CK9997 is selected, impacts to this resource would be avoided through implementation of Mitigation Measure CR-1.

Mitigation Measure CR-1: The construction zone shall be narrowed or otherwise altered to avoid intact portions of resource 26CK9997, and construction shall be restricted to previously disturbed road beds and graded areas where portions of the trail have already been destroyed. Resource 26CK9997 shall be designated an Environmentally Sensitive Area. Prior to construction, the resource shall be relocated by a qualified archaeologist and shall be marked with exclusion markers to ensure avoidance. Protective fencing shall not identify the protected areas as cultural resource areas in order to discourage unauthorized disturbance or collection of artifacts. A qualified archaeologist shall monitor construction within 100 feet of the Environmentally Sensitive Area.

If avoidance of resource 26CK9997 is determined to be infeasible, then, prior to any Project-related ground disturbing activities, a detailed treatment plan shall be prepared and implemented by a qualified archaeologist (defined as one who meets the Secretary of the Interior's professional qualification standards for archaeology). The treatment plan shall include a research design and a scope of work for data recovery of the portion(s) of the resource to be affected by the Proposed Action. Treatment could consist of (but would not be not limited to) sample excavation, surface artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion of the significant resource to be impacted by the Proposed Action. The treatment plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, and curation of artifacts and data at an approved facility.

Cumulative Effects

Cumulative impacts on cultural resources take into account the Project's impacts in combination with those of other past, present, and reasonably foreseeable actions. This cumulative effects analysis tiers to Section 11.3.22.4.16 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-359) and Section 11.3.22 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-1 et seq.).

The geographic area of analysis remains unchanged from that described in Table 11.3.21.1-1 of the Draft Solar PEIS. For cultural resources, the geographic area of analysis was defined as areas within and adjacent to the Dry Lake SEZ for archaeological sites, and the viewshed within a 25-mile radius of the Dry Lake SEZ for other properties, such as traditional cultural properties.

The cumulative effects analysis presented in the Solar PEIS remains applicable and is incorporated here by reference. The Draft Solar PEIS identified potential cumulative impacts to archaeological sites and historic properties. Specifically, the Solar PEIS indicated that cumulative visual impacts to the National Register-listed Old Spanish Trail/Mormon Road could occur. The Solar PEIS concluded that consultation with SHPO and Indian Tribes would reduce or mitigate adverse effects to cultural resources, and historic properties.

Ongoing and reasonably foreseeable actions and trends as presented in the Solar PEIS remain applicable to the analysis in this EA except as updated in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ*. This discussion of cumulative effects focuses on the contribution of these new projects to the cumulative scenario. New proposed projects within the geographic area of analysis include Mountain View Solar, Apex Solar Power, Moapa Solar Energy Center, Nellis Air Force Base Area II Solar, Centennial II Project, and a transmission line project. Many of these projects are large-scale renewable energy projects that require extensive grading and development. Information regarding impacts to cultural resources was available for only one of these projects, Moapa Solar Energy Center; no impacts to cultural resources were identified for that project.

Two projects, the Harry Allen Solar Energy Center Project and the Dry Lake Solar Energy Center Project, are proposed within the Dry Lake SEZ. The Harry Allen Solar Energy Center Project would not affect any cultural resources. The Dry Lake Solar Energy Center Project would affect one cultural resource, which has been determined by the BLM not to be eligible for listing in the National Register.

Regarding potential impacts of present and reasonably foreseeable future projects, there is the potential for the Proposed Action and all ongoing and reasonably foreseeable future development projects in the vicinity to inadvertently discover, unearth, expose, or disturb, and thereby damage archaeological and historic resources, the locations of which are unknown. In addition, present and future projects could result in increased human access to the locations of cultural resources and historic properties, which could result in impacts (such as vandalism and vehicle damage) to such resources. Damage to or destruction of cultural resources could result in an adverse cumulative impact.

Construction of the projects proposed throughout this region, many of which are large-scale solar developments, would result in substantial changes in the setting of the areas in which they are constructed. These kinds of cumulative effects may affect the setting, feeling, and association of built historic resources, including the Old Spanish Trail, Arrowhead Highway, and the San Pedro, Los Angeles, and Salt Lake Railroad, and other cultural resources within the cumulative effects geographic area of analysis. Similarly, individual projects can contribute to the degradation of certain ethnographic values of an area by altering the landscape, even though no cultural resources may be physically affected. This could include alteration of important views, modification of traditional landscapes, or limitations on traditional uses of an area.

Cumulative impacts from the Proposed Action and other projects proposed within the Dry Lake SEZ on known cultural resources are expected to be less than those described in the Draft and Final Solar PEIS because the Project area plus the areas to be developed by other projects (i.e., parcels 1 through 6), would be approximately 3,230 acres, whereas the areas of analysis (proposed Dry Lake SEZ) in the Draft and Final Solar PEIS were 15,649 acres and 6,186 acres, respectively, resulting in reduced cumulative impacts relating to known cultural resources. However, there is the potential for the Proposed Action to inadvertently discover, unearth, expose, or disturb, and thereby damage archaeological and historic resources, which could contribute to the cumulative impact on such resources.

Although their settings have already been modified by past development of roads (including I-15) and transmission lines, the BLM has determined that the Proposed Action will contribute to a cumulative adverse effect to the setting and feel of resources 26CK3848 (the Old Spanish Trail/Mormon Road), 26CK5685 (the San Pedro, Los Angeles, and Salt Lake Railroad), and 26CK7793 (the Arrowhead Highway) beyond that of the previously built structures within the indirect APE.

As discussed in the Draft Solar PEIS (BLM and DOE 2010), development of the Proposed Action in combination with other projects in the cumulative scenario could adversely affect cultural resources in the vicinity of the SEZ, depending in part on where and how many potential projects are actually built. Although the list of specific projects in the cumulative scenario has been updated since the Final Solar PEIS, the scope of potential cumulative effects on cultural resources is within that analyzed in the Final Solar PEIS, and no new or increased significant cumulative effects would occur as a result of the Proposed Action.

3.5.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts to cultural resources from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012) and because the successful bidders at the Dry Lake SEZ auction have demonstrated a substantial commitment to the solar resource (BLM 2014), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

Specific locations of activity, related disturbance activities as well as the height, visibility, sounds, scheduling and other details associated with the construction, operation, maintenance, and decommissioning of possible future solar development at the site are not available, and so it is only possible at this time to provide a general analysis of potential future solar development that could occur on the site. If the Proposed Action was not constructed, a different PV project could be constructed and presumably would have substantially similar effects as those of the Proposed Action.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts to cultural resources, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts from that development would likely be similar to those described in the Proposed Action section above.

3.6 Native American Religious Concerns

Regarding Native American religious concerns, this section tiers to Section 11.3.18 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-291 et seq.) and Section 11.3.18 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-81 et seq.). The analysis and other information provided there remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of parcels 2, 3, and 4.

3.6.1 Affected Environment

Section 11.3.18.1 of the 2010 Draft Solar PEIS (BLM and DOE 2010, p. 11.3-291 et seq.) describes the affected environment IRUWKH/0DDOVRIWHWDOHIIHFWVRQ Native American religious concerns resulting from the /0V Western Solar Plan.

The BLM is consulting with Tribes in accordance with a programmatic agreement concluded under Section 106 of the National Historic Preservation Act (NHPA) for solar development within the Dry Lake SEZ and on a Project-specific basis. Letters requesting government-to-government consultation under Section 106 and the American Indian Religious Freedom Act (AIRFA) were sent to the following Tribes on October 16, 2014: Chemehuevi Indian Tribe, Colorado River Indian Tribe, Fort Mojave Indian Tribe, Hopi Tribe, Kaibab Band of Paiutes, Las Vegas Paiute Tribe, Moapa Band of Paiutes, Pahrump Paiute Tribe, Paiute Indian Tribe of Utah, San Juan Southern Paiute Tribe, and Timbisha Shoshone Tribe. To date, one letter response has been received. The Hopi Tribe replied on November 3, 2014, stating that they did not believe that the Proposed Action would affect cultural resources significant to the Hopi Tribe, and requesting that if any cultural features are encountered during Project activities, that activities be discontinued and the SHPO consulted.

Based on the ethnographic study prepared for the Dry Lake SEZ (SWCA and University of Arizona 2011), the Final Solar PEIS identified Native American resources with religious value that could be affected by solar energy development within the Dry Lake SEZ including:

1. Water sources, such as the Apex Pleistocene Lake, Muddy River, the Colorado River, and Virgin River, which tribal representatives believe are interconnected. Development may affect the amount of water naturally stored in aquifers, which may greatly reduce the amount of water available to the Southern Paiute Tribe and to plants and animals in the valley. This also may affect the connection that the Southern Paiute have with water;

2. Geological features such as the Arrow Canyon Range and Potato Woman. Visual impacts to the Arrow Canyon Range DGUURZDRFRODOVRDIIHFWRWDWRPDDGWKHDKJDK (Mountain Sheep);

3. The Salt Song Trail;

4. Historical sites such as the Moapa River Reservation; and

5. TUDGLWLRDOSODWDGDPDOUHVRUFHV,SDFWVWRWKDKDGH affect the spiritual nature of the Arrow Canyon Range and Potato Woman, as well as the stories and medicine of the Southern Paiute.

special-status wildlife species. Possible direct effects from herbicides may result from direct contact or ingestion of treated materials that could result in death, damage to vital organs, decrease in body weight, decrease in healthy offspring, and increased susceptibility to predation depending on exposure length and amounts (Syracuse Environmental Research Associates, Inc. 2003).

Consistent with the Solar PEIS methodology, the area of potential indirect effects for the Project includes a 5-mile radius around the center of the Project site. Indirect impacts include but are not limited to impacts associated with surface runoff, dust, noise, lighting, use of herbicides, and accidental spills. Herbicide use may result in a reduction in plant species diversity and consequent availability of preferred food, habitat, and breeding areas; decrease in wildlife population densities within the first year following application as a result of limited reproduction; habitat and range disruption (as wildlife may avoid sprayed areas following treatment), resulting in changes to territorial boundaries and breeding and nesting behaviors; and increase in predation of small mammals due to loss of ground cover (BLM 2007). The use of herbicides would require review and approval by the BLM through development of an Integrated Weed Management Plan and Herbicide Use Proposal.

To assess noise related impacts to general and special-status wildlife species in the Coyote Springs Area of Critical Environmental Concern (ACEC) (located 0.25 mile away from the Project site), detailed construction information provided in Chapter 2, *Proposed Action and Alternatives,* were assessed. Project-related construction noise levels at the Coyote Springs ACEC could be as high as 59.4 and 35.5 dBA Lmax, respectively, during solar panel and collection system construction. The construction noise level at the Coyote Springs ACEC would exceed the terrestrial wildlife exposure threshold of approximately 55 dBA Lmax identified in Section 11.3.15.2.1 of the Solar PEIS (BLM and DOE 2012, p. 11.3 75) as the sound level corresponding to the onset of adverse physiological impacts to terrestrial wildlife in areas of special concern, but would not exceed the 90 dBA Lmax as the threshold at which adverse impacts to wildlife species in the ACEC would result (BLM and DOE 2010, p. 11.3-271). The estimated operation daytime maximum noise level at the Coyote Springs ACEC would be 43.6 dBA, which is below the established threshold of 55 dBA L_{max} for potential impacts on terrestrial wildlife in areas of special concern. Additionally, with the possible exception of some maintenance activities, the Project would not operate during the nighttime hours, and so would result in no nighttime noise impacts to wildlife at the Coyote Springs ACEC.

Mammals

Direct effects to mammal species could result from habitat disturbance and direct injury or mortality to individual mammal species from contact with Project facilities and equipment. In general, overall direct effects on mammal species are expected to be relatively small because the Proposed Action would permanently affect a total of 1,550 acres of suitable habitat for mammal species, which is negligible considering the approximately 83,000 acres of available creosote bush desert scrub habitat surrounding the Project site within the area of indirect effects and the approximately 14 million acres available within the larger Mojave ecoregion (BLM 2014a) that contains similar habitat that occurs within the affected area. Potentially suitable foraging habitat for bat species occurs within the desert washes, but only when inundated by seasonal rains, and no roosting habitat occurs on the Project site due to the lack of caves, mines, cliffs, bridges, structures and trees in proximity to a perennial water source for foraging. Little to no available data currently exists for bat mortalities observed as a result of collision with PV solar panels. While the potential impact on bats is expected to be negligible, ongoing monitoring efforts of the Project

(to be described in the Project Bird and Bat Conservation Strategy [BBCS]) and other proposed solar projects in the region will determine the potential impact to bats by solar development.

The area of potential indirect effects outside the Project site provides additional suitable habitat areas for mammal species. Potential indirect effects include surface water and sediment runoff from disturbed areas, dust generated by Project activities, noise, lighting, spread of invasive species, use of herbicides, accidental spills, habitat fragmentation, loss of foraging habitat, and harassment. Potential indirect effects are expected to be negligible with implementation of Project design features that would control impacts such as soil erosion, dust, stormwater runoff, and water quality during all phases of the Project. In accordance with Dry Lake SEZ specific design features, the fencing around the Project is not expected to block the free movement of mammals, particularly big game species. In addition, the Applicant would prepare and implement a Worker Education and Awareness Plan, Integrated Weed Management Plan, Herbicide Use Proposal, Spill Prevention and Emergency Response Plan, Hazardous Materials and Waste Management Plan, and Lighting Management Plan.

Decommissioning could result in short-term negative impacts on individuals and habitats within and adjacent to the Project site. Potential negative impacts would be reduced as reclamation proceeds and eventually results in long-term benefits as original ground surface contours, soils and native plant communities are restored. A Decommissioning and Site Reclamation Plan would be prepared for the BLM's review and approval.

Amphibians and Reptiles

Direct effects to common amphibian and reptile species with potential to occur within the Project site may occur from habitat disturbance (e.g., reduction, fragmentation, and alteration) and from direct injury or mortality. As described in the BLM's SRMS (BLM 2014a), reptiles tend to take shelter in burrows and do not move out of harm's way. Individual reptiles can be killed or maimed during construction. However, direct effects on amphibian and reptile species would be relatively small for all common amphibian and reptile species as the Project would not result in significant impacts that would cause the population of an amphibian or reptile species to drop below self-sustaining levels. Additionally, the Project development footprint would permanently affect a total of 1,550 acres of potentially suitable habitat for common amphibian and reptile species, which is negligible considering the approximately 83,000 acres of available creosote bush desert scrub habitat surrounding the Project site within the area of indirect effects and the approximately 14 million acres available within the larger Mojave ecoregion (BLM 2014a).

Larger areas of available suitable habitat for amphibian and reptile species occur within the area of indirect effects surrounding the Project site. Potential indirect effects include surface water and sediment runoff from disturbed areas, dust generated by Project activities, use of herbicides, accidental spills, noise, and harassment. Potential indirect effects from the Proposed Action on areas outside the Project site are expected to be negligible with implementation of Project design features that would control impacts such as soil erosion, dust, stormwater runoff, and water quality during all phases of the Project. In addition, the Applicant would prepare and implement a Worker Education and Awareness Plan, Integrated Weed Management Plan, Herbicide Use Proposal, Spill Prevention and Emergency Response Plan, Hazardous Materials and Waste Management Plan, and Lighting Management Plan to reduce potential impacts.

Decommissioning could result in short-term negative impacts on individuals and habitats within and adjacent to the Project site. These negative impacts would be reduced as reclamation proceeds and eventually results in long-term benefits as restoration of ground surface contours, soils, and native plant communities occur over time. A Decommissioning Plan would be prepared for the BLM's review and approval.

Aquatic Biota

Potential effects to aquatic biota could occur from surface water impacts such as sediment and contaminant inputs associated with runoff and groundwater withdrawal. No permanent water bodies or streams are present within the boundaries of the Project site, and so no direct effects to species dependent on perennial streams are expected to occur. The approximately 12 ephemeral desert washes present on the Project site may be directly affected by development of the Proposed Action. However, these ephemeral washes are inundated only during seasonal rain events and under normal conditions do not provide suitable habitat to support aquatic biota that are dependent on perennial streams or regularly inundated waterways. Therefore, no direct effects are expected to occur to aquatic biota.

More suitable habitat for aquatic biota occurs within the area of potential indirect effects around the Project site. The California Wash and Gypsum Wash, which occur within 5 miles of the Project site, connect to other perennial surface water streams, including the Dry Lake, which may provide habitat for aquatic biota. The California Wash carries water into the Muddy River, a perennial stream containing the federally endangered fish species Moapa dace (*Moapa coriacea*). The California Wash however drains into the Muddy River downstream of Moapa dace habitat. The Gypsum Wash drains water from upland areas into Lake Mead. Both streams typically are dry and are not expected to contain permanent aquatic habitat or communities. Project design features to control surface water runoff and sediment deposition into streams and water bodies would minimize any potential indirect surface water impacts in this drainage system. In addition, the Applicant would prepare and implement a Worker Education and Awareness Plan, Integrated Weed Management Plan, Herbicide Use Proposal, Spill Prevention and Emergency Response Plan, and Hazardous Materials and Waste Management Plan to reduce potential impacts.

Groundwater withdrawals from the Garnet Valley groundwater basin as proposed by the Project, have the potential to affect the regional groundwater supply that supports spring-fed aquatic habitats in the region, specifically the Pahranagat and Moapa Valleys. The BLM has concluded that the limited water needs for the Proposed Action (an estimated 1,320 acre-feet of water over an approximately 18 month period for construction-related activities and five to 15afy for the duration of Project operations) would not withdraw groundwater to the extent that adverse effects would occur to aquatic biota (see Section 3.9.5.1 for more information). Further, the Applicant would develop a Groundwater Monitoring and Reporting Plan to be reviewed and approved by the BLM. The Groundwater Monitoring and Reporting Plan would document pre-construction baseline groundwater conditions, guide groundwater monitoring and reporting, and document groundwater use.

Like construction, decommissioning could require groundwater withdrawals. However, the amount of water needed is not expected to exceed the water need for Project construction. A Decommissioning Plan would be prepared for the BLM's review and approval and would address groundwater withdrawal.

Special-Status Wildlife Species

Potential direct and indirect effects to special-status species were evaluated in the Draft and Final Solar PEIS in Section 11.3.12.2 of each document, and are considered in the Dry Lake SEZ SRMS (BLM 2014a). Impacts from the Project would be consistent with those detailed in the Solar PEIS. The Proposed Action could result in direct effects to individual species and vegetation communities that provide suitable habitat for special-status species with potential to occur on the Project site. Direct effects to special-status species could occur through direct injury or mortality to individuals of these species, as well as habitat destruction and modification within the boundaries of the Project site where ground-disturbing activities will occur. Indirect effects to special-status species may occur through habitat fragmentation, collisions with vehicles, solar facilities, and associated infrastructure, as well as offsite runoff, fugitive dust, lighting, predation, use of herbicides, accidental spills, and an increased human presence during the construction and operation and maintenance phases of the Proposed Action.

Impacts to BLM sensitive species are not anticipated to lead to further decline of the species range wide as the SEZ is overall a small portion of the general habitat. Potential indirect effects from the Proposed Action on special-status species are expected to be negligible with implementation of Project design features that would control impacts such as soil erosion, dust, stormwater runoff, and water quality during all phases of the Project. The Applicant would prepare and implement a Worker Education and Awareness Plan, Integrated Weed Management Plan, Herbicide Use Proposal, Spill Prevention and Emergency Response Plan, Hazardous Materials and Waste Management Plan, and Lighting Management Plan. In addition, the Applicant would be required to conduct pre-clearance surveys for BLM sensitive species (e.g., burrowing owls, Gila monster, and chuckwalla) and to work with the BLM to develop appropriate avoidance and minimization measures if species are discovered.

Mitigation Measures

No significant new impacts beyond those identified in the Solar PEIS are anticipated from the Project. Adherence to and implementation of the Project design features prescribed in the Solar PEIS ROD, as summarized in Table 2-7, *Dry Lake Programmatic Design Features*, would reduce potential effects to wildlife and aquatic biota, including common and non-listed special-status species. Some level of impact to general and special-status wildlife, however, would be unavoidable, as identified in the Solar PEIS.

During development of the Dry Lake SRMS, cumulative impacts to general and special-status wildlife species and habitat were identified as an unavoidable impact that cannot be mitigated on site (BLM 2014a, Section 2.4.3.2). To compensate for unavoidable impacts, the SRMS recommended a per-acre fee that developers would pay for acres disturbed by development. The BLM will decide as part of the decision record for this Project if funds will be collected and, if so, the amount of those funds. Any compensatory mitigation measures would be consistent with the procedures described by IM 2013-142 (June 13, 2013) and draft Manual Section 1794, “Regional Mitigation,” which includes guidance for management of funds collected as part of the restoration, acquisition, or preservation portion of the total mitigation fee by an independent third party. Off site mitigation would include restoration of native vegetation and site protection activities. Because wildlife habitat is an ecosystem service provided by native vegetation, mitigation for vegetation would benefit general and special-status wildlife species.

Cumulative Effects

This cumulative effects analysis tiers to Section 11.3.22.4 of the Solar PEIS (BLM and DOE 2010, p. 11.3-349 et seq.; BLM and DOE 2012, p. 11.3-104 et seq.). The list of ongoing and reasonably foreseeable actions near the Dry Lake SEZ, and analyzed for cumulative effects of the Project, are included in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ*, of Section 3.2, *Cumulative Scenario*. For this Project-level analysis, the geographic scope of potential cumulative impacts for general and special-status amphibians, reptiles, and aquatic biota includes other projects that could occur within 20 miles of the Project site, and for general and special-status mammals (including bats) includes other projects that could occur within 10 miles of the Project site. These geographic scopes of analysis are based on species distribution and landforms surrounding the Project site and natural boundaries of the resources affected. The analysis considers potential effects at different scales for different species, with the analysis generally concentrating on the Garnet Valley of southern Nevada.

Several projects in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ,* are within 20 miles of the Project site. Among them, solar projects such as the Moapa Solar Project (2,000 acres), and Nellis Air Force Base Area II Solar (160 acres) are under construction. Solar projects proposed for development along I-15 include Harry Allen Solar Energy Center (715 acres), Dry Lake Solar Energy Center (815 acres), one Bright Source Energy Solar project (2,000 acres), and a First Solar project (5,500 acres). Adjacent projects proposed in the Dry Lake SEZ include the Harry Allen Solar Energy Center and the Dry Lake Solar Energy Center. These and other actions, including approximately 20,000 acres of wind development projects, transmission lines such as the One Nevada Transmission Line Project and TransWest Express Transmission Project, are expected to cause similar types of impacts to wildlife and aquatic biota as the Proposed Action. The cumulative effects of the Proposed Action and other projects in the geographic scope on general and special-status amphibians, reptiles, and aquatic biota would occur through habitat loss, habitat disturbance, wildlife disturbance, injury or mortality. While other projects within the cumulative scenario in combination with the Proposed Action could affect up to approximately 31,000 acres, the geographic scope for cumulative effects to aquatic biota is limited to the Dry Lake area, Muddy River system, and Lake Mead, which contain more than 333,000 acres of available habitat for common amphibians and reptiles. Approximately 302,000 acres of habitat would remain available for amphibians, reptiles, and aquatic biota.

Several projects in Table 3.2-1*,* are within 10 miles of the Project site. Among them, solar projects such as the Moapa Solar Project (2,000 acres) and Nellis Air Force Base Area II Solar (160 acres) are under construction. Solar projects proposed for development along I-15 include Harry Allen Solar Energy Center (715 acres), Dry Lake Solar Energy Center (815 acres), one Bright Source Energy Solar project (2,000 acres), and a First Solar project (5,500 acres). Adjacent projects proposed in the Dry Lake SEZ include the Harry Allen Solar Energy Center and the Dry Lake Solar Energy Center. These and other actions, including approximately 20,000 acres of wind development projects, transmission lines such as the One Nevada Transmission Line Project and TransWest Express Transmission Project, are expected to cause similar types of impacts as the Proposed Action. The cumulative effects of the Proposed Action and other projects in the geographic scope on general and special-status mammals would occur through habitat loss, habitat disturbance, wildlife disturbance, injury or mortality. While other projects within the cumulative scenario in combination with the Proposed Action could affect up to approximately

31,000 acres, approximately 166,000 acres of habitat is available for general and special-status mammals within 10 miles of the Project site. Approximately 135,000 acres of habitat would remain available.

As described above, the closest noise-sensitive receptor to the Project site is the Coyote Springs ACEC where construction noise levels generated by the Proposed Action would be approximately 59.4 dBA L_{max} (noise levels at or above 90 dBA L_{max} are considered likely to adversely affect wildlife). Assuming up to two other construction projects (e.g., proposed solar development of Dry Lake SEZ parcels 1, 5, and 6) would occur at the same time and within the same general vicinity as the Project, the combined noise level at the Coyote Springs ACEC would be up to approximately 64 dBA, which would be below the 90 dBA L_{max} threshold that would adversely affect wildlife. Therefore, Project construction noise levels in combination with other projects at the Coyote Springs ACEC would not result in any new significant cumulative impacts.

When combined with other reasonably foreseeable actions, and existing declines in the quality and quantity of native vegetation, the Proposed Action would result in an incremental addition to current declines in the quality and quality of habitat available for general and non-listed special-status wildlife species and habitat. In addition, the Proposed Action would result in an incremental addition to habitat fragmentation which for some species could lead to population declines and a reduction in long term population viability. It is assumed that all reasonably foreseeable development on BLM lands in the Dry Lake SEZ and surrounding public lands would be subject to the same design features that reduce the potential cumulative impacts to general and special-status wildlife species.

Although the list of specific projects in the cumulative scenario has been updated since the Final Solar PEIS, the scope of potential cumulative effects on general wildlife and special-status species is within that analyzed in the Final Solar PEIS, and no new or increased significant cumulative effects would occur to such species as a result of the Proposed Action.

3.7.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts to non-listed wildlife species and aquatic biota from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012) and because the successful bidders at the Dry Lake SEZ auction have demonstrated a substantial commitment to the solar resource (BLM 2014), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

The size of the area of ground disturbance, water needs and sources, and related details about possible future solar development at the site are not available, and so it is only possible at this time to provide a general analysis of potential future solar development that could occur on the site. If the Proposed Action was not constructed, a different PV project could be constructed and presumably would have substantially similar effects as those of the Proposed Action. Regardless of the technology of a potential future solar project, development would be constrained to the same footprint of parcels 2, 3, and 4.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts to non-listed wildlife species and aquatic biota, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts from that development would likely be similar to those described in the Proposed Action section above.

3.8 Migratory Birds

This section tiers to Draft Solar PEIS Section 11.3.11.2 and 11.3.12 (BLM and DOE 2010, p. 11.3-87et seq. and 11.3-40 et seq.), and Section 11.3.12 (BLM and DOE 2010, p. 11.3-127 et seq.) regarding wildlife and special-status species, including migratory birds, as well as to Final Solar PEIS Sections 11.3.11.2 and 11.3.12 (BLM and DOE 2012, p. 11.3-36 et seq. and 11.3-40 et seq., respectively). This section also refers to the Solar Regional Mitigation Strategy for the Dry Lake SEZ (SRMS) (BLM 2014a). The analysis and other information provided in those documents remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of Dry Lake SEZ parcels 2, 3, and 4.

3.8.1 Affected Environment

Sections 11.3.11.2 and 11.3.12 of the Draft and Final Solar PEIS describe the affected environment for wildlife species, including migratory birds. This analysis relies on those discussions, and refines them as detailed below.

Almost all the birds that occupy the Project area are considered to be migratory birds. The U.S. Fish and Wildlife Service (USFWS) defines a migratory bird as any species or family of birds that live, reproduce, or migrate within or across international borders at some point during their annual life cycle. The Project area contains breeding, nesting, brood rearing, and wintering areas, as well as migration routes that are important for migratory birds. Some migratory birds are also federally listed or BLM sensitive species.

Neotropical migrants may occur on the Project site including: ash-throated flycatcher (*Myiarchus cinerascens*), Bewick's wren (*Thryomanes bewickii*), black-tailed gnatcatcher (*Polioptila melanura*), black-throated sparrow (*Amphispiza bilineata*), Brewer's sparrow (*Spizella breweri*), cactus wren (*Campylorhynchus brunneicapillus*), common poorwill (*Phalaenoptilus nuttallii*), common raven (*Corvus corax*), Costa's hummingbird (*Calypte costae*), crissal thrasher (*Toxostoma crissale*), black-throated sparrow (*Amphispiza bilineata*), sage thrasher (*Oreoscoptes montanus*), phainopepla (*Phainopepla nitens*), greater roadrunner (*Geococcyx californianus*), horned lark (*Eremophila alpestris*), ladder-backed woodpecker (*Picoides scalaris*), Le Conte's thrasher (*Toxostoma lecontei*), lesser nighthawk (*Chordeiles acutipennis*), loggerhead shrike (*Lanius ludovicianus*), Lucy's warbler (*Vermivora luciae*), northern mockingbird (*Mimus polyglottos*), rock wren (*Salpinctes obsoletus*), sage sparrow (*Amphispiza belli*), Say's phoebe (*Sayornis saya*), verdin (*Auriparus flaviceps*), Bendire's thrasher (*Toxostoma bendirei*), Lewis's woodpecker (*Melanerpes lewis*) and western kingbird (*Tyrannus verticalis*). Raptor species may occur on the Project site including: bald eagle (*Haliaeetus leucocephalus*), golden eagle (*Aquila chrysaetos*), American kestrel (*Falco sparverius*), great horned owl (*Bubo virginianus*), long-eared owl (*Asio otus*), red-tailed hawk (*Buteo jamaicensis*), ferruginous hawk (*Buteo regalis*), western burrowing owl (*Athene cunicularia*), peregrine falcon (*Falco peregrinus*), prairie falcon (*Falco mexicanus*), Swainson's hawk (*Buteo swainsoni*), and turkey vulture (*Cathartes aura*). Upland game birds may occur including: chukar (*Alectoris chukar*), Gambel's quail (*Callipepla gambelii*), mourning dove (*Zenaida macroura*), white-winged dove (*Zenaida asiatica*), and wild turkey (*Meleagris gallopavo*).

Based on information gathered from the Nevada Department of Wildlife (NDOW), 17 eagle nests (or eagle sized nests potentially belonging to Buteo species), occur within 10 miles of the Project site as

recently as May 2014, with the nearest recorded nest 1.5 miles within the hills west of the Project site (NDOW 2014). No eagle nests have been recorded and no eagle sightings have been observed within parcels 2, 3, and 4 of the Dry Lake SEZ. All eagle nests and observations occur outside the boundaries of the Project site but within the area of indirect effects. *See Figure 3.8-1 Eagle Nests and Observations*. Additional golden eagle nest surveys will occur in January 2015 to confirm this information (BLM 2014b).

Draft Solar PEIS Table 11.3.11.2-1 (BLM and DOE 2010, p. 11.3-88 et seq.) provides additional detail regarding habitats for representative bird species that could occur on the Project site. Additionally, three federally listed species have a potential to occur within riparian habitats within the region that may travel through the Project site when migrating including: Yuma clapper rail (*Rallus longirostris yumanensis*), yellow-billed cuckoo (*Coccyzus americanus*), and southwestern willow flycatcher (*Empidonax traillii extimus*). Federally listed species are addressed in Section 3.9, *Threatened, Endangered, and Candidate Listed Species*, of this EA.

3.8.2 Applicable Laws, Regulations, Plans, and Standards

3.8.2.1 Migratory Bird Treaty Act of 1918, as amended

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. §703 et. seq.) protects migratory birds and their nests (nests with eggs or young) and prohibits the take of MBTA-listed[1] migratory birds "by any means or manner to pursue, hunt, take, capture (or) kill" except as permitted by regulations issued by the USFWS. The term "take" is defined by USFWS regulation to mean to "pursue, hunt, shoot, wound, kill, trap, capture or collect" any migratory bird or any part, nest or egg of any migratory bird covered by the statute, or to attempt those activities.

3.8.2.2 Fish and Wildlife Conservation Act of 1980, as amended

Under authority of the Fish and Wildlife Conservation Act (16 U.S.C. 2901-2911), the USFWS has identified some migratory birds in the region of the Dry Lake SEZ as "Birds of Conservation Concern." Birds of Conservation Concern include species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the federal Endangered Species Act.

3.8.2.3 Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (BGEPA) (16 USC §§ 668-668d) prohibits the take, defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb," of any bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*). Through recent regulation (50 Code of Federal Regulations [CFR] § 22.26; USFWS 2009), the USFWS can authorize take of bald and golden eagles when the take is associated with, but not the purpose of, an otherwise lawful activity and cannot practicably be avoided.

[1] A list of MBTA protected birds is found at 50 CFR 10.13 and also is available online: http://www.gpo.gov/fdsys/pkg/CFR-2012-title50-vol1/xml/CFR-2012-title50-vol1-sec10-13.xml.

3.8.2.4 Executive Order 13186

Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds, signed in January 2001) (66 Fed. Reg. 3853) requires the BLM to evaluate the effects of federal actions on migratory birds. In addition, there is a Memorandum of Understanding between the BLM and USFWS to promote the conservation of migratory birds (77 Fed. Reg. 60381). The purpose of the Memorandum of Understanding is to strengthen migratory bird conservation by identifying and implementing strategies that promote conservation and avoid or minimize adverse impacts on migratory birds through enhanced collaboration between the two agencies, in coordination with state, tribal, and local governments.

3.8.3 Methodology

This EA tiers to the methodology described in Appendix M of the Draft Solar PEIS to analyze potential effects to migratory birds. Multiple data sources were consulted to determine migratory birds with a potential to occur on the Project site including NDOW's, gap analysis programs (such as the Southwest Regional Gap Analysis Project [SWReGAP]), NatureServe, Great Basin Bird Observatory (GBBO) data, and the results of technical biological resource field surveys conducted by Environmental Science Associates in 2014 (ESA 204a, b, c).

3.8.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features, resource surveys, and management plans, the implementation of which would avoid or reduce potential impacts to migratory birds.

3.8.5 Environmental Consequences

This analysis tiers to the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-78 et seq. and p. 11.3-174 et seq.) and the Final Solar PEIS (BLM and DOE 2012, p.11.3-35 et seq.), and refers to the Dry Lake SEZ SRMS (BLM 2014a). The analysis and information provided in those documents remains applicable except as detailed below.

3.8.5.1 Proposed Action

The Proposed Action would result in impacts to native desert creosote bush scrub vegetation that may provide suitable foraging and other habitat for a number of migratory bird species. The Proposed Action would result in 1,550 acres of permanent ground disturbance and 24 acres of temporary ground disturbance during the construction phase of the Project for the various Project components.

Direct and Indirect Effects

Direct effects to bird species can result from habitat disturbance, direct injury or mortality to individual birds from contact with Project vehicles, solar panels ("lake effect"), fencing, buildings, and transmission lines (including possible electrocution), as well as removal of vegetation communities that provide suitable habitat for such species. In addition, there is the potential for herbicides (used properly or improperly) to have a direct adverse impact on bird species (see Section 3.7, *Wildlife, Excluding Federally Listed Species*, for more information). Direct effects on bird species are expected to be relatively small since Project impacts would be limited to primarily desert creosote bush scrub habitat that

lacks significant areas of trees, which typically provide higher quality nesting and perching habitat for bird species known to occur in the region. Further, since birds are highly mobile, they most likely would move out of harm's way during construction. Additionally, alternative suitable avian habitat exists, particularly for bald and golden eagles, within the mountain ranges to the east and west of the site and for birds generally within the approximately 88,000 acres of available habitat within the area of indirect effects (creosote bush desert scrub habitat and North American warm desert bedrock cliff and outcrop) and the approximately 20 million acres available within the larger Mojave ecoregion (BLM 2014a).

Individual golden eagles nests would not be directly affected by Project activities and habitat modification associated with construction of the Proposed Action. Eagle activity has been recorded within 10 miles of the Project site, and as recently as May, 2014. Four eagle sightings and 17 eagle nests (or eagle sized nests potentially belonging to Buteo species), occur within 10 miles of the Project site (NDOW 2014). See Figure 3.8-1, *Eagle Nests and Observations.* These recorded observations are all located outside the Project site but occur within the area of indirect effects around the site. The Project would affect potential golden eagle foraging habitat through removal of foraging habitat during construction. Potential Project impacts to bird species would be reduced further through implementation of Project design features such as pre-construction clearance surveys, construction buffers around active nests during the breeding season, and preparation and implementation of a Bird and Bat Conservation Strategy (BBCS).

The 0.7-mile overhead 230-kV gen-tie line connecting to the Harry Allen substation could result in an increased risk of electrocution to birds flying through the Project area. However because the additional 230-kV transmission line would be in close proximity to other existing transmission lines, there would be a minor increase in the risk of electrocution to birds throughout the 30-year duration of the Project. Implementation of Avian Power Line Interaction Committee (APLIC) measures and the BBCS would reduce the risk of collision and electrocution.

The area of potential indirect effects around the Project site contains more suitable habitat areas for bird species. Indirect impacts may result from surface water and sediment runoff from disturbed areas; dust generated by Project activities; noise; lighting; spread of invasive species; use of herbicides (see Section 3.7, *Wildlife Excluding Federally Listed Species*, for more information on herbicide impacts), accidental spills; harassment; territory abandonment; increased opportunity for predators; habitat fragmentation; avoidance due to increased human presence; and altered hydrology. For example, the Lower Muddy River Important Bird Area (IBA) is located approximately 4.5 miles to the east of the SEZ boundary. If migratory birds are nearby Project activities that require the use of heavy equipment, they may temporarily be disturbed or displaced by noise (see Section 3.7, *Wildlife Excluding Federally Listed Species*, for more information on noise impacts).

Indirect effects on areas outside the Project site are expected to be negligible and short-term with implementation of Project design features such as pre-construction clearance surveys, construction buffers around active nests during the breeding season (sometimes called "seasonal clearing restrictions"), soil erosion, dust, stormwater runoff, and water quality during all phases of the Project. In addition, the Applicant will prepare and implement a Worker Education and Awareness Plan, Integrated Weed Management Plan, Herbicide Use Proposal, Spill Prevention and Emergency Response Plan, Hazardous Materials and Waste Management Plan, Lighting Management Plan, and BBCS.

The Applicant will avoid potential impacts to migratory birds within the Project area and habitat-altering activities will be scheduled outside the bird breeding season to the extent possible, which generally occurs from February 15th through August 31st. If a Project related activity has to occur during the breeding season, then a qualified biologist would survey the area for nests immediately prior to commencement of construction activities. This shall include burrowing and ground nesting species in addition to those nesting in vegetation. If any active nests are found, an appropriately-sized buffer area would be established in coordination with the BLM and maintained until the young birds fledge. This buffer would be required to connect to other suitable undisturbed habitat. As the above dates are a general guideline, if active nests are observed outside this range they would be avoided as described above.

Measures to reduce impacts from lighting are required because migratory birds are known to collide with lighted structures, including buildings. Any lighting on Project facilities and associated infrastructure would be down-shielded to keep light within the boundaries of the site and the minimum amount and intensity allowable. The minimum amount of lighting required by the FAA would be used. Unless otherwise required by the FAA, only pulsating lights would be used at night, and these would be the minimum number, minimum intensity, and minimum number of flashes per minute allowable by the FAA. Solid red or white lights would not be used as they are known to attract birds. The Applicant will prepare a Lighting Management Plan for BLM approval.

Due to potential for electrocution, collision, and nesting/perching by migratory birds on overhead power lines, the Applicant would follow the following APLIC guidelines to reduce this risk through facility design and comply with MBTA and other federal wildlife laws: Suggested Practices for Avian Protection on Power Lines (APLIC 2006); and Reducing Avian Collisions with Power Lines (APLIC 2012).

The Applicant would be required to complete a BBCS that includes a robust systematic monitoring and adaptive management plan to assist in avoiding and minimizing impacts to migratory birds by the Project. This monitoring would include overall annual mortality, species composition, and spatial differentiation based on established searcher efficiency and carcass persistence trials at the site. Monitoring plans would be designed to account for seasonal differences and fatality events of rare species.

Decommissioning could result in short-term negative impacts on individual birds and habitats within and adjacent to the Project site. Potential negative impacts would be reduced as reclamation proceeds and eventually results in long-term benefits as original ground surface contours, soils and native plant communities are restored. A Decommissioning and Site Reclamation Plan would be prepared for the BLM's review and approval.

Mitigation Measures

No significant new impacts to birds beyond those identified in the Solar PEIS are anticipated from the Project. Adherence to and implementation of the Project design features prescribed in the Solar PEIS ROD, as summarized in Table 2-7, *Dry Lake Programmatic Design Features*, would reduce potential direct and indirect effects. Impacts to migratory bird species would be addressed though a Project-specific BBCS that would include a robust systematic monitoring and adaptive management plan to assist in avoiding and minimizing impacts. Implementation of adaptive management in compliance with the Project BBCS may result in the identification of future mitigation measures that would further compensate for any unacceptable mortality levels of migratory birds identified during monitoring. Although application of these design

features would reduce impacts to migratory birds, disturbance of approximately 1,550 acres of habitat as a result of the Proposed Action would remain for the duration of the Project.

The SRMS identified the impact to migratory birds from solar development within the SEZ as a potential impact that may warrant regional mitigation (BLM 2014a, Section 2.4.3.2). To compensate for unavoidable impacts, the SRMS recommended a per-acre fee that developers would pay for acres disturbed by development. The BLM will decide as part of the decision record for this Project if funds will be collected and, if so, the amount of those funds. Any compensatory mitigation measures will be consistent with the procedures described by IM 2013-142 (June 13, 2013) and draft Manual Section 1794, "Regional Mitigation," which includes guidance for management of funds collected as part of the restoration, acquisition, or preservation portion of the total mitigation fee by an independent third party. Specific mitigation funds would be set aside to locate and pull hollow mine markers in the district to help offset potential impacts to migratory birds. Regional mitigation actions funded to offset those impacts may require additional NEPA analysis by the BLM prior to implementation.

Cumulative Effects

This cumulative effects analysis tiers to Section 11.3.22.4 of the Solar PEIS (BLM and DOE 2010, p. 11.3-349 et seq.; BLM and DOE 2012, p. 11.3-104 et seq.). The list of ongoing and reasonably foreseeable actions near the Dry Lake SEZ, and analyzed for cumulative effects of the Project, are included in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ*, of Section 3.2, *Cumulative Scenario*. For this project-level analysis, the geographic scope of potential cumulative impacts for birds (including raptors such as golden eagle) includes other projects that could occur within 10 miles of the Project site.

Several projects in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ,* are within 10 miles of the Project site. Among them, solar projects such as the Moapa Solar Project (2,000 acres) and Nellis Air Force Base Area II Solar (160 acres) are under construction. Solar projects proposed for development along I-15 include Harry Allen Solar Energy Center (715 acres), Dry Lake Solar Energy Center (815 acres), one Bright Source Energy Solar project (2,000 acres), and a First Solar project (5,500 acres). Adjacent projects proposed in the Dry Lake SEZ include the Harry Allen Solar Energy Center and the Dry Lake Solar Energy Center. These and other actions, including approximately 20,000 acres of wind development projects, transmission lines such as the One Nevada Transmission Line Project and TransWest Express Transmission Project, are expected to cause similar types of impacts as the Proposed Action. The cumulative effects of the Proposed Action and other projects in the geographic scope on migratory birds would occur through habitat loss, habitat disturbance, wildlife disturbance, injury, or mortality. While other projects within the cumulative scenario in combination with the Proposed Action could affect up to approximately 31,000 acres, approximately 166,000 acres of available habitat for migratory bird species occur within 10 miles of the Project site that provide suitable habitat for mammal and bird species. Approximately 135,000 acres of habitat would remain available.

Although the list of specific projects in the cumulative scenario has been updated since the Final Solar PEIS (see Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ,* of this EA), the scope of potential cumulative effects on migratory birds is within that analyzed in the Final Solar PEIS, and no new or increased significant cumulative effects would occur to such species as a result of the Proposed Action.

3.8.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts to migratory birds from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012) and because the successful bidders at the Dry Lake SEZ auction have demonstrated a substantial commitment to the solar resource (BLM 2014c), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

Specific locations of activity, necessary equipment, and related details about possible future solar development at the site are not available, and so it is only possible at this time to provide a general analysis of potential future solar development that could occur on the site. If the Proposed Action was not constructed, a different solar project could be constructed and presumably would have substantially similar effects as those of the Proposed Action since the general project footprint would be the same.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts related to birds, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts to birds from that development would likely be similar or louder to those described in the Proposed Action section above.

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3.9 Threatened, Endangered, and Candidate Wildlife Species

This section tiers to Draft Solar PEIS Section 11.3.12 (BLM and DOE 2010, p. 11.3-127 et seq.) regarding species listed under the federal Endangered Species Act (ESA), as well as to Final Solar PEIS Sections 11.3.12 (BLM and DOE 2012, p. 11.3-35 et seq. and 11.3-40 et seq., respectively). This section also refers to the Solar Regional Mitigation Strategy for the Dry Lake SEZ (SRMS) (BLM 2014a). The analysis and other information provided in those documents remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of Dry Lake SEZ parcels 2, 3, and 4.

3.9.1 Affected Environment

Sections 11.3.11 and 11.3.12 of the Draft and Final Solar PEIS describe the affected environment in the Dry Lake SEZ for ESA-listed species, which generally is classified as Mojave creosote bush scrub habitat. This analysis relies on those discussions, and refines them as detailed below.

After a thorough review of the list issued by the U.S. Fish and Wildlife Service (USFWS) of Nevada's Protected Species, the USFWS's Critical Habitat Mapper (USFWS 2014a), and species evaluated for consideration within the Solar PEIS Programmatic BA (BLM 2012a), as well as field investigations, the BLM has determined that five federally listed species have the potential to occur in the Project area or potentially be affected by the Proposed Action including: desert tortoise (*Gopherus agassizii*), Moapa dace (*Moapa coriacea*), Yuma clapper rail (*Rallus longirostris yumanensis*), yellow-billed cuckoo (*Coccyzus americanus*), and southwestern willow flycatcher (*Empidonax traillii extimus*).

3.9.1.1 Desert Tortoise

Desert tortoise is listed as federally threatened under the Federal ESA. The Proposed Action is located within the Northeastern Mojave Recovery Unit (USFWS 2010). The Northeastern Mojave Recovery Unit extends into extreme southwestern Utah and northwestern Arizona and encompasses approximately 4.85 acres of suitable desert tortoise habitat. The east end of the unit extends south from the Beaver Dam Mountains, across the north end of the Virgin Mountains, down to the Colorado River. From the Colorado River at Las Vegas Bay, the southern boundary extends west generally along Las Vegas Wash through the city of Las Vegas to the Spring Mountains. From here, the western boundary extends north up the Sheep Mountains. This recovery unit includes the Beaver Dam Slope, Gold Butte-Pakoon, and Mormon Mesa Critical Habitat Units. It also includes the Coyote Springs Area of Critical Environmental Concern (ACEC), Mormon Mesa ACEC, and Arrow Canyon ACEC, as well as the Lake Mead National Recreation Area (NRA) south to Las Vegas Bay, Grand Canyon-Parashant National Monument on the Arizona Strip, and the eastern edge of Desert National Wildlife Range.

According to the USFWS, desert tortoise has the potential to occur within the Dry Lake SEZ and within the Project area, and designated Critical Habitat for this species is located within the Coyote Springs ACEC approximately 2.5 miles to the west of the SEZ, which includes an approximately 10,000 acre potential translocation area for desert tortoise from the Project site (Figure 3.9-1, *Desert Tortoise Translocation*). According to the Southwest Regional Gap Analysis Project (SWReGAP) habitat

suitability model, approximately 5,665 acres of potentially suitable habitat for this species occurs in the area of direct effects within the Dry Lake SEZ as a whole (BLM 2012a). The U.S. Geological Survey (USGS) desert tortoise model identifies the SEZ as having overall high habitat suitability for desert tortoise (suitability score greater than or equal to 0.5 out of 1.0). About 70,250 acres (284 km2) of potentially suitable habitat occurs in the area of potential indirect effects around the Dry Lake SEZ (BLM 2012b). The area of potential indirect effects for the Project includes a 5 mile radius around the center of the Project area consistent with the Programmatic BA/BO (BLM 2012a). The larger recovery unit includes approximately 4.85 million acres of suitable desert tortoise habitat (USFWS 2010).

Historical survey data for the Project area indicates that the area within the Dry Lake SEZ boundary consists of high to moderate density tortoise habitat and very low to very high density tortoise habitat within the proposed translocation area. High value contagious habitat for desert tortoise is between 0.9-0.8 within the SEZ and between 0.9-0.7 for the translocation area. In addition, the SEZ boundary is within the least cost corridor for the desert tortoise, known as habitat linkages for sustaining healthy populations (BLM, 2014b). On the basis of previous surveys conducted in the Coyote Springs ACEC located to the northwest of the Dry Lake SEZ, the USFWS preliminarily estimated that the Dry Lake SEZ may support up to 213 desert tortoises (BLM and DOE 2010).

Desert tortoise surveys conducted by Environmental Science Associates, with assistance from Newfields and Ironwood Consulting biologists, between September 8 and October 16, 2014 for the Project area and portions of the potential translocation area. Survey of the approximately 10,000 acre translocation area was divided among the three applicants in the Dry Lake SEZ; the data will be combined and reflected in the Desert Tortoise Translocation Project for the SEZ. All surveys followed USFWS guidance (pre-project clearance and translocation guidance) and occurred under the direction of Ironwood Consulting, which holds a Federal Fish and Wildlife Recovery Permit under Section 10 of the Federal ESA and related List of Authorized Individuals, a Scientific Collection/Band Permit from Nevada Department of Wildlife (NDOW), and a BLM Research Permit. A total of 22 desert tortoises were identified within the Project area (see Table 3.9-1 for a summary of survey findings). Based on those observations, desert tortoise abundance estimates were calculated for the Project area using the USFWS 2010 formula for estimating tortoise abundance (Environmental Science Associates 2014a). A total of 44 desert tortoises were estimated to occur in the Project area.

TABLE 3.9-1
PROJECT AREA SURVEY DATA SUMMARY

	Total	Project Area
Acres Surveyed	6,475	2,150
Survey Miles	1,792	595
Live Desert Tortoise	51	22
Tortoise Abundance Estimate	96	44
Desert Tortoise Burrows	984	399
Desert Tortoise Scat	154	32
Desert Tortoise Carcass	111	37
Other Burrows	672	242

SOURCE: Environmental Science Associates, 2014a

The potential for both genetic and demographic connectivity occurs throughout the Dry Lake Valley, particularly within the Coyote Springs Critical Habitat Unit to the northwest of the Project area (BLM 2014b). A connectivity area is located on the northwestern boundary of the SEZ. The corridor is designated as desert tortoise Critical Habitat within the Coyote Springs Desert Wildlife Management Area (DWMA) (Clark County 2007), and is approximately 1.5 miles to 3 miles wide within the area of indirect effects, and averaging 6 miles across its full length. The connectivity area narrows to the terminus at the Nellis Small Arms Range approximately 5 miles southwest of the SEZ, and continues to the north for approximately 25 miles where it widens and connects with additional Critical Habitat to the east.

3.9.1.2 Moapa Dace

The Moapa dace is a small fish listed as endangered under the ESA. This species is endemic to the Muddy (Moapa) River and associated thermal spring systems within the Warm Springs Area of Clark County, Nevada. Historically, the Moapa dace inhabited springs and approximately 10 miles of the upper Muddy River system. This species is known to occur in spring habitats of the Warm Springs Area, approximately 15 miles north of the Project area. Critical Habitat for this species has not been designated.

The Moapa dace currently occupies a variety of habitats in the Warm Springs Natural Area, including spring pools, tributaries (spring outflows), and the upper 2.48 miles of the 24.8 mile-long mainstem Muddy River (post-Hoover Dam). Habitat use varies among larval, juvenile, and adult life stages. Larval dace are observed only in the upper-warmest reaches of tributaries and occur most frequently in slack water, suggesting that spawning only occurs near the spring heads in the extreme upper end of the Muddy River headwaters. Juveniles occur throughout tributaries and occupy habitats with increasing flow velocities as they grow. Adults inhabit both tributaries and the mainstem of the Muddy River, but are most often seen in the mainstem except during spawning when they are in the upper end of the thermal tributaries.

The Warm Springs Natural Area and the Moapa Valley National Wildlife Refuge encompass numerous springs that form the headwaters of the Muddy River. No direct surface connectivity to suitable habitat for the Moapa dace occurs within the Project area or the Dry Lake SEZ, due to the lack of perennial streams; however, hydrologic connectivity could potentially exist between suitable habitat for the Moapa dace within the Muddy River System and the proposed locations of groundwater withdrawal for the Project. The Warm Springs Natural Area is a groundwater discharge area consisting of about 20 regional springs, with numerous seeps and wetlands. This area is part of the White River Groundwater Flow System, a regional groundwater flow system located in Southern Nevada. The White River Groundwater Flow System encompasses many smaller basins throughout several counties within the State of Nevada and includes the Garnet Valley Basin (Basin 216) that is proposed to be used for Project-related groundwater withdrawals. The USFWS believes that groundwater withdrawals from the Garnet Valley groundwater basin associated with solar energy development in the Dry Lake SEZ could reduce the regional groundwater supply that supports spring-fed aquatic habitats in the region, including habitats in the Pahranagat and Moapa Valleys (BLM and DOE 2010).

3.9.1.3 Yuma Clapper Rail

Yuma clapper rail is listed as endangered under the ESA. The range of this species in Nevada includes the Virgin River, Lower Muddy River, Colorado River around Lake Mojave, Las Vegas Wash, and Big

Marsh along the Las Vegas Wash (approximately 20 miles south of the SEZ). Surveys along the Las Vegas Wash between 2009 and 2014 resulted in zero detections there. At Overton Wildlife Management Area (approximately 25 miles east of the SEZ), annual surveys have detected the species every year (USFWS 2014b). The Overton Wildlife Management Area lies in the lower extremes of the Moapa and Virgin river valleys where they flow into the north end of the Overton Arm of Lake Mead. The species likely follows river/lake corridors for dispersal. Critical Habitat for the Yuma clapper rail has not been designated by the USFWS.

3.9.1.4 Yellow-billed Cuckoo

The yellow-billed cuckoo is listed as threatened under the ESA. The range of this species in Nevada includes the Lower Muddy River, Virgin River, Pahranagat Valley, Las Vegas Wash, and historically Warm Springs Natural Area. Historically, the species was documented at Warm Springs but it has not been detected there since a July 2010 fire. Warm Springs is located 21 miles northeast of the SEZ. At Overton Wildlife Management Area (approximately 25 miles east of the SEZ), annual surveys have detected the species almost every year. The species also was detected along the Las Vegas Wash (approximately 20 miles south of the SEZ) in 2013 and 2014. The species is closely tied to riparian habitat and is not expected to widely disperse over non-riparian areas. On August 15, 2014, the USFWS proposed to designate Critical Habitat for the western yellow-billed cuckoo (*Coccyzus americanus*) in 80 separate units in Arizona, California, Colorado, Idaho, Nevada, New Mexico, Texas, Utah and Wyoming (USFWS 2014c); the nearest Critical Habitat area is located approximately 100 miles south of the Project site near Fort Mojave and the Topock Marsh Lake area on the Arizona/California border (USFWS 2014b).

3.9.1.5 Southwestern Willow Flycatcher

The southwestern willow flycatcher is listed as endangered under the ESA. The range of this species in Nevada includes the Virgin River, Lower Muddy River, Pahranagat Valley, and Warm Springs Natural Area. Critical Habitat for the species exists along the Virgin River, north of Lake Mead NRA. The species was documented annually at Warm Springs prior to a July 2010 fire but was absent until detected again in 2014. Warm Springs is located 21 miles northeast of the Dry Lake SEZ. Annual surveys have detected the species at Overton Wildlife Management Area (approximately 25 miles east of the SEZ). The species is closely tied to riparian habitat and is not expected to widely disperse over non-riparian areas. Critical Habitat for the southwestern willow flycatcher has been designated by the USFWS, and the nearest Critical Habitat is located approximately 140 miles southeast of the Project site, near Burro Creek and Alamo Lake State Park in Arizona (USFWS 2014a).

3.9.2 Applicable Laws, Regulations, Plans, and Standards

Federally listed species are currently managed in accordance with USFWS recovery plans or conservation agreements; the Endangered Species Act of 1973, as amended (16 U.S.C. §1531 et seq.); and BLM Manual 6840, regarding Special Status Species Management. The Federal Endangered Species Act (ESA) was established to protect wildlife species and habitats from extinction and diminishment. For purposes of the identified species, The Federal ESA is administered by the USFWS and applies to federally listed species and habitat occupied by the federally listed species. ESA Section 9 forbids acts that result in the

"take" of listed species. The term "take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such activity (16 U.S.C. §1532[18]).

3.9.3 Methodology

This analysis of potential Project impacts on the five ESA-listed wildlife species tiers to the methodology described in Appendix M of the Solar PEIS. Potential effects on sensitive species within the Project area were determined through review of the Programmatic BA, information provided by the BLM and USFWS, and existing conditions observed during field and protocol-level surveys conducted by Environmental Science Associates (ESA 2014a, b and c). The impacts associated with the Proposed Action were determined based on the Project-specific characteristics such as area of proposed land disturbance, the technology utilized, water requirements, and amount of earth-moving or altering surface features required.

3.9.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features, resource surveys, and management plans that are proposed to avoid or reduce potential impacts to threatened, endangered, and candidate wildlife species.

3.9.5 Environmental Consequences

This analysis tiers to the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-78 et seq. and p. 11.3-174 et seq.) and the Final Solar PEIS (BLM and DOE 2012, p.11.3-35 et seq.), and refers to the SRMS (BLM 2014a). The analysis and information provided in those documents remains applicable except as detailed below. Impacts to Yuma clapper rail and yellow-billed cuckoo are not discussed in the Solar PEIS; however, the impacts as described below are expected to be similar to those described for southwestern willow flycatcher and do not result in any new significant effect to the species.

3.9.5.1 Proposed Action

The Proposed Action would result in impacts to native desert creosote bush scrub vegetation that may provide suitable habitat for ESA listed species. The Proposed Action would result in 1,550 acres of permanent ground disturbance and 24 acres of temporary ground disturbance during the construction phase of the Project for the various Project components and could result in indirect impacts to habitat within the general vicinity of the Project and in the translocation area into which desert tortoise would be relocated.

Direct and Indirect Effects

Potential direct and indirect effects to ESA listed species were evaluated in the Draft and Final Solar PEIS in Section 11.3.12.2 of each document, and are considered in the SRMS (BLM 2014a). This section presents the potential effects of the Proposed Action on listed species and designated Critical Habitat that may occur within the Project area. Direct effects would be related to the amount of land disturbance, the duration and timing of construction and operation periods, and the habitats affected by development within the Project area. Indirect effects may occur as a result of erosion of disturbed land surfaces, and disturbance and harassment of animal species, and is considered proportional to the amount of land disturbed.

Desert Tortoise

Potential effects to desert tortoises within the Project area may occur during the construction, operation, maintenance, and decommissioning of portions of the Project through the introduction of increased human activity in the area; handling of desert tortoises for radio telemetry, health assessment and translocation; removal of habitat; and habitat fragmentation.

As currently designed, approximately 1,550 acres of the Project area would be permanently impacted, and 7.25 miles of desert tortoise fencing would be installed around the perimeter of the Project area to exclude desert tortoises. Direct effects are limited to the boundaries of the Project area. Estimates by the USFWS of desert tortoise density in the Coyote Springs ACEC to the west of the Project area indicate that development within the 5,665 acres of suitable habitat in the larger Dry Lake SEZ may directly affect up to 213 desert tortoises (BLM and DOE 2010). Based on the results of the focused surveys conducted in 2014 by Environmental Science Associates, 44 tortoises were estimated based on applicable USFWS methodology to occur within the Project area and may be directly impacted by the Project. The final number of tortoises actually affected by the Project would be determined based on the results of the clearance surveys conducted prior to Project construction (ESA, 2014a).

The area of indirect effects is defined as the area within 5 miles of the Project area (consistent with the Solar PEIS Programmatic BO) and includes the proposed translocation areas. Indirect effects do not involving ground-disturbing activities but instead consider effects from dust, noise, increased predation, lighting and accidental spills associated with the Project that have the potential to impact desert tortoise and their habitat in the surrounding area. The magnitude of indirect effects would decrease as distance from the Project area increases, particularly due to the amount of available habitat in the region for desert tortoises. Potential indirect effects from the Proposed Action would be addressed through implementation of Project design features that control impacts such as soil erosion, dust, stormwater runoff, and water quality during all phases of the Project. In addition, the Applicant would prepare and implement a Worker Education and Awareness Plan, Raven Management Plan, Integrated Weed Management Plan, Herbicide Use Proposal, Spill Prevention and Emergency Response Plan, Hazardous Materials and Waste Management Plan, and Lighting Management Plan.

The desert tortoises within the translocation area(s) would not be directly affected by the Proposed Action, but would be indirectly affected by the movement of translocated desert tortoises from the Project area to these sites. Increased competition for resources and species niche would occur as a result of translocating desert tortoises. Translocated populations may encounter increased intra-specific interactions, an increased incidence of aggressive interactions between individuals and an increased incidence of predation that may not have occurred in the absence of translocation. Density-dependent effects on resident populations are expected to be minor because USFWS guidance limits the number of tortoises that can be translocated based on the population densities for the recovery unit. Only tortoises determined to be healthy and asymptomatic will be translocated (USFWS 2011). Since there is not a 100 percent guarantee that the translocated tortoises are disease-free, there is a minor risk that resident tortoises may be adversely affected due to the spread diseases. All translocation activities would be guided by a USFWS-approved Desert Tortoise Translocation Plan.

The Project may result in additional local habitat fragmentation for desert tortoises in the immediate area, however, this local habitat fragmentation would not occur at a level that would significantly change the

dispersal opportunities for desert tortoises moving throughout the area. The level of fragmentation may be exacerbated by the installation of exclusionary fencing at the perimeter of the SEZ and/or individual project areas. It should be noted however, that the exclusionary fencing would reduce potential future direct effects to desert tortoises by preventing them from moving on to the Project site (BLM and DOE 2010).

The Project would not adversely affect local or regional genetic or demographic connectivity of the desert tortoise population. A connectivity area is located on the northwestern boundary of the SEZ. The corridor is designated as desert tortoise Critical Habitat within the Coyote Springs ACEC (Clark County 2007). This area was removed from the developable area of the Dry Lake SEZ prior to the BLM's competitive auction and would remain in place after construction of the Project (BLM 2014a). The connectivity area narrows to the terminus at the Nellis Small Arms Range approximately 5 miles southwest of the SEZ, and continues to the north for approximately 25 miles where it widens and connects with additional Critical Habitat to the east. The connectivity area allows genetic and demographic connectivity to desert tortoises moving through the region and would not be impeded by the Proposed Action. Additionally, the Coyote Springs ACEC is adjacent to the Mormon Mesa ACEC and the Arrow Canyon wilderness, and movement between these two ACECs can occur.

The nearest Critical Habitat is located within the Coyote Springs ACEC to the northwest of the Project area, outside of the area of direct effects. Construction, operation, maintenance, and decommissioning of the Project would not result in direct effects to Critical Habitat for desert tortoise or any primary constituent elements. The Proposed Action may have an indirect effect on designated Critical Habitat for desert tortoise through the translocation of desert tortoises into areas within and adjacent to the Coyote Springs ACEC as described above.

Moapa Dace

The Moapa dace does not occur within the boundaries of the Project area due to the lack of perennial streams that occur on the Project site and vicinity. However, groundwater withdrawals from the Garnet Valley groundwater basin as proposed by the Project, could potentially impact the regional groundwater supply that supports spring-fed aquatic habitats in the region, specifically the Pahranagat and Moapa Valleys. Although these areas are outside of the Project area, they are included for evaluation because of the possible indirect effect of groundwater withdrawal by the Project.

The Proposed Action would implement the following applicable measures from the Solar PEIS Programmatic BO. The USFWS anticipates that implementation of these measures would reduce potential effects to groundwater-dependent species by permitting only those projects that would not withdraw groundwater to the extent that adverse effects would occur in habitat for listed species (USFWS 2012).

- The Project is sited and designed to avoid direct and indirect impacts on important, sensitive, or unique resources, including aquatic habitat and habitats supporting listed species.
- Although the Project would not completely avoid surface water or groundwater withdrawals that have the potential to affect sensitive habitats (e.g., aquatic, wetland, and riparian habitats), the Applicant has demonstrated, through hydrologic modeling, that the withdrawals required for the Project would not affect groundwater discharges that support listed species or their habitats (see analysis below).

- The Applicant would develop a Groundwater Monitoring and Reporting Plan (GMRP) to be reviewed and approved by the BLM. The GMRP would document pre-construction baseline groundwater conditions, guide groundwater monitoring and reporting, and document groundwater use.
- The Project would not result in a point of groundwater withdrawal being moved closer to locations supporting the groundwater-dependent species and (or) increased pumping in the regional carbonate aquifer in areas with a significant potential to affect habitat for those species (albeit the total consumptive groundwater use may remain the same).

No direct effects to Moapa dace are anticipated to occur during construction, operation, maintenance, or decommissioning of the Project because no perennial streams occur within the Project area that could support this species. Additionally, the Project area does not contain the Muddy River and associated thermal spring systems within the Warm Springs Natural Area. Therefore, no direct effects to streams that could support this species would occur.

Indirect effects to Moapa dace could potentially occur as a result of the Project due to groundwater withdrawal for the construction, operation, maintenance, and decommissioning phases of the Project. An estimated 1,350 acre-feet of water would be required over an approximately 18-month period for construction-related activities. After construction is complete, the Project's water consumption during operations would be approximately five to 15 afy. The Applicant would purchase up to 1,350 acre-feet of water for construction from existing water rights held by municipal and private entities. This water would be withdrawn from the Garnet Valley Basin and potentially other basins in the Las Vegas Valley, including the Black Mountain Basin. Specifically, up to 900 acre-feet of water for construction would be purchased from the City of North Las Vegas and up to 450 acre-feet from a private holder of water rights. Water supply for the Proposed Action would be met through purchases of water from holders of existing water rights and as such would not exceed Nevada Department of Water Resources (NDWR) authorized pumping. The remainder of the Project's construction water requirements, if any, would be met by transporting water to the site from water sources in the Las Vegas Metropolitan Area.

Even under existing water rights, the withdrawal of groundwater for Project construction, operation, maintenance, and decommissioning activities could result in very minor lowering of water levels of the source aquifer if it represents new water pumping (as would be the case with some or all of the proposed water use). Depending on site-specific geology, withdrawals exceeding the sustainable yield of the groundwater basin could cause permanent loss of available storage in the aquifer and land subsidence in certain areas. In addition, groundwater withdrawals exceeding the defined sustainable yield for the basin could lower groundwater levels to the degree that nearby water wells are adversely affected. Withdrawal of groundwater also could affect groundwater flow and the timing such that streams, springs, seeps, and wetlands are adversely affected depending on the local connectivity of surface water and groundwater features.

As discussed in Section 11.3.9.1.3 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3 56 et seq.), the NDWR, led by the State Engineer, is the agency responsible for managing both surface water and groundwater resources, which includes overseeing water right applications, appropriations, and interbasin transfers. The NDWR generally does not grant new water rights in a basin that is over-appropriated. Because the Garnet Valley groundwater basin is over-appropriated with up to approximately 3,400 ac-ft/yr

committed for beneficial uses in Garnet Valley, the Applicant plans to meet supply requirements through existing water rights obtained from municipal and private holders.

This analysis tiers to Sections 5.9 (BLM and DOE 2010, p. 5-37 et seq.) and 11.3.9.2 (BLM and DOE 2010, p. 11.3-57) of the Draft Solar PEIS and Sections 5.9 (BLM and DOE 2012, p. 57 et seq.) and 11.3.9.2 (BLM and DOE 2012, p. 11.3-18) of the Final Solar PEIS and To Appendix M of the Draft Solar PEIS, which provides details of the aquifer characteristics of the Garnet Valley hydrologic basin and presents results of numeric groundwater flow model analysis conducted to examine the influence of potential groundwater withdrawal to support utility-scale solar energy development at the Dry Lake SEZ. Two additional existing studies were also relied upon for conclusions regarding Moapa dace as outlined below: UFWS's Intra-Service Programmatic Biological Opinion on Moapa Dace (USFWS 2006); and the Mifflin and Associate's (Mifflin) Hydrogeologic and Groundwater Modeling Analysis for the Moapa Paiute Energy Center Study (Mifflin 2001).

Because the interconnections among adjacent basins are not fully understood in combination with uncertainty regarding future water use in the White River Groundwater Flow System, the Programmatic BO for the Western Solar Program concluded that adverse effects may occur to the Moapa dace as a result of groundwater use for solar projects in the Dry Lake SEZ (BLM 2012a). The Programmatic BO noted however the need to evaluate the project-level effects of specific projects in the Dry Lake SEZ. Given the studies summarized below, the BLM concludes that the limited water needs for the Proposed Action- an estimated 1,350 acre-feet of water over an approximately 18-month period for construction-related activities and five to 15afy for the duration of Project operations – would not withdraw groundwater to the extent that adverse effects would occur to habitat for the Moapa dace.

In accordance with the applicable measures in the Solar Programmatic BO, the Applicant would develop a GMRP to be reviewed and approved by the BLM. The GMRP would document pre-construction baseline groundwater conditions, guide groundwater monitoring and reporting, and document groundwater use.

Solar PEIS. The groundwater model assessment presented in the Draft Solar PEIS evaluated the potential drawdown and associated affects for groundwater pumping rates over a 20-year period for three water demand scenarios (high, medium, and low). The analyses of groundwater included a basin-scale groundwater budget and a simplified, one-dimensional groundwater model of potential groundwater drawdown. Detailed methods and results are presented in Appendix O of the Final Solar PEIS. Table 11.3.9.2-1 in the Final Solar PEIS (p. 11.3-27) presents the revised estimates of water requirements for both construction and operation of solar facilities at the proposed Dry Lake SEZ assuming full build out of the SEZ. A basin-scale groundwater budget was assembled using available data on groundwater inputs, outputs, and storage, with results presented in Table 11.3.9.2-2 (p. 11.3-28) in the Final Solar PEIS.

The estimated total water use requirements during the peak construction year assuming full build out of the SEZ assessed in the Final Solar PEIS are as high as 1,740 ac-ft/yr, which is more than twice the estimated annual inputs to the basin as per the water budget presented in Table 11.3.9.2-2 (p. 11.3-28) in the Final Solar PEIS and substantially higher than the water use estimated for the Proposed Action. The low, medium, and high pumping scenarios result in groundwater withdrawals that range from 26 to 4,586 ac-ft/yr, or 520 to 91,720 ac-ft over the 20 year operational period, also substantially higher than that anticipated for the Proposed Action. The proposed water use for the Proposed Action is reduced as

compared to the range of water demand scenarios assessed for construction, operation, maintenance, and decommissioning phases for solar development within the Dry Lake SEZ and presented in the Solar PEIS. The other two projects proposed within the Dry Lake SEZ propose to meet water supply needs via offsite sources (SWCA 2014; NV Energy 2014).

Intra-Service Programmatic Biological Opinion. The effects of groundwater pumping on the Moapa dace were analyzed in a 2006 Intra-Service Programmatic Biological Opinion, which evaluated the effects of the multiple parties withdrawing 16,100 afy of groundwater from the carbonate aquifer in Coyote Spring Valley and California Wash on the endangered Moapa dace (USFWS 2006). The USFWS determined that the cumulative withdrawal of 16,100 afy from Coyote Spring Valley and California Wash is not likely to jeopardize the continued existence of the Moapa dace.

Calpine Study. The potential impacts of water withdrawal in the Project vicinity also were evaluated in the Hydrogeologic and Groundwater Modeling Analysis for the Calpine Company Moapa Paiute Energy Center proposed project (Mifflin 2001). The Calpine-proposed project site is located in the White River Groundwater Flow System. The proposed energy project required 7,000 ac-ft/yr of groundwater extraction from the California Wash hydrographic basin for purposes of electric power generation. The study used various models/simulations to estimate 25- and 45-year drawdown and to assess the impacts of the proposed 7,000-ac-ft/yr appropriation in the site area and hydrologic impacts in major spring areas.

Three modeling scenarios were developed by varying boundary conditions to demonstrate the range of credible impacts of 7,000-ac-ft/yr pumping stress on the Muddy River Springs Area, assuming hydraulic continuity between the areas. The modeling analyses concluded that only under the least probable scenario are observable changes expected to the Muddy River Springs Area hydrology, and those would only occur during prolonged drought periods (Mifflin 2001).

Scenario one, which was judged the most probable response of the natural system to pumping, produced a decrease in the Muddy River Springs Area discharge of about 1 percent at 25 years and 1.3 percent in 45 years. These are equivalent to about 0.5 cubic feet per second (cfs) of the 51 cfs, which, on average, flows to the discharge area. Scenario two, which was less probable, resulted in reduction of the Muddy River Springs Area discharge of about 1 percent in 25 years and a 1.1 percent in 45 years. Scenario three which was the least probable case projected 7.5 percent reduction in flow to the Muddy River Springs Area in 25 years and a 10 percent decrease at 45 years (or a 5 cfs decrease).

Yuma Clapper Rail

Suitable habitat for Yuma clapper rail does not occur within or near the Project area. There currently is a lack of general information on Yuma clapper rail dispersal beyond its known habitat and range. The species likely follows river/lake corridors for dispersal. Two Yuma clapper rails have been recorded as mortalities at existing solar facilities in California; one of those facilities was located close to suitable habitat and had observations within less than 5 miles (BLM 2014c) and the cause of death could not be determined at either facility.

There is no evidence to indicate that dispersal would occur within the SEZ or area of potential effects of the Project. The Project is not proposed within a path that would connect any aquatic features, and the closest current documented records for the species and its habitat is over 25 miles from the Proposed

Action. The low number of recorded mortalities, the lack of habitat onsite, and the long distance from any known occurrence suggests low potential for direct morality to Yuma clapper rail related to the Proposed Action. As described above for Moapa dace, the Project would not withdraw groundwater to the extent that indirect effects to riparian habitat would occur. Based on the best available science, the potential direct and indirect effects posed by the Proposed Action to the Yuma clapper rail are expected to be negligible. The Bird and Bat Conservation Strategy (BBCS) to be prepared for the Project would include a monitoring and adaptive management plan to assist in avoiding, minimizing, and detecting impacts to migratory birds by the Project (BLM 2014c).

Yellow-billed Cuckoo

Suitable habitat for yellow-billed cuckoo does not occur within or near the Project area. There currently is a lack of general information on yellow-billed cuckoo dispersal beyond its known habitat and range. The species likely follows river/lake corridors for dispersal. One yellow-billed cuckoo mortality has been recorded at a solar facility in Ivanpah in San Bernardino County, California (BLM 2014c).

There is no evidence to indicate that dispersal would occur within parcels 2, 3, or 4 or the Dry Lake SEZ as a whole. The Project is not within a path that would connect any aquatic features and the closest current documented records for the species and its habitat is more than 20 miles from the Project site. The low number of recorded mortalities, the lack of habitat onsite, and the long distance from any known occurrence suggests low potential for direct morality to yellow-billed cuckoo related to the Proposed Action. As described above, the Project would not withdraw groundwater to the extent that indirect effects to riparian habitat would occur. Based on the best available science, the potential direct and indirect effects to the yellow-billed cuckoo from the Proposed Action are expected to be negligible. The BBCS to be prepared for the Project would include a monitoring and adaptive management plan to assist in avoiding, minimizing, and detecting impacts to migratory birds by the Proposed Action (BLM 2014a).

Southwestern Willow Flycatcher

Suitable habitat for southwestern willow flycatcher does not occur within or near the Project area. There is currently a lack of general information on southwestern willow flycatcher dispersal beyond its known habitat and range, and little information on mortalities at solar facilities. The species likely follows river/lake corridors for dispersal.

There is no evidence to indicate that dispersal would occur within parcels 2, 3, or 4 or the SEZ as a whole. The Project is not within a path that would connect any aquatic features and the closest current documented records for the species and its habitat is more than 20 miles from the Project site. No southwestern willow flycatcher mortalities have been recorded at existing solar facilities and the lack of habitat and long distance from any known occurrence suggests low potential for direct morality related to the Project. As described above, the Project would not withdraw groundwater to the extent that indirect effects to riparian habitat would occur. Based on the best available science, the potential effects to the southwestern willow flycatcher from the Proposed Action are expected to be negligible. The BBCS to be prepared for the Project would include a monitoring and adaptive management plan to assist in avoiding, minimizing, and detecting impacts to migratory birds by the Proposed Action (BLM 2014a).

Mitigation Measures

No significant new impacts beyond those identified in the Solar PEIS are anticipated to result from the Project. Adherence to and implementation of the Project design features prescribed in the Solar PEIS ROD, as summarized in Table 2-7, *Dry Lake Programmatic Design Features*, would reduce potential direct and indirect effects to ESA listed species. The BLM is in consultation with USFWS pursuant to Section 7 of the ESA regarding the Proposed Action, and it is anticipated that that a Project specific Biological Opinion will be issued that includes non-discretionary reasonable and prudent measures and terms and conditions to minimize take.

Specific to desert tortoise, the Project would require a preparation and approval of a Raven Management Plan and Desert Tortoise Translocation Plan to comply with the ESA. The Applicant would also be required to pay remuneration fees for the loss of desert tortoise habitat that would be based on the current year's rate of $836/acre of disturbance. This rate is subject to change if fees are paid after March 1, 2015.

Implementation of the SRMS for the Dry Lake SEZ (BLM 2014a) does not specifically address desert tortoise mitigation because it is addressed through the remuneration fee process. However, the SRMS would indirectly benefit the species thorough improvements to habitat. The SRMS identified the impact to wildlife from solar development within the SEZ as a potential impact that may warrant regional mitigation (BLM 2014a, Section 2.4.3.2). To compensate for unavoidable impacts, the SRMS recommended a per-acre fee that developers would pay for acres disturbed by development. The BLM will decide as part of the decision record for this Project if funds will be collected and, if so, the amount of those funds. Any compensatory mitigation measures will be consistent with the procedures described by IM 2013-142 (June 13, 2013) and draft Manual Section 1794, "Regional Mitigation," which includes guidance for management of funds collected as part of the restoration, acquisition, or preservation portion of the total mitigation fee by an independent third party.

Cumulative Effects

This cumulative effects analysis tiers to Section 11.3.22.4 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-349 et seq.) and Section 11.3.22.4 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-104 et seq.). The list of ongoing and reasonably foreseeable future actions near the Dry Lake SEZ, and analyzed for cumulative effects of the Project, are included in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ*, of Section 3.2, *Cumulative Scenario*. The geographic scope for desert tortoise is defined as the Northeastern Mojave Recovery Unit (USFWS 2010). Each recovery unit is considered a distinct population in which the USFWS tracks the species progress towards recovery of the species. The geographic scope for the Moapa dace is the White River Groundwater Flow System. As described above, impacts to Yuma clapper rail, yellow-billed cuckoo, and southwestern willow flycatcher are expected to be negligible. No cumulative effects from the Proposed Action in combination with other projects in the cumulative scenario are anticipated for these species and no further discussion is warranted.

Several projects in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ,* are within the geographic scope for desert tortoise and Moapa dace. Among them, solar projects such as the Moapa Solar Project (2,000 acres), and Nellis Air Force Base Area II Solar (160 acres) are under construction. Solar projects proposed for development along I-15 include Harry Allen Solar Energy

Center (715 acres), Dry Lake Solar Energy Center (815 acres), one Bright Source Energy Solar project (2,000 acres), and a First Solar project (5,500 acres). Adjacent projects proposed in the Dry Lake SEZ include the Harry Allen Solar Energy Center and the Dry Lake Solar Energy Center. These and other actions, including approximately 20,000 acres of wind development projects, transmission lines such as the One Nevada Transmission Line Project and TransWest Express Transmission Project, are expected to cause similar types of impacts to ESA listed species as the Proposed Action.

Although the list of specific projects in the cumulative scenario has been updated since the Final Solar PEIS (see Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ*), the scope of potential cumulative effects on desert tortoise and Moapa dace is within that analyzed in the Final Solar PEIS, and no new or increased significant cumulative effects would occur to such species as a result of the Proposed Action.

Desert Tortoise

Desert tortoise would be affected by ongoing and reasonably foreseeable actions within the area of cumulative effect for the Proposed Action, including impacts from urban areas, roads, transmission lines, and solar generating facilities described above and identified in the Solar PEIS. These potential developments cover large areas and long linear distances and are likely to affect desert tortoise by reducing and/or fragmenting habitat. Contributions to cumulative effects from the Proposed Action are expected to be relatively small. The Proposed Action would affect approximately 1,550 acres of potentially suitable desert tortoise habitat out of the total 4.85 million acres available within the recovery unit (USFWS 2010). The Proposed Action, and likely most projects included in the cumulative scenario, would employ industry standard BMPs and would be required to adhere to all applicable local, state and federal requirements, which would help to avoid and reduce some adverse impacts to desert tortoise.

The translocation of approximately 44 desert tortoises from the Project area, combined with the desert tortoises proposed for translocation from parcels 1, 5, and 6, may have an adverse cumulative effect on Desert tortoise Critical Habitat located within the Coyote Springs ACEC. However, the incorporation of BMPs and adherence to measures described in the Desert Tortoise Translocation Plan such impacts would be minimized to the extent possible.

Moapa Dace

Increased water withdrawals from concurrent state, private, and Tribal activities within the White River Groundwater Flow System could affect listed species through the alteration of water tables and natural hydrologic processes. Given the limited water needs for the Proposed Action (an estimated 1,350 acre-feet of water over approximately 18 months for construction-related activities and 5 to 15 ac-ft/yr for the remaining duration of the Project) and the use of existing water rights, no adverse impacts to groundwater dependent habitats and wildlife species are anticipated separately or cumulatively. This finding is consistent with the Hydrogeologic and Groundwater Modeling Analysis for the Calpine Company Moapa Paiute Energy Center (Mifflin 2001). In accordance with the applicable measures in the Solar Programmatic BO, the Applicant would develop a GMRP to be reviewed and approved by the BLM. The GMRP would document pre-construction baseline groundwater conditions, guide groundwater monitoring and reporting, and document groundwater use.

3.9.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts to ESA-listed species from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012b) and because the successful bidders at the Dry Lake SEZ auction have demonstrated a substantial commitment to the solar resource (BLM 2014d), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

The size of the area of ground disturbance, water needs and sources, and related details about possible future solar development at the site are not available, and so it is only possible at this time to provide a general analysis of potential future solar development that could occur on the site. If the Proposed Action was not constructed, a different solar project could be constructed and presumably would have substantially similar effects as those of the Proposed Action since development would be constrained to parcels 2, 3, and 4.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts related to ESA-listed threatened, endangered, or candidate species, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts from that development would likely be similar to those described in the Proposed Action section above.

3.10 Vegetation, Excluding Federally Listed Species

This section tiers to Section 11.3.10 of the Solar PEIS (BLM and DOE 2010, p. 11.3-65 et seq.; BLM and DOE 2012, p. 11.3-32 et seq.). The analysis and other information provided there remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of parcels 2, 3, and 4.

3.10.1 Affected Environment

Section 11.3.10 of the Draft and Final Solar PEIS describe the affected environment for vegetation, which generally is classified and dominated by Mojave creosote bush scrub habitat. The Draft and Final Solar PEIS describe the potential for flora species to occur within the SEZ, including common and special-status plants species. No federally listed plant species occur in the Project area. This analysis relies on those discussions and supplements the information regarding parcels 2, 3, and 4.

3.10.1.1 General Vegetation

Information for vegetation presented in Section 11.3.10.1 of the Final Solar PEIS remains valid (BLM and DOE 2012).Vegetation cover types described and mapped under the Southwest Regional Gap Analysis Project (U.S. Geological Survey 2004) were used to evaluate plant communities in the Project area. Land cover types occurring within the potentially affected area of the Project include Sonora Mojave Creosote White Bursage Scrub and North American Warm Desert Wash Communities. Sonora Mojave Creosote White Bursage Desert Scrub is the predominant cover type within the Project area and in the Dry Lake SEZ.

Plant communities on the Project site were verified by Environmental Science Associates during various biological resource surveys conducted between August and October 2014 (ESA 2014a, 2014b). The Project site is characterized by Mojave creosote bush scrub within a basin that contains stream terraces, floodplains, alluvial fans, and eroded washes, as well as isolated hills, mesas, and buttes (BLM and DOE 2010, pp. 11.3-65). Vegetation communities occurring within upland areas within the Project site included creosote bush scrub consisting of a dominance of creosote bush (*Larrea tridentata*) and a co-dominance of burrow bush (*Ambrosia dumosa*) interspersed with sparse herbaceous cover. Ephemeral drainages present within the Project site generally consist of a mix of upland and desert wash shrub species to varying degrees including sweetbush (*Bebbia juncea*), Virgin River brittlebush (*Encelia virginensis*), and broom rubber rabbitbrush (*Ericameria nauseosa*) interspersed with sparse herbaceous cover (ESA 2014a, 2014b). Vegetation communities on the Project site are depicted on Figure 3.10-1, *Vegetation Map.*

As described in the Solar Regional Mitigation Strategy (SRMS) for the Dry Lake SEZ (BLM 2014a), large wildfires historically did not occur in the Mojave Desert; the Mojave is not adapted to fire and is very slow to recover from it. The frequency of wildfire in desert ecosystems has increased due to the invasion of native desert habitats by non-native plant species (USFWS 2014; Van Linn III et al. 2013). As indicated in Section 3.12, *Invasive and Noxious Weeds,* Mediterranean grass, red brome, and wild oats are known to be present within the Project site, and their presence in particular may increase the risk of wildfire.

3.10.1.2 Special-Status Species

Special-status plant species are defined as species that are listed or proposed for listing under the federal Endangered Species Act (ESA), species considered sensitive by the BLM, and species listed in the State of Nevada as rare. Table 11.3.12.1-1 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-130 et seq.) lists special-status plant species with a potential to occur near the Project site. Based on known population occurrences and habitat requirements, the only BLM special-status plant that occurs in the Project area is rosy two toned penstemon (*Penstemon bicolor ssp. roseus*). The rosy two toned penstemon is a BLM special-status plant species that is restricted to Mojave Desert of Southern Nevada (BLM 2014b) and adjacent southeastern California and northwestern Arizona. Within the Las Vegas Field Office the population size and habitat quality for this species is being reduced by development, competition with non-native annual grasses, and altered fire regime. Though not part of the Project footprint, three additional BLM special-status plants, the three corner milkvetch (*Astragalus geyeri var. triquetrus),* Beaver Dam breadroot (*Pediomelum castoreum*), and sticky buckwheat (*Eriogonum viscidulum*) are located east of the Project near the Crystal substation within Dry Lake Valley utility corridor.

3.10.2 Relevant Applicable Laws, Regulations, Plans, and Standards

3.10.2.1 General Vegetation

The BLM manages general wildlife habitat according to the 1998 BLM Las Vegas Resource Management Plan (RMP) (BLM/LVFO 1998).

3.10.2.2 Special-Status Species

The BLM manages special-status plant species according to BLM Manual 6840.Protection of Nevada special-status plant species is provided under NRS 527.050 and NRS 527.260–527.300.

3.10.3 Methodology

This EA tiers to the methodology described in Appendix M of the Draft Solar PEIS (BLM and DOE 2010, p. M-16 et seq.). Multiple data sources were consulted to determine general and special-status species with a potential to occur on the Project site including the Nevada Department of Wildlife's (NDOW), gap analysis programs such as the Southwest Regional Gap Analysis Project (SWReGAP), NatureServe, data provided by the BLM, and the results of technical biological resource field surveys conducted by Environmental Science Associates in 2014 including the Dry Lake Jurisdictional Delineation Report (ESA 2014a).

3.10.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features, resource surveys, and management plans that are proposed to avoid or reduce potential impacts to vegetation.

3.10.5 Environmental Consequences

This analysis tiers to Section 11.3.10.2 of the Solar PEIS (BLM and DOE 2010, p. 11.3-73 et seq.; BLM and DOE 2012, p. 11.3-32 et seq.), and refers to the SRMS for the Dry Lake SEZ (BLM 2014a). The analysis and information provided in those documents remains applicable except as detailed below.

3.10.5.1 Proposed Action

Direct and Indirect Effects

Direct effects of the Proposed Action would result from clearing vegetation for construction of solar panel arrays and associated infrastructure. Indirect effects would be associated with surface runoff, fugitive dust, and groundwater withdrawal (see Section 3.22, *Water Resources*, for more information) during the construction phase of the Project. These indirect impacts have the potential to degrade offsite plant communities and reduce biodiversity.

General Vegetation

The potential impacts to vegetation resources within the Dry Lake SEZ and lands surrounding the Dry Lake SEZ that may result from the construction and operations of a typical solar PV facility are described in Section 11.3.10.2 of the Final Solar PEIS and the impacts from this Project would be consistent with them. Development of the Project site would result in permanent impacts to approximately 1,550 acres of creosote bush scrub habitat that includes approximately 80 acres of desert washes, resulting in a moderate loss of the Sonora Mojave Creosote White Bursage Desert Scrub cover type (BLM and DOE 2012, p. 332). These habitat types are common within the region and contain many native species that occur within desert scrub communities.

Site clearing and site preparation could disrupt surface water flow patterns, resulting in changes in the frequency, duration, depth, or extent of inundation or soil saturation; could alter playa plant communities; and could affect community function. Increases in surface runoff from the Project site also could affect hydrologic characteristics of these communities. The introduction of contaminants into these downstream habitats could result from spills of fuels or other substances such as herbicides and palliatives used on the Project site. Soil disturbance could result in sedimentation in these areas, which could degrade or eliminate sensitive plant communities. In addition, indirect effects could include the loss of connectivity for dispersal and colonization of seed and loss of connectivity for pollinators. The interruption of connectivity affects the ability of native plant communities to recover from disturbance (such as off-highway vehicle [OHV]) activity and fire) and adapt to future climate change.

Potential indirect effects from the Proposed Action on areas outside the Project site are expected to be minor with implementation of Project design features that control impacts such as soil erosion, dust, stormwater runoff, and water quality during all phases of the Project. In addition, the Applicant would prepare and implement an Integrated Weed Management Plan, Herbicide Use Proposal, Spill Prevention and Emergency Response Plan, Hazardous Materials and Waste Management Plan, Stormwater Pollution Prevention Plan, Fire Protection Management Plan, and Site Drainage Plan.

Project-related groundwater withdrawals from the Garnet Valley groundwater basin could affect the regional groundwater supply that supports spring-fed aquatic habitats in the region, specifically the

Pahranagat and Moapa Valleys. The BLM has concluded that the limited water needs for the Proposed Action (an estimated 1,320 acre-feet of water over an approximately 18 month period for construction-related activities and five to 15ac-ft/yr for the remaining duration of Project) would not withdraw groundwater to the extent that adverse effects would occur to vegetation communities (See Section 3.9.5.1 for more information). Further, the Applicant would develop a Groundwater Monitoring and Reporting (GMRP) to be reviewed and approved by the BLM. The GMRP would document pre-construction baseline groundwater conditions, guide groundwater monitoring and reporting, and document groundwater use.

Special-Status Species

The Proposed Action would permanently impact 1,550 acres of rosy two toned penstemon habitat. Development of the Project would indirectly affect the species by reducing overall population genetic diversity. By definition rare plant species have a limited population size. The loss of genetic diversity is one of the largest threats to the long term persistence of most rare plant species. The loss of genetic diversity can lead to genetic drift, reduced reproduction, reduced fitness and impaired ability to restore or reintroduce new populations as part of conservation and recovery efforts.

Potential indirect effects to special-status species from the Proposed Action on areas outside the Project site would be addressed through the implementation of Project design features that control impacts such as soil erosion, dust, stormwater runoff, and water quality during all phases of the Project. In addition, the Applicant would prepare and implement an Integrated Weed Management Plan, Herbicide Use Proposal, Spill Prevention and Emergency Response Plan, Hazardous Materials and Waste Management Plan, Stormwater Pollution Prevention Plan, Fire Protection Management Plan, and Site Drainage Plan.

Mitigation Measures

No significant new impacts beyond those identified in the Draft and Final Solar PEIS are anticipated from the Project. Adherence to and implementation of the Project design features prescribed in the Solar PEIS ROD, as summarized in Table 2-7, *Dry Lake Programmatic Design Features*, would reduce potential direct and indirect effects to vegetation, including common and special-status plant species. Some level of impact to vegetation and the ecosystem services they provide, however, would be unavoidable.

The Dry lake SEZ SRMS identified the impact to vegetation from solar development within the SEZ as a potential impact that may warrant regional mitigation (BLM 2014a, Section 2.4.3.2). To compensate for unavoidable impacts, the SRMS recommended a per-acre fee that developers would pay for acres disturbed by development, which included a proposed amount to mitigate for vegetation impacts. The BLM will decide as part of the decision record for this Project if funds will be collected and, if so, the amount of those funds. Any compensatory mitigation measures will be consistent with the procedures described by IM 2013-142 (June 13, 2013) and draft Manual Section 1794, “Regional Mitigation,” which includes guidance for management of funds collected as part of the restoration, acquisition, or preservation portion of the total mitigation fee by an independent third party.

Cumulative Effects

This cumulative effects analysis tiers to Section 11.3.22.4 of the Solar PEIS (BLM and DOE 2010, p. 11.3-353 et seq.; BLM and DOE 2012, p. 11.3-104 et seq.). This analysis relies on those discussions,

and updates them to describe changes in the cumulative scenario that have occurred since publication of the Final Solar PEIS. See, e.g., Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ*.

The geographic scope of this project-specific analysis of potential cumulative effects on non-listed plant species includes the Las Vegas and Pahrump Field Offices. As discussed in the 2014 Draft Resource Management Plan and Environmental Impacts Statement of the Las Vegas and Pahrump Field Offices, vegetation (native plant communities) in the Las Vegas Field Office and Mojave Ecoregion is experiencing severe declines in quality and quantity that affect the level of ecosystem services they provide to humans. In general, direct and indirect impacts to native plant communities are additive and cumulative over time, most Mojave Desert native plant communities will not fully recover from temporary disturbances within 10-20 years. Almost all native vegetation in the Mojave ecoregion is being subjected to multiple environmental stressors that affect the quality of native plant communities. Summarized below are the trends in stressors and effects on vegetation from 1998 to 2013 in the Las Vegas and Pahrump Field Offices (BLM 2014b).

Nonnative Species. The trend is an increase in area occupied by non native species. Invasive nonnative plants are a major threat to native plant communities because they thrive in disturbed areas and are better competitors for water, nutrients, and space than many native species (Mack 1981, Billings 1990, Vitousek 1990, D'Antonio and Vitousek 1992, Salo 2005, Defalco et. al. 2007). This competition slowly reduces the stability and resiliency of native plant communities because it gradually reduces the amount of seed produced by native species and, subsequently, the amount available for recovery. An estimated 2.9 million acres (or 94 percent) of Las Vegas and Pahrump Field Offices are moderately to heavily impacted by non-native plants, primarily red brome and Mediterranean grass.

Fire. The trend is an increase in number of acres burned and higher frequency of repeat burning. In lower elevation vegetation, nonnative annual grasses are now responsible for an annual grass/fire cycle that did not exist before (Brooks 1999 Brooks et al. 2004). This is largely because the spaces between individual shrubs were bare, and acted as a fuel break. Now, nonnative annual grasses create a nearly continuous fuel load that carries fire between shrubs (Brooks 1999). Following fire, nonnative annual grasses are some of the first species to return. If fire returns too quickly, the surviving native plants do not have enough time to grow and produce the seed needed for recovery. An estimated 1.3 million acres (or 42 percent) of Las Vegas and Pahrump Field Offices burned from 1998 to 2013 (BLM 2014b).

Livestock Grazing. The trend is toward a decrease in the number of active grazing allotments, grazing use is constant in wild horse and burro herd management areas. Grazing affects the species composition and biomass production of native plant communities through selective foraging. It is generally agreed that present-day Mojave ecosystems did not evolve with significant selective pressure from large-bodied herbivores (Pendleton et. al. 2013, Beever et. al. 2003, Brown and McDonald 1995, Grayson 1987, Hall 1946), and desert vegetation is very slow to recover if overgrazed or disturbed (Abella 2008, Tueller 1989, Chambers 2013). Currently 9.2 percent of the Las Vegas and Pahrump Field Offices are being grazed by domestic livestock, wild horses and burros.

Climate Change. The trend is toward less stable atmospheric conditions leading to more extremes in temperature and precipitation, increase in the average low temperature, potential changes in seasonality,

potential decrease in total precipitation. Changes in temperature and precipitation affect the ability of seeds to germinate, and plants to grow, which can affect what plant species are present and which species are dominant. The entire 3.1 million acres in Las Vegas and Pahrump Field Offices are affected. Evidence of changes in vegetation shifts over the last 30 years including shifts in the distribution of Mojave yucca, pinyon pine and juniper trees.

Lands and Minerals Use Authorizations. The trend is toward an increasing number of authorizations issued, which reflects trends in economic growth. BLM issued 2,917 lands and minerals authorizations directly and indirectly affecting 304,000 acres (roughly 9.8 percent) of the planning area between 1998 and 2013.

Development of Desert Tortoise Habitat. The trend is toward increasing development in desert tortoise habitat, which reflects trends in economic growth. Based on desert tortoise Section 7 fees, an estimated 40,000 acres of creosote bursage scrub was impacted between 1998 and 2013.

Recreation Use. The trend is toward increasing permitted and casual recreation on public lands. Since 2007, casual visitor use in the Las Vegas Field Office has increased by approximately 11 percent annually. Casual recreation is estimated to have directly affected between 3,000 and 6,000 acres (0.12 percent to 0.25 percent) of native plant communities in the Las Vegas Field Office under the 1998 RMP (BLM/LVFO 1998). As of 2009, there is an estimated 11,151 miles (estimated 13,500 acres) of dirt roads and trails present in the Las Vegas Field Office. This represents 0.56 percent in the field office. Similar percentages are likely in the Pahrump Field Office. Impacts to vegetation from casual recreation are the highest in Special Recreation Management Areas. The number of acres of indirect impacts and cumulative impacts is unknown.

All of the actions listed in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ,* are within the geographic scope of potential cumulative vegetation impacts. Among them, solar projects such as the Moapa Solar Project (2,000 acres) and Nellis Air Force Base Area II Solar (160 acres) are under construction. Solar projects proposed for development along I-15 include Harry Allen Solar Energy Center (715 acres), Dry Lake Solar Energy Center (815 acres), two Bright Source Energy Solar projects (total of 12,000 acres), and a First Solar project (5,500 acres). Adjacent projects proposed in the Dry Lake SEZ include the Harry Allen Solar Energy Center and the Dry Lake Solar Energy Center. These and other actions, including approximately 28,000 acres of wind development projects and transmission lines such as the One Nevada Transmission Line Project and TransWest Express Transmission Project, are expected to cause similar types of impacts to vegetation as the Proposed Action. The cumulative effects of clearing vegetation from the land by projects within the geographic scope would have a substantial effect on desert creosote bush scrub and other vegetation within the region because thousands of acres of land would be affected. Cumulative indirect effects of the projects within the geographic scope also could result, including the introduction of invasive/noxious species, changes in surface runoff, deposition of fugitive dust, and groundwater withdrawal that results in degradation of native vegetation. Further, additional introduction of non-native grass species that would provide an additional fuel source for the spread of wildfires (see Section3.12, *Invasive and Noxious Weeds,* for more information). Projects within the Dry Lake SEZ would be required to implement similar project design features as the Proposed Action, which would decrease the direct and indirect contributions to cumulative effects from these projects.

Projects within the Dry Lake SEZ (i.e., the Harry Allen Solar Energy Center and the Dry Lake Solar Energy Center) would be required to implement project design features that are substantially similar to those prescribed for the Proposed Action, which would reduce the direct and indirect effects of these projects to contribute to cumulative conditions.

Although the list of specific projects in the cumulative scenario has been updated since the Final Solar PEIS, the scope of potential cumulative effects on vegetation is within that analyzed in the Final Solar PEIS, and no new or increased significant cumulative effects would occur to general and special-status vegetation as a result of the Proposed Action.

General Vegetation

During development of the SRMS, cumulative impacts to native vegetation, and the ecosystem services they provide, were identified by BLM resource specialists as an unavoidable impact that cannot be mitigated on site. The Sonoran Mojave Creosote White Bursage Desert Scrub and North American Warm desert wash communities that occur within the Project area are generally widespread and present throughout the Mojave Ecoregion. These vegetation communities provide a variety of ecosystem services with direct and indirect economic benefits to humans such as livestock grazing; wildlife habitat; soil, water, and air protection; a setting for recreation; and are an important component of the viewshed.

The Sonoran Mojave Creosote White Bursage Desert Scrub and North American Warm desert wash communities are widespread within the geographic scope for cumulative effects; however, both are a limited and finite resource. When combined with other actions in the cumulative scenario, the Proposed Action would result in an incremental addition to current declines in the quality and quality of native vegetation in the area. Offsite mitigation for cumulative effects to native vegetation and its ecosystem services would ensure the Proposed Action does not contribute to current declines in the native plant communities and would allow the BLM to fulfill its sustainable yield and multiple use mission under the Federal Land Policy Management Act (FLPMA).

Mitigation funds for this Project, collected under the Dry Lake SEZ SRMS, would be used to restore degraded public lands and increase the level of resource protection thru more frequent resource monitoring and law enforcement patrols. The Mojave Desert has an extremely slow rate of natural recovery. Restoration (seeding and soil decompaction) funded by offsite mitigation funds cannot replace natural recovery but it can speed its rate. Increased resource protection is beneficial because native vegetation and soils in the Mojave Desert can be fragile. Offsite mitigation funds would be used to raise the frequency of resource monitoring and law enforcement patrols in existing desert tortoise ACECs with a goal of preventing new damage to vegetation and the ecosystem services it provides and identifying and correcting problems early while they are still relatively small.

Special-status Species

During development of the Dry Lake SEZ SRMS, cumulative impacts to BLM special-status plant species, including the rosy two toned penstemon, were identified by BLM resource specialists as an unavoidable impact that cannot be mitigated on site. Development of the Project would result in an incremental addition to an existing decline in the area occupied by the rosy two toned penstemon resulting from the development of habitat as well as the factors described in the cumulative scenario described in Section 3.2. As an offset this incremental loss, mitigation would be provided as part of the offsite

mitigation fee. Using part of this fee, the BLM would provide seed collection and long term conservation of the species through the Center for Plant Conservation, National Collection of Endangered Plants. The incremental loss of populations is the single largest threat to rare plant species. If left unchecked, the incremental decline ultimately would result in protection under the Endangered Species Act.

Under the BLM special species manual, BLM has a responsibility to implement management actions that will preclude the need for federal listing. Offsite conservation thru the Center for Plant Conservation would conserve the genetic diversity of rosy two toned penstemon populations in the Dry Lake Area. If necessary this material would be available for future population management and restoration efforts.

3.10.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts related to non-listed vegetation from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012) and because the successful bidders at the Dry Lake SEZ auction have demonstrated a substantial commitment to the solar resource (BLM 2014c), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

Specific locations of activity and related details about possible future solar development at the site are not available, and so it is only possible at this time to provide a general analysis of potential future solar development that could occur on the site. If the Proposed Action was not constructed, a different solar project could be constructed and presumably would have substantially similar effects as those of the Proposed Action. An alternative project size and the associated layout could cause location-specific impacts to vegetation that differ slightly from those of the Proposed Action, such as incursions into washes that are avoided by the Proposed Action but are within the developable area of the SEZ. Although no specific details are available about a potential future solar proposal on the Project site, such effects to vegetation would be expected be similar to those of the Proposed Action.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts related to vegetation, excluding federally-listed species, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts from that development would likely be similar to those described in the Proposed Action section above.

3.11 Forestry

This section tiers to Section 11.3.10 of the Solar PEIS (BLM and DOE 2010, p. 11.3-65 et seq.; BLM and DOE 2012, p. 11.3-32 et seq.). The analysis and other information provided there remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of parcels 2, 3, and 4.

3.11.1 Affected Environment

Two different BLM forestry program vegetative resources are present in the Dry Lake SEZ that could be affected by the Proposed Action: native seed and cactus and yucca plants. Native seed, collected by commercial vendors under a BLM issued permit, is important for revegetation, mine reclamation, habitat restoration, and fire rehabilitation of private and public lands. Individual cactus and yucca plants, sold to the public under a permit, are considered wildings and are in demand for drought tolerant and native plant landscaping as well as habitat restoration and reclamation projects on public lands.

At the BLM's request, a survey for cactus and yucca was conducted in October 2014 (ESA 2014). Species observed during the field survey included silver cholla (*Cylindropuntia echinocarpa*), cotton top cactus (*Echinocactus polycephalus*), strawberry hedgehog cactus (*Echinocereus englemanii*), California barrel cactus (*Ferocactus cylindraceous*), beavertail cactus (*Opuntia basilaris*), and Mohave yucca (*Yucca schidigera*). Cactus and yucca occurrences are greater in the northern portion of the Project site where the elevation increases, and lower to the south where the elevation decreases. A total of 79 cactus and 58 yucca plants were observed within 62 survey plots combined. Based on projection, approximately 31,995 cactus and 23,490 yucca plants (55,485 in total) are estimated to occur within the Project site (ESA 2014).

3.11.2 Applicable Laws, Regulations, Plans, and Standards

The BLM administers the sale of forest products and other vegetative resources under 43 CFR 5400. In Nevada, IM NV-2010-055 and draft IM NV-2014-013 clarify and provide guidance regarding the disposal, sale, and pricing of forest products on BLM lands in the state.

3.11.3 Methodology

A density estimate of the number of cactus and yucca plants present within the Project areas was completed and used to evaluate impacts to BLM's forestry program concerns.

3.11.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features, resource surveys, and management plans that are proposed to avoid or reduce potential impacts of the Project. Table 2-7, *Dry Lake Programmatic Design Features*, in Section 2.2.17 describes how the Proposed Action has or would comply with the programmatic design features adopted in the ROD for the Solar PEIS (BLM 2012).

3.11.5 Environmental Consequences

This section tiers to Section 11.3.10 of the Solar PEIS (BLM and DOE 2010, p. 11.3-65 et seq.; BLM and DOE 2012, p. 11.3-32 et seq.). The analysis and other information provided there remains applicable except as detailed below.

3.11.5.1 Proposed Action

Direct and Indirect Effects

The Proposed Action would result in the loss of approximately 1,550 acres within the Dry Lake Valley seed collection area. Opportunities for commercial contractors to collect native seed on public lands are limited by stand location and the density of target species. On average Las Vegas Field Office has issued one commercial collection permit for the area every two to three years. The Proposed Action could directly affect the ability of the BLM to issue future seed collection contracts to native seed collectors in the area. The primary native species collected in the area are creosote bush, bursage, and globe mallow. Because these species occur elsewhere, the reduction in seed collection area would be negligible. The Project area also contains exceptionally good stands of galleta grass that have unusually high densities of galleta grass that are suitable for commercial collection; these stands are relatively rare in the Las Vegas Field Office. The loss of this area for the commercial collection of galleta grass would be moderate.

As described above, it is estimated 55,485 cactus and yucca plants are estimated to be present within the Project area and would be impacted by the Proposed Action. Because of the Project schedule, arranging and soliciting bids for a commercial salvage contract is not practical. The Applicant may agree to purchase cactus and yucca in the impact area at salvage sale pricing set by the BLM Nevada State Office.

Mitigation Measures

Adherence to and implementation of the Project design features prescribed in the Solar PEIS ROD, as summarized in Table 2-7, *Dry Lake Programmatic Design Features*, would reduce potential direct and indirect effects to forestry resources.

Cumulative Effects

The geographic scope of this analysis of potential cumulative impacts to forestry resources includes the Las Vegas and Pahrump Field Offices. Forestry resources in the Mojave ecoregion are being subjected to multiple environmental stressors that affect the quality of all native plant communities in the area. See Section 3.10, *Vegetation, Excluding Federally Listed Species*, for a summary of the trends in stressors and effects on vegetation from 1998 to 2013 in the Las Vegas and Pahrump Field Offices.

All of the actions listed in Table 3.2-1 are within the geographic scope of potential cumulative forestry resource impacts. Among them, solar projects such as the Moapa Solar Project (2,000 acres) and Nellis Air Force Base Area II Solar (160 acres) are under construction. Solar projects proposed for development along I-15 include Harry Allen Solar Energy Center (715 acres), Dry Lake Solar Energy Center (815 acres), two Bright Source Energy Solar projects (total of 12,000 acres), and a First Solar project (5,500 acres). Adjacent projects proposed in the Dry Lake SEZ include the Harry Allen Solar Energy Center and the Dry Lake Solar Energy Center. These and other actions, including approximately 28,000 acres of wind development

projects and transmission lines such as the One Nevada Transmission Line Project and TransWest Express Transmission Project, are expected to cause similar types of impacts to forestry resources as the Proposed Action. The cumulative effects of clearing vegetation from the land by projects within the geographic scope would have an adverse effect on forestry resources within the region because thousands of acres of land would be affected. Projects within the Dry Lake SEZ (i.e., the Harry Allen Solar Energy Center and the Dry Lake Solar Energy Center) and on other BLM-administered lands would be subject to forestry program provisions, which would lessen potential direct and indirect effects to forestry resources.

3.11.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts to forestry resources from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012) and because the successful bidders at the Dry Lake SEZ auction have demonstrated a substantial commitment to the solar resource (BLM 2014), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

Specific locations of activity and related details about possible future solar development at the site are not available, and so it is only possible at this time to provide a general analysis of potential future solar development that could occur on the site. If the Proposed Action was not constructed, a different solar project could be constructed and presumably would have substantially similar effects as those of the Proposed Action given the same general project footprint.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts to forestry resources, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts from that development would likely be similar or louder to those described in the Proposed Action section above.

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3.12 Invasive and Noxious Weeds

This section tiers to Section 11.3.10 of the Solar PEIS (BLM and DOE 2010, p. 11.3-65 et seq.; BLM and DOE 2012, p. 11.3-32 et seq.). The analysis and other information provided there remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of parcels 2, 3, and 4.

3.12.1 Affected Environment

The Draft and Final Solar PEIS describe the potential for flora species to occur within the SEZ, including invasive and noxious plant species. This analysis relies on those discussions, and supplements them with information specifically regarding parcels 2, 3, and 4. Studies suggest that the Mojave Desert currently is threatened by the spread of non-native invasive annual grasses, which results in increased fire risk and loss of native natural resources.

The Dry Lake SEZ area was inventoried for weeds in 2014 and populations of red brome (*Bromus madritensis ssp. rubens*) were encountered along roadsides and in water collection areas. The general area along the I-15 corridor and several adjacent right-of-way corridors are known to have populations of both Malta Starthistle (*Centaurea melitensis*) and Sahara Mustard (*Brassica tournefortii*). Both of these species are listed as noxious weeds in the State of Nevada. The proximity of these species increases the probability of their establishment within Project boundaries after surface disturbance has occurred. Botanical surveys of the Project site were conducted by Environmental Science Associates in conjunction with biological resources surveys during August, September, and October, 2014 (ESA 2014a; ESA 2014b). Six invasive and noxious plant species were observed within the Project site: Mediterranean grass (*Schismus barbatus*), Cheeseweed (*Malva parviflora*), red brome, wavy-leaved gaura (*Oenothera sinuosa*), wild oats (*Avena fatua*), and salt cedar (*Tamarix ramosissima*).

According to the BLM, other weed species of concern in the general Project area include: camelthorn (*Alhagi maurorum*), perennial pepper weed (*Lepidium latifolium*), russian knapweed (*Acroptilon repens*), yellow starthistle (*Centaurea solstitialis*), Johnson grass (*Sorghum halepense*), Cheeseweed, wavy gaura (*Gaura sinuata*), Scotch thistle (*Onopordum acanthium*), Canada thistle (*Cirsium arvense*), fountain grass (*Pennisetum setaceum*), puncture vine (*Tribulus t*errestris), tamarisk (*Tamarix ramosissima*), and halogeten (*Halogeton glomeratus*).

3.12.2 Applicable Laws, Regulations, Plans, and Standards

Invasive plants and noxious weeds are managed on public lands by the BLM under the direction of the National Invasive Species Council (NISC) established in 1999 (Executive Order 13112). This statute defines invasive species as "…an alien (non-native) species whose introduction does, or is likely to cause, economic or environmental harm or harm to human health" (NISC 2008). In addition, much of the management of invasive plants and the listing of noxious weeds are regulated by the USDA under the Federal Noxious Weed Act of 1974 (7 U.S.C. §2801 et seq.). Executive Order 13112 (64 Fed. Reg. 6183) outlines the federal responsibility to "prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause..." Additionally, Nevada Revised Statutes, Chapter 555.05 defines "noxious weeds" and mandates

the extent that land owners and land management agencies must control specific noxious weed species on lands under their jurisdiction. The BLM Las Vegas Field Office has prepared the Noxious Weed Plan (BLM 2006), which provides guidance for an active integrated weed management program using Best Management Practices (BMPs).

3.12.3 Methodology

This EA tiers to the methodology described in Appendix M of the Draft Solar PEIS (BLM and DOE 2010, p. M-16 et seq.). Multiple data sources were consulted to determine invasive and noxious weeds with a potential to occur on the Project site including the State of Nevada Department of Agriculture, the BLM's Noxious Weed Plan (BLM 2006), information provided by the BLM, and the results of technical biological resource field surveys conducted by Environmental Science Associates in 2014, including a botanical survey (ESA 2014a and b).

3.12.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features, resource surveys, and management plans that are proposed to avoid or reduce potential impacts relating to invasive and noxious weeds, including preparation of BLM-approved Integrated Weed Management Plan, Fire Management Plan, Site Rehabilitation and Restoration Plan, and Decommissioning and Site Reclamation Plan.

3.12.5 Environmental Consequences

This analysis of environmental consequences tiers to Section 11.3.10.2 of the Solar PEIS (BLM and DOE 2010, p. 11.3-73 et seq.; BLM and DOE 2012, p. 11.3-32 et seq.), and refers to the SRMS for the Dry Lake SEZ (BLM 2014a). The analysis and information provided in those documents remains applicable except as detailed below.

3.12.5.1 Proposed Action

Direct and Indirect Effects

Past or present land uses may affect the susceptibility of plant communities to the establishment of noxious weeds and invasive species. Indirect effects from existing roads, transmission lines, and off-highway vehicles (OHV) use within and surrounding the Project site also likely would contribute to the susceptibility of plant communities to the establishment and spread of noxious weeds and invasive species. Exotic plants are often early-successional, pioneer species that are very successful at colonizing disturbed areas. They typically produce large quantities of easily-dispersed seeds that may remain viable for decades, which establish quickly and grow to out-compete natives for water, nutrients, and other resources. They may also spread through asexual vegetative reproduction following habitat disturbances like those related to construction.

The Proposed Action has the potential to permanently affect 1,550 acres by introducing and/or exacerbating current weed populations. Project construction associated would involve activities such as clearing and tilling which have the potential to decrease native plant cover and increase soil disturbance. The bare ground resulting from the vegetation removal provides opportunity for non-native invasive weed

species to colonize the Project area. If weeds are established on the site there is potential for species to out-compete native plants for resources. Noxious and/or invasive weeds effectively compete with native species for sunlight, soil, water, nutrients, and space, thereby reducing forage productivity. Additionally, soil disturbance could reduce the native seed bank associated with the site.

Increased vehicle traffic during all phases of the Project also would affect noxious and/or invasive weed conditions. Vehicles effectively introduce and/or spread weeds by disbursing weed seed along roadways. Seed heads of non-native weed species can imbed in the tires and undercarriage of vehicles and equipment when traveling from offsite areas onto the Project site. The increased vehicular activity at the site also has the potential to spread non-native invasive annual grasses.

In addition to competing with native plant species and reducing the productivity of rangelands, forest lands, riparian areas, and wetlands, the spread of invasive weed infestations, cheat grass in particular, increase fine fuels, thereby increasing the likelihood of fire. Although the non-native annual grasses are not legally designated as noxious by the State of Nevada, their role within the Mojave desert ecosystem is increasingly important with respect to their relationship to fire and future disturbance.

Aggressively managing invasive or noxious species would limit residual effects to manageable levels. This may include activities such as maintaining discontinuous, dispersed native vegetation, nonflammable native species, propagation and planting of native species, or complete removal of all vegetation. All applicable design features and protective measures would be implemented as a part of the Project and no new significant direct or indirect effects would occur related to invasive species as a result. As part of the design features, the Applicant would prepare an Integrated Weed Management Plan and associated Herbicide Use Proposal to address the full potential for invasive species to enter the Project site. The Integrated Weed Management Plan would describe measures to prevent the spread of weed seeds and vegetative reproductive structures (such as rhizomes) and inhibit their germination include the following measures. All of these measures apply throughout the construction and operations and maintenance phases of the Project. The Applicant and its contractors would follow the BLM's Noxious Weed Plan (BLM 2006). Personnel responsible for weed control shall be certified herbicide applicators and trained in the proper and safe use of all equipment and chemicals used for weed control. In addition, the Applicant would actively reduce the threat of noxious weeds on site as part of wildfire risk management and would prepare a Fire Management Plan. The Applicant also would prepare a Worker Education and Awareness Plan that includes provisions for the spread of weeds.

Mitigation Measures

No significant new impacts beyond those identified in the Solar PEIS are anticipated from the Project. Adherence to and implementation of the Project design features prescribed in the Solar PEIS ROD, as summarized in Table 2-7, *Dry Lake Programmatic Design Features*, would reduce potential direct and indirect effects related to invasive and noxious weeds.

Cumulative Effects

This cumulative effects analysis tiers to Section 11.3.22.4.9 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-353 et seq.) and Section 11.3.22.4 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-104 et seq.). This analysis relies on those discussions, and updates them to describe changes in the

cumulative scenario that have occurred since publication of the Final Solar PEIS. See, e.g., Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ.*

The geographic scope of this Project-specific analysis of potential cumulative effects includes the Las Vegas and Pahrump Field Offices. Native vegetation in the Mojave ecoregion is being subjected to multiple environmental stressors that affect the quality of native plant communities, including the spread of invasive and noxious weeds. See Section 3.10, *Vegetation, Excluding Federally Listed Species,* for a summary of the trends in stressors and effects on vegetation from 1998 to 2013 in the Las Vegas and Pahrump Field Offices.

All of the actions listed in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ,* are within the geographic scope of potential cumulative impacts for invasive and noxious weeds. Among them, solar projects such as the Moapa Solar Project (2,000 acres) and Nellis Air Force Base Area II Solar (160 acres) are under construction. Solar projects proposed for development along I-15 include Harry Allen Solar Energy Center (715 acres), Dry Lake Solar Energy Center (815 acres), two Bright Source Energy Solar projects (total of 12,000 acres), and a First Solar project (5,500 acres). Adjacent projects proposed in the Dry Lake SEZ include the Harry Allen Solar Energy Center and the Dry Lake Solar Energy Center. These and other actions, including approximately 28,000 acres of wind development projects and transmission lines such as the One Nevada Transmission Line Project and TransWest Express Transmission Project, are expected to cause similar types of impacts to invasive and noxious weeds as the Proposed Action.

The Proposed Action, in conjunction with other projects in the geographic scope, would result in cumulative impacts on native vegetation communities, including the potential spread of noxious and/or invasive weeds with the potential to adversely affect the Project area and adjacent lands. The combined effects of the proposed land uses have the potential to increase the rate at which the noxious and invasive weeds colonize adjacent BLM lands. Projects within the Dry Lake SEZ (i.e., the Harry Allen Solar Energy Center and the Dry Lake Solar Energy Center) and on other BLM-administered lands would be subject to the same weed management provisions described in Section 3.12.5.1, including adherence to the BLM's Noxious Weed Plan (BLM 2006) and development of an Integrated Weed Management Plan, which would lessen potential spread of invasive and noxious weeds.

3.12.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts related to invasive and noxious weeds from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012) and because the successful bidders at the Dry Lake SEZ auction have demonstrated a substantial commitment to the solar resource (BLM 2014b), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

Specific locations and types of activity, necessary equipment, and related details about possible future solar development at the site are not available, and so it is only possible at this time to provide a general analysis of potential future solar development that could occur on the site. If the Proposed Action was not constructed, a different solar project could be constructed and presumably would have substantially

similar effects as those of the Proposed Action. Although no specific details are available about a potential future solar proposal on the Project site using a different technology, effects relating to invasive and noxious weeds would be expected be similar to those of the Proposed Action.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts related to invasive and noxious weeds, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts from that development would likely be similar to those described in the Proposed Action section above.

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3.13 Geology and Mineral Resources

This section tiers to Section 11.3.7 of the Solar PEIS (BLM and DOE 2010, p. 11.3-37 et seq.; BLM and DOE 2012, p. 11.3-10 et seq.) relating to geology and to Section 11.3.8 of the Solar PEIS (BLM and DOE 2010, p. 11.3-51 et seq.; BLM and DOE 2012, p. 11.3-16 et seq.) relating to mineral resources. The analysis and other information provided in those documents remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of parcels 2, 3, and 4.

3.13.1 Affected Environment

3.13.1.1 Geology

The geologic setting, site topography, seismicity, volcanic hazards, slope stability, land subsidence, and other hazard information in the Solar PEIS has not changed since publication of the Solar PEIS ROD. The setting information and findings for all other geologic conditions reported in the Solar PEIS except liquefaction are incorporated by reference (BLM and DOE 2012).

Regarding the assessment of liquefaction hazard, the Project site is within an area where the peak horizontal acceleration with a 10 percent probability of exceedance in 50 years is between 0.2 and 0.3g (USGS 2014). Shaking associated with this level of acceleration generally is perceived as light, and any potential damage to structures is expected to be minimal (Wald et al. 1999). Given the low intensity of ground shaking estimated for the area and the low incidence of historical seismicity in the region, the potential for liquefaction in sediments within and around the site remains low.

3.13.1.2 Minerals

As described in the Solar PEIS, leasable[1], saleable[2], and locatable[3] minerals occur throughout the BLM lands considered as part of the Dry Lake SEZ. As part of the Final Solar PEIS and in the ROD, the BLM revised the developable portions of the Dry Lake SEZ to take into account current existing land uses, including mining claims and mineral leases. As a result, parcels 2, 3, and 4 of the Dry Lake SEZ do not contain existing mining claims or mineral leases. As discussed below, the public land within the SEZ was closed to additional locatable mineral entry and then later withdrawn from locatable mineral entry and surface occupancy.

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1 Leasable minerals are explored for and developed in accordance with mineral leasing laws and regulations, and include energy resources such as coal, oil, and geothermal, as well as non-energy minerals such as phosphate. The minerals to which this label applies are defined in the leasing laws.

2 Saleable minerals, also called mineral materials, are common minerals and building materials such as sand, stone, gravel, pumice, and clay. Generally, salable minerals are widespread, of low unit value, and are often used for construction or landscaping materials. These materials are managed under the Materials Act of 1947 and implementing regulations.

3 Locatable minerals are any minerals not governed by the mineral leasing laws or mineral materials laws. Examples of locatable minerals include gold, silver, gemstones, lead, and gypsum. Locatable minerals can be obtained by filing a mineral claim.

3.13.2 Applicable Laws, Regulations, Plans, and Standards

Federal Land Policy and Management Act of 1976 – Section 204

The Federal Land Policy and Management Act of 1976 (FLPMA) governs how the BLM manages public land. Public land is to be kept in federal possession unless the sale of that land to a private owner serves the national interest. Section 204 describes requirements for "withdrawals" of land, which include withholding an area of federal land from settlement, sale, location, or entry, under some or all of the general land laws, for the purpose of reserving the area for a particular public purpose or program, such as utility scale solar energy development. In July, 2013, the BLM issued Public Land Order No. 7818, which withdrew the SEZs identified in the Final PEIS from location and entry under the United States mining laws (BLM 2013). The ramifications of this withdrawal are discussed further in the following section describing Public Land Order No. 7818. One requirement of withdrawal of land greater than 5,000 acres is the preparation of a report that includes information about the known mineral deposits, past and present mineral production, mining claims, mineral leases, evaluation of future mineral potential, present and potential market demands. As noted in the Final Solar PEIS (BLM and DOE 2012, p. 2-37), a full mineral potential assessment report for the Dry Lake SEZ has been completed.

Public Land Order No. 7818

On December 17, 2012, temporary measures were published in the Federal Register that segregated public lands in Arizona, California, Colorado, Nevada, New Mexico, and Utah from settlement, sale, location, and entry under federal mining laws to protect and preserve SEZs identified in the Final Solar PEIS for future solar energy development (77 Fed. Reg. 74690). Those temporary measures were formalized for a 20-year period on June 27, 2013 pursuant to Public Land Order No. 7818, which withdrew 303,900 acres of land within the SEZs from the location of mining claims that could impede the development of potential solar energy sites. The Public Land Order was published in the Federal Register on July 5, 2013 (78 Fed. Reg. 40499). The Public Land Order extends the withdrawal for 20 years.

Under Public Land Order No. 7818, the public lands in SEZs, including the Dry Lake SEZ, have been withdrawn, subject to valid existing rights, from settlement, sale, location, or entry under the general land laws, including the mining laws. This means that new mining claims cannot be filed on the withdrawn lands, although valid mining claims filed prior to July 5, 2013 would take precedence over future solar energy development ROW application filings. Withdrawn lands cannot be sold, exchanged, or otherwise disposed of during the term of the withdrawal. Further, withdrawn lands remain open to mineral or geothermal leasing and mineral material laws, so the BLM could elect to lease the oil, gas, coal, or geothermal steam resources, or to sell common-variety mineral materials, such as sand and gravel, if the authorized officer determined there would be no unacceptable impacts on future solar energy development. Finally, withdrawn lands remain open to ROW authorizations and land leases or permits authorized under Section 302 of the FLPMA.[4]

[4] Information about the withdrawal of SEZ lands is available on the BLM's Western Solar Plan webpage [http://blmsolar.anl.gov/sez/withdrawal/] and also in Section 2.2.2.2.4 of the Final Solar PEIS (BLM and DOE 2012).

Mineral Materials Management

The sale, free use, or issuance of a material site right-of-way for mineral materials must be in conformance with the Las Vegas RMP, Minerals Management Section (Code MN), the Federal-Aid Highway Act (23 U.S.C.A. §101 et seq.), and the regulations found at 43 CFR 3600. The regulations at 43 CFR 3600 establish procedures for the exploration, development, and disposal of mineral material resources on the public lands, and for the protection of the resources and the environment. The regulations apply to free use permits and contracts for sale of mineral materials. Any mineral materials extracted, severed or removed from public lands without a contract, free use permit or material site right-of-way constitutes unauthorized use. Unauthorized users are liable for damages to the United States, and are subject to prosecution for such unlawful acts.

3.13.3 Methodology

The methodology used in this EA to evaluate potential impacts relating to geology and minerals is the same as the methodology described in Appendix M of the Draft Solar PEIS (BLM and DOE 2010, p. M-11 et seq.).

3.13.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features, resource surveys, and management plans that are proposed to avoid or reduce potential geology and minerals related impacts of the Proposed Action. In addition, all mineral materials associated with the Project would be used onsite within the right-of-way or stockpiled onsite for disposal by the BLM. If mineral materials associated with the Project are stockpiled onsite for future disposal by the BLM, a mineral material contract, free use permit, or material site right-of-way must be issued by the BLM before those mineral materials may be used.

3.13.5 Environmental Consequences

This analysis tiers to Section 5.7 of the Solar PEIS (BLM and DOE 2010, p. 5-19; BLM and DOE 2012, p. 5-6), as well as Sections 5.8 and 11.3.8 (BLM and DOE 2010, pp. 5-35, 11.3-51; BLM and DOE 2012, pp. 5-7, 11.3-16). The analysis and other information provided there remains applicable except as detailed below.

3.13.5.1 Proposed Action

The Proposed Action would disturb the ground within the same area evaluated in the Solar PEIS and to similar depths as those evaluated in the Solar PEIS (the inclusion of groundwater wells as part of site characterization is described in Draft PEIS Section 3.2.1). The facilities described in Section 2.2.5, *Offsite Linear Facilities,* are located within the original Dry Lake SEZ analyzed in the Solar PEIS.

Direct and Indirect Effects

Geologic Hazards

Geologic hazard impacts were disclosed and evaluated in the Solar PEIS (BLM and DOE 2010, 2012, p. 11.3-37 et seq.). The Proposed Action would build structures in an area that could experience light shaking in the case of an earthquake on one of the nearby Quaternary faults. While the potential for

liquefaction, land subsidence, and volcanism exists in the Project area, there is low likelihood that exposure of public health and safety to these hazards would be affected by the Proposed Action. The Applicant would conduct a geotechnical investigation to determine the type and size of foundations required for the structures and equipment associated with the Proposed Action, as recommended in programmatic design feature SR2-1 (BLM 2012). The Project-specific geotechnical report would identify and assess geologic and soil hazards at the site, and propose facility design criteria and any necessary Project-specific mitigation measures that would limit the effects of shaking and liquefaction at the site should an earthquake occur on a nearby fault.

While structures at the Project site could be exposed to multiple geologic hazards, the intensity of these hazards would not be severe and the implementation of recommendations determined by the results of a geotechnical investigation would further limit the geologic hazard risks associated with the Project. The programmatic design features and other protective measures described in Section 2.2.17 reduce the risk posed by geologic hazards at the site to a minimum. All of these potential effects were identified and analyzed in the Solar PEIS. No new significant impacts relating to geology would occur.

Minerals

As stated above, existing mineral leases or mining claims are not present on parcels 2, 3, and 4. Thus, no existing mineral resource extraction activity would be affected by the Proposed Action. It is unlikely that locatable minerals are present or could be accessed through the Project area because mineral occurrences have not been recorded in the Project area (MRDS 2014). In addition, the area has been closed to locatable mineral entry since 2009 (BLM and DOE 2010) and has been withdrawn from locatable mineral entry and surface occupancy per Public Land Order No. 7818 (BLM 2013). The Proposed Action therefore would not change the accessibility of locatable minerals at the site.

Mineral materials (sand and gravel) are generally extracted from alluvium, the type of sediment underlying parcels 2, 3, and 4 and which is common throughout the Basin and Range geomorphic province (BLM and DOE 2010). The Proposed Action would make the mineral materials in parcels 2, 3, and 4 inaccessible for the lifetime of the Project. Programmatic design feature MR1-2 indicates that, upon designation, SEZs will be classified as no surface occupancy areas for oil, gas, and geothermal leasing; however, as stated in Draft PEIS Section 11.3.8, future development of oil and gas resources would continue to be possible in the Dry Lake SEZ, since such development could occur with directional drilling from outside the SEZ. The Proposed Action would not alter the classification of the site as no surface occupancy. No evidence of a geothermal energy resource (such as warm or hot wells or hot springs) has been found at the site (Shevenell, et al. 2000). For this reason, it is not anticipated that the Proposed Action would adversely affect development of geothermal resources.

In addition to the direct effects described above, the Proposed Action would indirectly result in the preclusion of many types of mining activities at the site over the next 20 years, resulting in avoidance of potential mining-related adverse impacts.

Mineral materials would be used in small amounts for concrete foundations, fence footing, and miscellaneous small pads. Aggregate material would be used for backfilling trenches and covering parking areas, and potentially for roads (if necessary). Riprap would be necessary for erosion control. The Applicant would determine a source for these materials and the plan for their use would be presented for

use of roads and trails, and recreational shooting are evident in the area. See Section 3.18, *Recreation*, for additional details.

The site is located approximately 13.5 miles northeast of Nellis Air Force Base, an existing Department of Defense installation. The effects of the Project on military aircraft operations are analyzed in Section 3.17, *Military and Civilian Aviation*, and are not discussed in this section.

Coccidioidomycosis, also known as Valley Fever, is an illness caused by the fungus Coccidioides. The fungus Coccidioides is "suspected endemic" to southern Nevada, but has the lowest risk rating for areas where the fungus may occur (CDC 2012). According to the Division of Public and Behavioral Health's Office of Information and Epidemiology, the fungus is found in dust and soil in semiarid areas. When contaminated soil and dust are disturbed, Coccidioides spores circulate in the air. When these spores are inhaled, infection of the lungs or other organs can develop. Coccidioides is a common cause of pneumonia. Of those who live in an endemic area, 30 to 60 percent are exposed to Coccidioides at some point in their lives (CDC 2012).

In 2010, there were over 16,000 reported cases of coccidioidomycosis in the United States; the majority of these cases were located in Arizona and California (Division of Public and Behavioral Health 2014). From 2003 to 2012, the annual number of reported coccidioidomycosis cases in Nevada ranged from a low of 36 cases in 2003 to a high of 118 cases in 2012. Between 2008 and 2012 (years for which monthly data is available), there was no discernable monthly or seasonal trend for reported coccidioidomycosis infections. The number of reported cases ranged between 0 and 14 cases per month, depending on the year. Over the 10 years, a total of 710 cases were reported. Due to the large proportion of cases from southern Nevada increasing the state rate, the age-adjusted incidence rates for the other health districts were all significantly lower than the overall state rate (Division of Public and Behavioral Health 2014).

The most recent number of reported valley fever cases in Nevada, New Mexico, and Utah combined was 162, or about 2 percent of the total U.S. cases reported to the Centers for Disease Control and Prevention in 2013 (CDC 2014). Most people exposed to Coccidioides have no symptoms or may exhibit very mild flu-like symptoms. However, some people have a more severe infection. Anyone living in or travelling to an endemic area is at risk of getting coccidioidomycosis (Division of Public and Behavioral Health 2014).

3.15.2 Applicable Laws, Regulations, Plans, and Standards

All site characterization, construction, operation, maintenance, and decommissioning activities would be conducted in compliance with applicable federal, state, and local requirements. The following federal laws and regulations provide thresholds that are relevant to this EA's consideration of potential impacts on public and worker safety resulting from exposure to hazards and hazardous materials:

- **40 Code of Federal Regulations (CFR) Part 117 – Determination of Reportable Quantities for Hazardous Substances**, establishes the quantities of hazardous substances above which the release of these substances must be reported to the federal government.

- **40 CFR Part 112 – Oil Pollution Prevention,** requires a handler of hazardous waste to obtain a permit from the state or federal government prior to operation if storage thresholds for petroleum are exceeded and certain other preconditions are met. Conditions of the permit would require the

permit holder to limit the potential for accidental release by identifying all wastes generated, limiting the amount of waste that can accumulate at the site where waste is generated, and keeping accurate records of hazardous waste handling.

- **Stormwater Pollution Prevention Plan,** would ensure erosion and other water quality pollutants associated with construction are controlled through use of standard and Project-specific Best Management Practices (BMPs).

3.15.3 Methodology

The Solar PEIS evaluated effects of solar energy development by describing the hazardous materials and haul routes proposed for use in all anticipated solar technology types and qualitatively described the release risk in the context of relevant regulations. This EA analyzes potential impacts that could result if the Proposed Action would: (a) require storage, transport, or disposal of materials not described in the Solar PEIS; or (b) otherwise alter current exposure to risk of injury, death, or property damage by affecting emergency response, public health, or intentionally destructive acts.

3.15.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features, resource surveys, and management plans that are proposed to avoid or reduce potential impacts of the Proposed Action. Programmatic design features HMW1-1, HMW2-1, HMW3-1, HMW4-1, HMW4-2, HS1-1, HS2-1, and HS3-1, outlined in Appendix A of the ROD for the Solar PEIS (BLM 2012) would apply to the Proposed Action.

3.15.5 Environmental Consequences

This analysis tiers to Sections 5.20 and 5.21 of the Draft and Final Solar PEIS (BLM and DOE 2010, pp. 5-238, 5-268; BLM and DOE 2012, p. 5-26). The analysis and other information provided in those documents remains applicable except as detailed below.

3.15.5.1 Proposed Action

The Proposed Action would occur within the area analyzed for hazards and hazardous material impacts in the Solar PEIS, with the exception of the proposed offsite well and water pipeline. Components of the Proposed Action that are relevant for this analysis include: Hazardous materials used in construction equipment or used for construction equipment maintenance, PCS batteries, coating and solvents used on project structures, herbicides, insulating oil in transformers, and hazardous waste resulting from construction activities. Site security measures and the health and safety program are also relevant for this analysis. These components are described in detail in Chapter 2, *Proposed Action and Alternatives*.

Draft Solar PEIS Section 3.5 describes the specific hazardous materials and wastes used or generated during construction and operation of PV solar facilities. All of the materials and wastes associated with the Proposed Action were identified in the Solar PEIS.

Direct and Indirect Effects

Storage, transport, or disposal of hazardous materials

Exposure to hazardous materials directly resulting from the Proposed Action could occur as a result of spills, leaks, or other releases during construction, operation, maintenance, and transport of materials to and from the Project area.

Construction of the Proposed Action could result in increased risks of fires and contamination of environmental media from improper storage and handling of hazardous materials, leading to spills or leaks, and potential contamination of the environment from improper collection, containerization, storage, or disposal during short-term accumulation of wastes onsite. These adverse impacts would be reduced by the implementation of protective measures that fulfill the requirements of the programmatic design features. These measures are summarized in Section 3.15.4, above, and described in detail in Appendix A of the ROD for the Solar PEIS (BLM 2012).

Additional risks to public and environmental health also could occur if hazardous materials or wastes accidentally were released during transport to or from the Project site; however, similar to hazardous waste generation, hazardous materials transport would comply with federal requirements that are protective of public and environmental health (49 CFR Parts 171-179; 40 CFR Part 263). Transporters of hazardous materials or waste must meet material packaging and handling requirements, keep accurate handling records, and take immediate action to protect human health in the case of accidental release of materials or waste into the environment (USEPA 2011; 40 CFR Part 171). The hazardous materials transported to and from the Project site are the same types of materials analyzed in the Draft and Final Solar PEIS for solar PV technology with the exception that Section 5.20.2.3 of the Draft Solar PEIS identified cadmium telluride (CdTe) modules as a hazardous material. This is not the case. Instead, such modules are an “article” (i.e., a finished product) under the OSHA Hazardous Communication standard and the fact that they contain CdTe does not cause them to be categorized as a hazardous material.

Due to the lack of evidence of soil or groundwater contamination at the Project site, the chance that construction workers would come into contact with hazardous materials during ground disturbing or temporary dewatering activities would be low.

During operation and maintenance activities, workers could be exposed to hazardous materials and wastes and environmental contamination resulting from spills or leaks of dielectric fluid in transformers. However, the risk of accidental exposure to transformer fluid would be minimized by the regular monitoring of transformer containment that is proposed as part of the Project.

The types of materials and wastes to be used or generated as a result of the Proposed Action were included in the analysis of the Solar PEIS (see Draft and Final PEIS Section 5.20). In addition, the effects identified above were disclosed in the Draft and Final Solar PEIS. The Proposed Action is consistent with the analysis and findings in the Draft and Final Solar PEIS. All applicable design features and protective measures would be implemented as a part of the Proposed Action and no new significant direct or indirect effects would occur related to hazards and hazardous materials as a result of the Proposed Action.

Emergency response

Traffic during construction could limit emergency response to the Harry Allen Power Plant, accessed by the same paved access road as would be used to haul construction materials and equipment to the Project site. However, the Project includes a Traffic Management Plan, which would require notification of emergency responders prior to construction and would phase delivery truck traffic to and from the site if Project-related traffic exceeds identified levels. In addition, the Project Access Road would be repaired to pre-construction condition once construction is complete.

Public and Occupational Health and Safety

Ground disturbance during construction could result in the release of spores of the fungus that causes valley fever. The Proposed Action would implement programmatic design feature AQC2-1, which includes dust control measures and the preparation of a Dust Abatement Plan. These dust control measures would minimize the amount of spore-laden soil eroded and/or carried offsite, limiting the severity of the potential effect on public health. Health and safety risks posed to workers, including the risk of valley fever, would be addressed by the Health and Safety Program and consistent with Nevada Occupational Safety and Health Administration regulations which require job hazards to be properly identified and the necessary protective measures implemented.

Additional effects of the Proposed Action on occupational health and safety include risk of injuries or fatalities to workers during construction, operation, maintenance, and decommissioning of facilities and transmission lines resulting from: (a) weather extremes, (b) harmful interactions with plants or animals, (c) fire hazards, (d) retinal exposures to high levels of glare,[1] (e) hazardous substances, (f) electrical shock, or (g) exceptionally strong magnetic fields. The implementation of programmatic design features HS1-1, HS2-1, and HS3-1 would minimize the extent of the risk associated with unauthorized site access and exposure to hazardous materials and electrical and magnetic field hazards.

These public and occupational health and safety effects are consistent with those disclosed and analyzed in the Solar PEIS, described in Draft Solar PEIS Section 5.21.1 and Final Solar PEIS Section 5.21. The Proposed Action would be consistent with the analysis and findings contained in the Solar PEIS. The implementation of programmatic design features and project protective measures would reduce the health and safety risk to workers. No new significant public and occupational health impacts associated with Project activities would occur.

Intentionally Destructive Acts

Potential impacts of intentionally destructive acts as described in the Solar PEIS include injuries, loss of life, and release of hazardous materials into the environment as a result of accidents, sabotage, or terrorism. The Proposed Action would not increase the susceptibility of the area to intentionally destructive acts beyond what was identified in the Solar PEIS and no new significant effects related to intentionally destructive acts would occur as a result of the Proposed Action.

[1] Glint and glare also could affect users of nearby surface transportation routes or military or civilian pilots. These types of potential glint- and glare-related impacts are analyzed in Section 3.21, *Visual Resources*, and Section 3.17, *Military and Civilian Aviation*, respectively.

Location of the Proposed Action

As noted above in Section 3.15.1, the Project site is within 20 miles of the nearest Department of Defense installation. As described in Table 2-7, *Dry Lake Programmatic Design Features,* the Proposed Action would be consistent with the programmatic design features adopted in the ROD, including design feature HMW2-1, which requires a survey of the Project site for unexploded ordnance. This survey would minimize the risk of encountering unexploded ordnance onsite during construction.

Mitigation Measures

Because no new significant impacts related to hazards or hazardous materials would occur as a result of the Proposed Action relative to those considered in the Solar PEIS, no mitigation measures are recommended.

Cumulative Effects

Storage, transport, or disposal of hazardous materials

The Solar PEIS did not evaluate cumulative effects of exposure to hazards and hazardous materials. The geographic scope of cumulative impacts associated with hazards and hazardous materials includes the pathways of exposure – the air basin, watershed boundary, groundwater basin, extent of affected soils (in the case of a spill), and materials or waste hauling routes.

Projects identified in Section 3.2, *Cumulative Scenario*, could cause similar impacts that may combine with the Proposed Action related to the potential release of hazardous materials during routine use, transport, storage, and disposal for construction and operation of these projects. As discussed above, construction, operation, maintenance, and decommissioning of the Proposed Action could result in minor, localized impacts related to the potential to encounter hazardous materials, or to the potential for accidents to occur during the routine use of hazardous materials releasing such materials into the environment or causing harmful exposures.

Impacts caused by the projects in the cumulative scenario, combined with the Proposed Action, would not result in an adverse cumulative hazard or hazardous materials impact even if all of the projects were to be constructed simultaneously in part because all projects would be required to adhere to the robust body of regulations that govern hazardous materials transport, storage, and handling, and worker health and safety. These laws and other requirements have been adopted with cumulative safety considerations in mind and to be sufficiently protective of human health and safety under cumulative conditions. In addition, the Proposed Action, the Harry Allen Solar Energy Center Project, and the Dry Lake Solar Energy Center (each of which is proposed within the Dry Lake SEZ) would comply with the programmatic design features identified in the Solar PEIS ROD. Compliance with these measures would ensure that impacts related to exposure to hazardous materials would be minimized and/or avoided. The Proposed Action would be constructed, operated, maintained, and decommissioned in compliance with these requirements; therefore, none would cause or contribute to a significant cumulative effect related to hazards or hazardous materials.

Emergency Response

The potential for the Project to limit emergency response efforts or increase traffic accidents in a way that could combine with similar effects of other past, present, or reasonably foreseeable future projects is

considered low. The geographic scope of the cumulative impacts analysis for such risk would be other projects developed along the Harry Allen Power Plant access road. Projects in the cumulative scenario include the Harry Allen Solar Energy Center Project and the Dry Lake Solar Energy Center, both of which are proposed within the Dry Lake SEZ. If construction of either of these projects overlapped with the Proposed Action, construction traffic along Harry Allen Power Plant access road could limit the ability of emergency vehicles to access other facilities along the roadway or otherwise adversely affect traffic along the roadway. However, these two projects would be required to comply with the same programmatic design features as the Proposed Action, including implementation of methods to minimize impacts of the projects on transportation such as incorporating additional site access into local and regional road networks and implementing traffic control measures to reduce traffic hazards (BLM 2012, p. 120). The Proposed Action and other projects in the cumulative scenario would be required to comply with these requirements; therefore, none would cause or contribute to a significant cumulative effect related to emergency response or traffic hazards.

Public Health and Safety

The cumulative scenario and analysis for storage, transport, or disposal of hazardous materials includes effects to public health resulting from hazardous materials release. Exposure of the public to health risks resulting from physical hazards from unauthorized access to the facility, potential increased exposure to magnetic fields, and potential exposure to valley fever could combine with other past, present, and reasonably foreseeable future projects to impact public health in the Dry Lake Valley, although with the implementation of programmatic design features and project protective measures the risk would be low. Potential cumulative effects could occur at any time during the lifespan of the Project, but would not persist after closure and decommissioning. Some types of public safety hazards would be specific to the Project and would not combine with other projects. These include physical hazards from unauthorized access to the facility and potential increased exposure to magnetic fields. Other projects that could adversely affect public health due to increased exposure to valley fever spores in the cumulative scenario include the TransWest Transmission Project, Southern Nevada Intertie Project, Harry Allen Solar Energy Center Project, Dry Lake Solar Energy Center, and NVN 84232/First Solar. The two other solar projects that would be constructed within the Dry Lake SEZ would be subject to the same programmatic design features as the Proposed Action, and as a result would not contribute to a significant cumulative effect related to valley fever. The remaining two transmission projects and the solar project adjacent to the SEZ could disturb soils in the Dry Lake Valley concurrently with the Proposed Action, potentially exposing workers or others in the area to coccidioidomycosis (Valley Fever). The Proposed Action and other projects in the cumulative scenario would be required to comply with dust control measures and health and safety measures as described above; therefore, none would cause or contribute to a significant cumulative effect related to emergency response or traffic hazards.

Intentionally Destructive Acts

The number of high profile international and domestic terrorist attacks during the last decade presents a new and realistic threat to the safety and security of the people of the U.S., infrastructure, and resources. There is a potential for intentional destructive acts, such as sabotage or terrorism events, to cause impacts to human health and the environment. As opposed to industrial hazards, collisions, and natural events, where it is possible to estimate event probabilities based on historical statistical data and information, it is not possible to accurately estimate the probability of an act of terrorism or sabotage; therefore, related

analysis generally focuses on the consequences of such events. In general, the consequences of a sabotage or terrorist attack on a solar facility would be expected to be similar to accidental and natural events that could result in an interruption of power service, fire, or hazardous materials release.

The energy generation sector is one of 16 areas of Critical Infrastructure listed by the U.S. White House (The White House 2013). Nearly all of the other areas of Critical Infrastructure are reliant, at least in part, on the energy sector. The level of security needed for any particular facility depends on the threat imposed, the likelihood of an adversarial attack, the likelihood of success in causing a catastrophic event, and the severity of consequences of that event.

The risk of intentionally destructive acts resulting from the Project that could combine with the individual threat of other past, present, or reasonably foreseeable future energy-related projects is considered low. The geographic scope of the cumulative impacts analysis for such threats would be the Dry Lake SEZ and other energy generation projects adjacent to the Dry Lake SEZ and roadways I-15 and Highway 93. Potential cumulative effects could occur at any time during the lifespan of the Project, but would not persist past closure and decommissioning.

Other renewable energy generation projects in the cumulative scenario are identified in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ*, and include similar utility-scale proposals and projects such as the Apex Generating Station, the Chuck Lenzie Generating Station, the Harry Allen Generating Station and Substations, the Silverhawk Generating Station, the Harry Allen Solar Energy Center Project, and the Dry Lake Solar Energy Center. The human and environmental consequences of a realized threat of an intentionally destructive act could be comparable regardless of an energy generation facility's size or power output; however, although possible, it is unlikely that the targeting of renewable energy facilities in the Project area would result in a catastrophic event, due to the low population living in or around the Project area and the lack of commercial development in the Project area. Intentionally destructive acts are by their nature unpredictable, and it would be speculative to conclude that the Project would cause or contribute to a significant cumulative effect in this regard.

3.15.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts related to hazards and hazardous materials from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012) and because the successful bidders at the Dry Lake SEZ auction have demonstrated a substantial commitment to the solar resource (BLM 2014), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

Specific types, amounts and locations of hazardous materials use and soil disturbance, and other related details about possible future solar development at the site, are not available, and so it is only possible at this time to provide a general analysis of potential future solar development that could occur on the site. If the Proposed Action was not constructed, a different PV project could be constructed and presumably would have substantially similar effects as those of the Proposed Action. If different types of solar power generation facilities are built under the No Action Alternative, then the hazardous materials used and

other safety hazards posed by the solar technology chosen may be closer to those described for other solar technologies in Chapter 3 of the Solar PEIS.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts related to hazards and hazardous materials, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts from that development would likely be similar to those described in the Proposed Action section above if a PV project were developed, or vary by technology as indicated in the discussion of direct and indirect effects.

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3.16 Lands/Access

This section tiers to Section 11.3.2 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-19 et seq.) and Section 11.3.2 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-5 et seq.), both of which relate to lands and realty. The analysis and other information provided in those documents remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of parcels 2, 3, and 4.

3.16.1 Affected Environment

Section 11.3.2 of the Solar PEIS (BLM and DOE 2010, p. 11.3-19 et seq.; BLM and DOE 2012, p. 11.3-5 et seq.) describe the land uses within and adjacent to the Dry Lake SEZ, which consist of undeveloped and developed land including substations, pipelines, existing leases and mining claims, the Harry Allen Combined Cycle Generation Station, a gypsum processing plant, the Union Pacific Railroad, I-15, U.S. 93, and smaller paved and dirt roads. Two designated transmission corridors pass through the SEZ that contain natural gas, petroleum product, water pipelines, and electric transmission lines. The analysis in this EA relies on those discussions, updates them to describe changes that have occurred since publication of the Final Solar PEIS,[1] and tailors them to reflect Project site-specific information. Parcels 2, 3, and 4 are undeveloped, with the exception of a gas line that traverses parcel 2. The existing NV Energy Harry Allen Substation, paved access road, and an NV Energy high-voltage transmission line are located immediately adjacent to the Project's northern boundary (Figure 2-1, *Project Location Map*).

3.16.2 Applicable Laws, Regulations, Plans, and Standards

The BLM manages lands and access according to the 1998 BLM Las Vegas Resource Management Plan (RMP), as amended (BLM/LVFO 1998).

3.16.3 Methodology

The methodology used in this EA for purposes of evaluating impacts to lands and realty from the Proposed Action and No Action Alternative tiers to the methodology used in the Draft Solar PEIS (BLM and DOE 2010, Appendix M, Section M.2, p. M-4). In addition, a search of existing and pending land use authorizations was conducted through the BLM's Land & Mineral Legacy Rehost System (LR2000) to determine any land use authorizations approved since publication of the Final Solar PEIS (BLM 2014a).

3.16.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features, resource surveys, and management plans that are proposed to avoid or reduce potential impacts of the Proposed Action.

[1] Since publication of the Final Solar PEIS, three additional land use authorizations have been granted within 5 miles of the SEZ: the Mountain View Solar, Apex Solar Power, and Moapa Solar Energy Center Projects, which are described in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ.* Each has a transmission authorization on BLM-administered land.

3.16.5 Environmental Consequences

This analysis tiers to Section 11.3.2 of the Solar PEIS (BLM and DOE 2010, p. 11.3-19 et seq.; BLM and DOE 2012, p. 11.3-5 et seq.). The analysis and other information provided in those documents remains applicable except as detailed herein for purposes of this analysis.

3.16.5.1 Proposed Action

Direct and Indirect Effects

For the purposes of this analysis, direct and indirect effects include effects to the Project site and lands within 5 miles of the SEZ in relation to lands and realty. The Proposed Action would develop approximately 1,700 acres within the SEZ. Development of parcels 2, 3, and 4 would establish a large industrial area that would exclude other uses of the land for the duration of the ROW grant. The Proposed Action would not adversely affect the existing ROWs inside the SEZ or within 5 miles of the SEZ. The BLM notified grant holders of ROWs adjacent to and near the Proposed Action of the proposal to develop parcels 2, 3, and 4 and requested comments on how the Proposed Action could affect the integrity of the grant holders' existing facilities or affect the use of those facilities. NV Energy responded by indicating that development of areas within parcels 2, 3, and 4would not adversely affect NV Energy's ability to operate its existing facilities, but that NV Energy would need to review 90 percent engineering plans a minimum of 30 days before giving concurrence (NV Energy 2014).

As identified in the BLM's Solar Energy Environmental Mapper Web-Based GIS Program, there is one Section 368 corridor and one locally designated corridor within the SEZ, but neither overlaps with parcels 2, 3, or 4 or the proposed gen-tie alignment (BLM 2014b). Therefore, the Project would not affect designated utility corridors.

The Solar PEIS identifies facilities proposedwithin the SEZ as part of solar facility development and identifies the existing 500 kV transmission line within the SEZ as a potential point of interconnection. Except for the proposed well and water pipeline, all components of the Proposed Action would be located within the boundary of the SEZ, and would not affect any other authorized uses adjacent to the SEZ. The well and pipeline would be constructed on private land, and the pipeline would be located underground, resulting in no lands and realty-related impact. In addition, because the Project would construct solar generating facilities and associated linear facilities within the SEZ analyzed within the scope of the impact analysis of the Solar PEIS, the Proposed Action is consistent with the analysis and findings in the Solar PEIS. All applicable design features and protective measures would be implemented as a part of the Project. No new significant effects would occur related to lands and realty as a result of the Proposed Action.

Mitigation Measures

Because no new significant impacts related to lands and realty would occur as a result of the Project relative to those considered in the Solar PEIS, no mitigation measures are recommended.

Cumulative Effects

This cumulative effects analysis tiers to Section 11.3.22.4.1 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-349 et seq.) and Section 11.3.22 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-96 et seq.).

This analysis relies on those discussions, and provides updates to describe changes in the cumulative scenario that have occurred since publication of the Final Solar PEIS.

As described above, the Proposed Action would not have adverse effects on existing ROWs and other authorizations within the SEZ or within 5 miles of the SEZ. Therefore, it would not contribute to cumulative effects on these existing ROWs or uses.

The Proposed Action would develop 1,700 acres of the SEZ, making this area unavailable for traditional uses of and access to public lands. These effects would occur throughout the lifetime of the Project, assumed to be the 30-year term of the ROW grant, if approved. The geographic scope of cumulative effects on lands and realty has been refined since the Solar PEIS to include the lands encompassed by the Las Vegas RMP boundary. The cumulative effects analysis performed in the Draft Solar PEIS and updated in the Final Solar PEIS identified existing authorizations and pending applications within a 50-mile radius of the proposed Dry Lake SEZ, which remains applicable to this analysis except as revised or updated in Section 3.2, *Cumulative Scenario*, of this EA. As noted above, there are several new transmission line authorizations within and adjacent to the SEZ, one new transmission application, and two new solar development applications within the SEZ in addition to the Proposed Action. These existing and reasonably foreseeable actions are considered in this cumulative effects analysis.

The Final Solar PEIS anticipated that up to 4,574 acres of the developable area of the SEZ would be developed under a full build out scenario, eliminating the traditional uses of and access to public lands within the SEZ (BLM and DOE 2012, p. 11.3-1). Subsequent to the issuance of the ROD, the developable area was reduced to 3,471 acres. The Proposed Action, in combination with the proposed NV Energy and Invenergy Dry Lake SEZ projects on parcels 1, 5, and 6, would result in a total development of approximately 3,230 acres. This cumulative effect is within the scope of the lands and realty impacts analyzed in the Final Solar PEIS for the Dry Lake SEZ, and no new or increased cumulative effect would occur as a result of the Proposed Action and other projects within the SEZ.

As discussed in the Draft Solar PEIS (BLM and DOE 2010, p.11.3-350), development of the Proposed Action in combination with other projects in the ROW could impact the uses of and access to public lands in the vicinity of the SEZ, depending in part on where and how many potential projects are actually built. Although the list of specific projects in the cumulative scenario has been updated since the Final Solar PEIS (see Table 3.2, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ*), the scope of potential cumulative effects on lands and realty is within that analyzed in the Final Solar PEIS, and no new or increased significant cumulative effects would occur to lands and realty as a result of the Proposed Action.

3.16.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts to lands and access from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012) and because the successful bidders at the Dry Lake SEZ auction have demonstrated a substantial commitment to the solar resource (BLM 2014c), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

Typically, the potential environmental effects of solar power generation facilities on lands and realty can vary depending on the technology; additionally, potential alternative layouts could cause location-specific impacts to existing land uses and authorizations that differ from those of the Proposed Action. However, potential future development of parcels 2, 3, and 4 is constrained to development of the 1,700 acres within the footprint of the subject parcels. Therefore, it can be assumed that if the Proposed Action was not constructed, a project requiring a comparable number of acres within parcels 2, 3, and 4 is likely to be developed, even if a different solar technology is used. Although no specific details are available about a potential future solar proposal on the Project site, such effects to lands and realty would be expected be similar to those of the Proposed Action.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts to lands and access, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts to lands and access from that development would likely be similar to those described in the Proposed Action section above.

3.17 Military and Civilian Aviation

This section tiers to Section 11.3.6 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-35) and Section 11.3.6 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-10), which relate to military and civilian aviation; and to Section 11.3.21 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-323 et seq.) and Section 11.3.21 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-95 et seq.), which include additional information about airports and air bases. The analysis and other information provided in those documents remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of parcels 2, 3, and 4.

3.17.1 Affected Environment

The nearest air base to the Dry Lake SEZ is Nellis Air Force Base located approximately 13.5 miles from the Project site (BLM and DOE 2010, p. 11.3-35; BLM and DOE 2012, p. 11.3-10). The Dry Lake SEZ is not located under any military airspace or in a U.S. Department of Defense (DoD) Consultation Area.

3.17.2 Applicable Laws, Regulations, Plans, and Standards

No laws, regulations, plans, or standards provide thresholds that are relevant to this EA's consideration of potential effects on military and civilian aviation.

3.17.3 Methodology

Section M.6 of Appendix M of the Solar PEIS (BLM and DOE 2010, p. M-10) describes the impact assessment methodology relied upon to analyze military and civilian aviation impacts for the Western Solar Plan, including the BLM's consultation with the Department of Defense. This EA tiers to and relies on that methodology to evaluate potential impacts to military and civilian aviation. Further, for this Project, the BLM provided the Plan of Development (POD) for this Project to Nellis Air Force Base for review (NV Dry Lake, LLC 2014).

3.17.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features, resource surveys, and management plans that are proposed to avoid or reduce potential impacts of the Proposed Action, including actions to reduce the potential for glint and glare.

3.17.5 Environmental Consequences

This analysis tiers to Section 11.3.6 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-35) and Section 11.3.6 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-10). The analysis and other information provided in those documents remains applicable except as detailed below.

3.17.5.1 Proposed Action

Direct and Indirect Effects

The Project site is not in close proximity to a public airport or other civilian aviation uses, and so would not affect civilian aviation directly or indirectly. Refer to Section 3.21, *Visual Resources*, for a discussion of potential nighttime lighting impacts.

Although the Project site is not located under any military airspace or in a DoD Consultation Area, it is approximately 13.5 miles northeast of Nellis Air Force Base. Given that distance, Project elements would not affect the approach or departure corridors for runways at the base. Because the Project would not construct facilities taller than 200 feet, it would not require FAA evaluation of safety hazards. However, as described in the Draft Solar PEIS, the military has indicated that structures higher than 50 feet within the vicinity of the base may present electromagnetic compatibility concerns for test missions at the Nevada Test and Training Range. The Proposed Action includes components over 50 feet in height. The tallest structures would be the steel monopoles, which would be up to approximately 90 feet above grade. The DoD siting clearinghouse indicated to the BLM Nevada State Office that it did not have concerns about the Proposed Action. To date, no formal DoD submissions have been received in response to the BLM's initiation of consultation. Nellis Air Force Base has indicated that the Project would be located within a "controlled bailout area" for pilot ejections and that with increasing development within and near the Dry Lake SEZ, a different area likely would be needed for controlled bailout operations (BLM 2014a).

A glare analysis was performed for the Project using the Solar Glare Hazard Analysis Tool (SGHAT) developed by Sandia National Laboratories in collaboration with the FAA to provide a quantified assessment of when and where glare could occur, as well as information about potential ocular impacts. SGHAT uses a Google Maps interface with site specific parameters such as flight path proximity to the Project, glide slope, tracking versus fixed array, and solar panel orientation and tilt to simulate the probability of glint/glare occurrence during a specific time of day. No visible glare was found for aircraft taking off from Nellis Air Force Base, and aircraft landing at the base would be facing away from the Project site. No observation point- or flight path-based analyses found visible glare with "potential for permanent eye damage" (the highest rating given to visible glare in the SGHAT analysis).

The glare analysis was performed for the Project using numerous vantage points within the Class B airspace[1] overlying the Project site. The analysis determined that the most severe potential glare impacts would be likely to occur in the mornings during the summer months, from observation points to the east of the Project site. The use of solar tracking technology would result in longer duration of glare compared to fixed-tilt technology.[2] From observation points to the east of the Project site, there could be glare with "potential for temporary after-image[3]" visible for up to approximately 3.5 hours per morning between

1 Class B airspace is airspace from the surface to 10,000 feet above mean sea level surrounding the busiest airports in terms of operations or passengers (FAA 2008).

2 A research article entitled *A Study of the Hazardous Glare Potential to Aviators from Utility-Scale Flat-Plate Photovoltaic Systems* (Riley and Olson 2011) reports results showing that "the potential for hazardous glare from fixed-tilt flat-plate PV systems is similar to that of smooth water and [is] not expected to be a hazard to air navigation." By comparison, the analysis in this EA considers whether solar tracking technology could cause glare that would be a significant impact to military and civilian aviation.

3 After-image is a momentary flash of bright light and glare is a continuous source of bright light, both of which can cause brief visual impairment (also known as glare or temporary flash blindness) (FAA 2010).

April and August, at elevations of 7,500 to 10,000 feet. At the same elevations, from the west of the Project site, glare could be visible for up to 2.5 hours per afternoon. Glare with "low potential for temporary after-image" (the lowest rating given to visible glare in the modeling tool) may be visible from the east, west, and north of the Project site. No glare was found from observation points to the south of the Project site.

The analysis did not take into account the range of visibility from the cockpit of a plane flying over the Project site, and so may overstate the duration and/or intensity of glare visible to a pilot flying through each observation point. A flight path-based analysis found that the glare visible to a pilot flying west-to-east approaching the Project site would have "low potential for temporary after-image," which would be less intense than the observation point-based results. Some periods of visible glare with "potential for temporary after-image" were identified in an analysis of a flight path oriented southwest across the Project site; these would last up to approximately 1 hour in the afternoon between May and July.

Because the Proposed Action would include construction of solar generating facilities and associated linear facilities analyzed within the scope of the impact analysis of the Solar PEIS, the Proposed Action is consistent with the analysis and findings in the Final Solar PEIS. No new significant direct or indirect effects would occur related to military and civilian aviation as a result of the Proposed Action.

Mitigation Measures

Because no new significant impacts related to military and civilian aviation would occur as a result of the Proposed Action relative to those considered in the Solar PEIS, no mitigation measures are recommended.

Cumulative Effects

This cumulative effects analysis tiers to Section 11.3.22.4.5 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-351) and Section 11.3.22 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-96). This analysis relies on those discussions, and provides updates to describe changes in the cumulative scenario that have occurred since publication of the Final Solar PEIS.

The Proposed Action would introduce potential hazards to aviation, such as structures up to 90 feet above ground surface that could affect communications, or glare that could affect pilots' vision during the specific timeframes noted above. These effects would remain until the structures and solar panels are removed. The geographic scope of cumulative effects on military and civilian aviation has been refined since the Solar PEIS, which recommended a geographic scope of North Clark County, southwest Lincoln County, and central Nye County. For this analysis, the geographic scope of the cumulative analyses of glare impacts includes only the lands encompassed by the Dry Lake SEZ, because the proposed adjacent solar fields in the SEZ could cause cumulative glare perceptible to aircraft pilots from contiguous solar fields. The geographic scope of the cumulative analysis for other potential impacts to military aviation includes both the SEZ and lands adjacent to it where a collection of structures may present potential cumulative hazards. There are several new transmission line projects and authorizations within and adjacent to the SEZ, one new transmission application, and two new solar development applications within the SEZ in addition to the Proposed Action. These existing and reasonably foreseeable actions are considered in this cumulative effects analysis.

As part of this cumulative impacts analysis, the glare analysis performed for the Proposed Action was expanded to include development of single-axis tracking solar PV plants on parcels 1, 5, and 6 within the Dry Lake SEZ. The assumption that tracking technology would be used for all projects within the Dry Lake SEZ was chosen because the SGHAT analysis indicates that tracking technology produces greater visible glare than fixed-tilt technology. While the Harry Allen Solar Energy Center proposes to use a single-axis tracking system (SWCA Environmental Consultants, 2014), the Dry Lake Solar Energy Center may use either fixed-tilt or tracking technology (NV Energy 2014). A flight-path based analysis was performed for this cumulative scenario, analyzing cockpit views from the same flight paths described above (west-to-east approaching the Project site) (Sandia 2014). The analysis showed that the cumulative scenario (including solar development on Dry Lake SEZ parcels 1 through 6) would increase the duration of glare by an average of approximately 1 hour per day and approximately 1 to 2 months per year; however, analysis of the model results indicated that the cumulative scenario would not raise the intensity of glare produced from "low potential for temporary after-image" to "potential for temporary after image." Further, in light of military and civilian aviation facilities in the affected region, the cumulative glare impact would not be significant.

The development of Dry Lake SEZ parcels 1 through 6 would result in a cumulative increase in the amount of developed land located within the controlled bailout area used by Nellis Air Force Base Operations. Additionally, the development of several additional transmission lines, in combination with the transmission lines associated with the Project and other solar projects in the SEZ, would result in an increase in the number and density of structures over 50 feet, which the military has indicated may present compatibility concerns for military aviation activities.

Although the list of specific projects in the cumulative scenario has been updated since the Final Solar PEIS (see Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ*), the scope of potential cumulative effects on military and civilian aviation is within that analyzed in the Final Solar PEIS, and no new or increased significant cumulative effects would occur to military and civilian aviation as a result of the Proposed Action.

3.17.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts to military and civil aviation from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012) and because the successful bidders at the Dry Lake SEZ auction have demonstrated a substantial commitment to the solar resource (BLM 2014b), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

Reflection potential, structure height, and other details about possible future solar development at the site are not available, and so it is only possible at this time to provide a general analysis of potential future solar development that could occur on the site. If the Proposed Action was not constructed, a different PV project could be constructed and presumably would have substantially similar effects on military and civil aviation as those of the Proposed Action. Because PV has the lowest reflection potential of the various solar technologies (Argonne National Laboratory 2013), it is assumed that glare-related impacts of a solar thermal trough project on the Project site would be greater than glare from a PV project. Solar thermal

projects also can cause thermal plumes, which have been identified by the military as an aviation concern (PV projects do not cause thermal plumes) (BLM 2008).

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts to military and civil aviation, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts to acoustics from that development would likely be similar or greater than to those described in the Proposed Action section above.

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3.18 Recreation

This section tiers to Section 11.3.5 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-33 et seq.) and Section 11.3.5 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-9 et seq.), both of which relate to recreation. The analysis and other information provided in those documents remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of parcels 2, 3, and 4.

3.18.1 Affected Environment

Section 11.3.5.1 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-33 et seq.) and Section 11.3.5.1 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-9 et seq.) describe the limited recreation facilities and trails in and near the Dry Lake SEZ. The SRMS for the Dry Lake SEZ (BLM 2014) also discusses access to the Dry Lake and Arrow Canyon Mountain Range, which are to the west of the Dry Lake SEZ and accessible from the Dry Lake SEZ via existing routes. The analysis in this EA relies on those discussions and updates them to reflect more location-specific information.

3.18.2 Applicable Laws, Regulations, Plans, and Standards

No laws, regulations, plans, or standards provide thresholds that are relevant to this EA's consideration of potential effects on recreation resources.

3.18.3 Methodology

Appendix M of the Solar PEIS describes the impact methodology relied upon to analyze recreation-related effects for the Western Solar Plan. The analysis in this EA relies on the same methodology.

3.18.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features, resource surveys, and management plans that are proposed to avoid or reduce potential impacts of the Proposed Action.

3.18.5 Environmental Consequences

This analysis tiers to Section 11.5.3.2 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-33) and Section 11.5.3.2 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-9). The analysis and other information provided in those documents remains applicable except as detailed below.

3.18.5.1 Proposed Action

Direct and Indirect Effects

The Proposed Action would develop approximately 1,700 acres, making this area unavailable for dispersed recreational activities. The Proposed Action also would result in access restrictions to the roads or trails within the fenced portions of parcels 2, 3, and 4, displacing recreational users. The Proposed Action would limit recreational access through the site once site preparation has begun by blocking east-

west recreational movement across the site via the existing unpaved roads at the southeast edge of parcel 4 and between parcels 2 and 3 that provide access to and across US-93. Access to the Arrow Canyon Mountain Range and Dry Lake would be possible using existing routes outside of the site. Furthermore, the appearance of the Proposed Action could make adjacent recreational areas (such as, Dry Lake and Arrow Canyon Mountain Range) less attractive to recreational visitors who currently access these areas depending on their interest level in renewable energy generation facilities.

Because the Proposed Action would include construction of solar generating facilities and associated linear facilities analyzed within the scope of the impact analysis of the Solar PEIS, the Proposed Action is consistent with the analysis and findings in the Final Solar PEIS for recreation. No new significant direct or indirect effects would occur related to recreation resources as a result of the Proposed Action.

Mitigation Measures

Because no new significant impact related to recreation would occur as a result of the Proposed Action, no mitigation measures are recommended.

Cumulative Effects

This cumulative effects analysis tiers to Section 11.3.22.4.4 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-329) and Section 11.3.22 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-96). This analysis relies on those discussions, and updates them to describe changes in the cumulative scenario that have occurred since publication of the Final Solar PEIS.

The Proposed Action would develop approximately 1,700 acres, making this area unavailable for dispersed recreational activities. It also would introduce industrial development onto parcels that currently are undeveloped. These effects would occur throughout the lifetime of the Proposed Action; therefore, the temporal scope of cumulative effects includes all phases of the Proposed Action from construction through decommissioning. The geographic scope of cumulative effects on recreation has been refined since the Solar PEIS to include the lands encompassed by the Las Vegas Resource Management Plan (RMP) boundary (BLM/LVFO 1998). The cumulative effects analysis performed in the Draft Solar PEIS and updated in the Final Solar PEIS identified existing authorizations and pending applications within a 50-mile radius of the proposed Dry Lake SEZ, which remains applicable to this analysis except as revised or updated in Section 3.2, *Cumulative Scenario*, of this EA.

The current and reasonably foreseeable projects identified in Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ*, of this EA have resulted or could result in access restrictions within Las Vegas RMP area that would affect recreational users. For example, the proposed Harry Allen Solar Energy Center and the Dry Lake Solar Energy Center proposed to be developed on parcels 1, 5, and 6 of the Dry Lake SEZ would develop approximately 1,500 acres of lands near the Project site, resulting in a cumulative total of approximately 2,200 acres of dispersed recreational lands being closed to the public in the immediate vicinity of the Project site. Because these projects, as well as the Moapa Solar Energy Center, UNEV Pipeline Project, Southern Nevada Intertie Project, and Centennial II Project, would be constructed in close proximity to the Proposed Action, each could contribute to a cumulative impact on recreational access within and through the Project vicinity due to access restrictions on trails and roads. Due to the low recreational use of the Project site and surrounding undeveloped areas and the

existence of energy generation plants, high voltage power lines, and other infrastructure in this location that already constrain recreational access, the Project's contribution to potential cumulative effects is not considered significant. Furthermore, although some routes that provide access to Dry Lake and Arrow Canyon Mountain Range would become inaccessible as a result of the Proposed Action and the projects within the Dry Lake SEZ, these areas would remain accessible using existing routes outside of the SEZ. As a result of the existing infrastructure within and near the Dry Lake SEZ, it is not anticipated that the Project would contribute to a cumulative indirect effect on adjacent recreational lands by making them less attractive to current visitors.

Although the list of specific projects in the cumulative scenario has been updated since the Final Solar PEIS (see Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ*), the scope of potential cumulative effects on recreation is within that analyzed in the Final Solar PEIS, and no new or increased significant cumulative effects would occur to recreation as a result of the Proposed Action.

3.18.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts to recreation from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012) and because the successful bidders at the Dry Lake SEZ auction have demonstrated a substantial commitment to the solar resource (BLM 2014b), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

The specific fence lines, other access restrictions, and related design details of a possible future solar development at the site are not available, and so it is only possible at this time to provide a general analysis of potential future solar development that could occur on the site. However, such effects are expected be similar to those of the Proposed Action no matter what solar technology is proposed because public access would be excluded from the ROW grant area (which is presumed to maximize developable land within the SEZ) beginning when project fencing is installed.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts to recreation, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts to recreation from that development would likely be similar to those described in the Proposed Action section above.

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3.19 Socioeconomics and Environmental Justice

Regarding socioeconomics, this section tiers to Section 11.3.19 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-297 et seq.) and Section 11.3.19 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-85 et seq.). Regarding environmental justice, this section tiers to Section 11.3.20 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-317 et seq.) and Section 11.3.20 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-94 et seq.). The analysis and information provided in those sections remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of parcels 2, 3, and 4.

3.19.1 Affected Environment

3.19.1.1 Socioeconomics

Section 11.3.19.1 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-297 et seq.) and Section 11.3.19.1 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-85) describe the social and demographic background and existing conditions in the Region of Influence for the Dry Lake SEZ, which consists of Clark County, Nevada (County). This analysis relies on the same area that was evaluated in the Solar PEIS and updates it to reflect changes that have occurred since publication of the Final Solar PEIS; namely, that new employment and fiscal data are available that may provide a more accurate reflection of current socioeconomic conditions in the study area than those relied on in the Solar PEIS, in particular because these new data reflect years during which the U.S. experienced an economic recession, resulting in high unemployment. These data are presented below.

Employment

In 2013, employment in the County stood at 891,483 (see Table 3.19-1, *Employment in Clark County and Nevada*). Over the period 2004 to 2013, the annual average employment growth rate was 1.3 percent in the County, which was higher than the average rate for the State of Nevada (1.0 percent). Employment fell substantially in both geographies between 2008 and 2010, during the recent economic recession, contributing to the low average annual growth. In 2012, the services sector provided the highest percentage of employment in the County at 65.1 percent, followed by wholesale and retail trade at 15.8 percent. Construction provided 4.6 percent of employment (see Table 3.19-2, *Employment in Clark County by Sector, 2012*).

TABLE 3.19-1
EMPLOYMENT IN CLARK COUNTY AND NEVADA

	2004	2013	Average Annual Growth (%)
Clark County	793,908	891,483	1.3
Nevada	1,128,223	1,237,860	1.0

SOURCE: Bureau of Labor Statistics 2014a, b

TABLE 3.19-2
EMPLOYMENT IN CLARK COUNTY BY SECTOR, 2012

Industry	Employment	Percent of Total
Agriculture, Forestry, Fishing and Hunting	20 -99	0.0
Mining, Quarrying, and Oil and Gas Extraction	394	0.1
Utilities	2,500 – 4,999	0.3 – 0.6
Construction	34,252	4.6
Manufacturing	18,365	2.5
Transportation and Warehousing	31,509	4.2
Wholesale and retail trade	117,286	15.8
Finance, insurance, and real estate	43,599	5.9
Information	10,757	1.4
Services	482,952	65.1
Other	20 – 99	0.0
Total	**742,162**	**100**

SOURCE: Bureau of the Census 2013a

Unemployment

Over the period 2004 to 2013, the average unemployment rate in the County was 8.6 percent, slightly higher than the average rate for the State of Nevada (see Table 3.19-3, *Unemployment Rates in Clark County and Nevada, 2004-2014*). Unemployment rates for the County (8.3 percent) and for the State (8.1 percent) for the first 7 months of 2014 were similar to the average between 2004 and 2013, but were lower than rates for 2013 as a whole.

TABLE 3.19-3
UNEMPLOYMENT RATES (%) IN CLARK COUNTY AND NEVADA, 2004-2014

Location	2004-2013	2013	2014[a]
Clark County	8.6	10.0	8.3
Nevada	8.5	9.8	8.1

NOTE:
a Rates for 2014 are the average for January through July.

SOURCE: Bureau of Labor Statistics 2014a, b

Population and Income

Table 3.19-4 presents estimated and projected populations in the County and the State. The County's population was 1,951,269 as of the 2010 Census, having grown at an average annual rate of approximately 3.6 percent since 2000. This was higher than the state rate for Nevada (3 percent) over the same period. The County's population is expected to increase to 2,142,324 by 2020 and to 2,322,939 by 2030.

TABLE 3.19-4
POPULATION ESTIMATES AND PROJECTIONS FOR CLARK COUNTY AND NEVADA

Location	2000	2010	Average Annual Growth Rate 2000-2010 (%)	2020	2030
Clark County	1,375,765	1,951,269	3.56	2,142,324	2,322,939
Nevada	1,998,257	2,700,551	3.06	2,959,641	3,222,107

SOURCES: Bureau of the Census 2010a; Nevada State Demographer's Office 2013

Total personal income in the County stood at $73.4 billion in 2012, reflecting an annual average growth rate of approximately 4.1 percent for the period 2003 to 2012 (see Table 3.19-5, *Personal Income In Clark County and Nevada*). Per-capita income also rose over the same period at an annual rate of approximately 1.4 percent (not adjusted for inflation), increasing from $32,250 to $36,676. These average growth rates also reflect a loss of both total and per capita income experienced between 2008 and 2010.

TABLE 3.19-5
PERSONAL INCOME IN CLARK COUNTY AND NEVADA

Location	2003	2012	Average Annual Growth Rate 2003-2012 (%)
Clark County			
Total income (thousands)	$51,089,469	$73,379,049	4.10
Per-capita income	$32,250	$36,676	1.44
Nevada			
Total income (thousands)	$74,937,491	$105,449,888	3.87
Per-capita income	$33,323	$38,221	1.54

SOURCE: Bureau of Economic Analysis 2014

As shown in Table 3.19-5 above, annual average total personal income growth rates in the County were higher than the State rate, but per-capita income growth rates in the County were slightly lower than in the State. Median household income in the County in 2012 was estimated at $49,546, while median household income Statewide was estimated at $49,760 (Bureau of the Census 2012).

Urban Population and Income

The County's population in 2010 was approximately 56 percent urban.[1] The largest city, Las Vegas, had an estimated 2010 population of 583,756; other large cities include Henderson (257,729) and North Las Vegas (216,961) (see Table 3.19-6, *Urban Population and Income in Clark County, 2004-2014*). The County also has two smaller cities: Mesquite (15,276) and Boulder City (15,023).

[1] A number of unincorporated urban areas in Clark County are not included in the urban population, meaning that the percentage of the County population living in urban areas is somewhat understated.

TABLE 3.19-6
URBAN POPULATION AND INCOME IN CLARK COUNTY, 2004-2014

City	Population			Median Household Income ($2010)		
	2000	2010	Average Annual Growth Rate, 2000- 2010 (%)	1999	2010	Average Annual Growth Rate, 1999 to 2010 (%)
Boulder City	14,966	15,023	0.04	66,128	62,171	-0.62
Henderson	175,381	257,729	3.92	73,229	68,039	-0.73
Las Vegas	478,434	583,756	2.01	57,680	54,334	-0.60
Mesquite	9,389	15,276	4.99	52,867	44,221	-1.77
North Las Vegas	115,488	216,961	6.51	60,282	59,256	-0.17

SOURCES: BLM and DOE 2010, p. 11.3-299; Bureau of the Census 2000, 2010b; Bureau of Labor Statistics 2014c

Population growth rates in urban areas of the County have varied over the period 2000 to 2010 (Table 3.19-6). The highest average annual growth rate of approximately 5 percent occurred in Mesquite, while Boulder City experienced almost no growth during this period. Las Vegas grew at an annual rate of approximately 2 percent during this period.

Median household incomes also vary across cities in the County. All but Mesquite had median incomes that were higher than the State average. Income growth rates between 1999 and 2010 were negative in all cities in the County.

Housing

In 2010, more than 840,000 housing units were located in the County (see Table 3.19-7, *Housing Characteristics in Clark County*). Owner-occupied units made up about 57 percent of the occupied units, with rental housing making up 43 percent of the total. The vacancy rate in 2010 was 14.9 percent in the County, up from 12.2 percent in 2007. There were 124,978 vacant housing units in the County in 2010, of which 47,504 were for rent (Bureau of the Census 2010c). There were approximately 22,000 units in seasonal, recreational, or occasional use in 2010, representing 2.6 percent of all housing units.

TABLE 3.19-7
HOUSING CHARACTERISTICS IN CLARK COUNTY

Occupancy	2007	2010
Owner-occupied	393,453	408,206
Rental	268,572	307,159
Vacant	92,144	124,978
Vacant for seasonal and recreational use[a]	not available	*22,002*
Total	754,169	840,343

NOTE:
[a] Subset of total vacant units

SOURCE: BLM and DOE 2010, p. 11.3-301; Bureau of the Census 2010c

Housing stock in the County grew at an average annual rate of approximately 3.7 percent over the period 2007 to 2010, with 86,174 new units added. The estimated median value of owner-occupied housing in the County in 2010 was $170,100 (Bureau of the Census 2010d).

Local Government Organizations and Community and Social Services

This analysis tiers to and incorporates by reference information provided in Sections 11.3.19.1.8 and 11.3.19.1.9 of the Solar PEIS (BLM and DOE 2010, p. 11.3-301 et seq.; BLM and DOE 2012, p. 11.3-85). This information remains current except for details about the Clark County School District, which in 2012 had 377 schools. Information about the Clark County School District is updated in Table 3.19-8.

TABLE 3.19-8
CLARK COUNTY SCHOOL DISTRICT DETAILS (2011-2012 SCHOOL YEAR)

Students	Teachers (Full-time equivalent)	Student-Teacher Ratio	Teachers per 1,000 population (Level of Service)
313,398	14,822	21.1	7.6

SOURCE: National Center for Education Statistics 2014

Social Structure and Social Change

This analysis tiers to and incorporates by references information provided in Section 11.3.19.1.10 of the Solar PEIS (BLM and DOE 2010, p. 11.3-303 et seq.; BLM and DOE 2012, p. 11.3-85). This information remains current. The Draft Solar PEIS indicated that project-level NEPA analyses would provide a description of social structures, contributing factors, their uniqueness, and the susceptibility of local communities to various forms of social disruption and social change. There are no local communities in proximity to the Project site. Coyote Springs, a planned residential community, is located over 27 miles from the Project site and no housing has yet been developed in this location. There are several residences on agricultural parcels within approximately 23 miles of the Project site to the northeast, and the community of Moapa is located approximately 25 miles to the northeast. However, because the much larger Las Vegas metropolitan area is just 14 miles southwest of the Project site, and therefore is likely to be the source of most Project employment and employee housing, these small rural communities are not considered to be within the area of the Project's potential socioeconomic influence, and so are not characterized further.

Recreation

This analysis tiers to and incorporates by references information provided in Section 11.3.19.1.11 of the Solar PEIS (BLM and DOE 2010, p. 11.3-305; BLM and DOE 2012, p. 11.3-85).

3.19.1.2 Environmental Justice

This analysis tiers to and incorporates by references information provided in Section 11.3.20.1 of the Solar PEIS (BLM and DOE 2010, p. 11.3-317 et seq.; BLM and DOE 2012, p. 11.3-85).

Section 11.3.20.1 of the Solar PEIS (BLM and DOE 2010, p. 11.3-317 et seq.; BLM and DOE 2012, p. 11.3-94) describe the affected environment related to environmental justice within a 50-mile radius of

the Dry Lake SEZ. For purposes of this analysis of environmental justice-related impacts, the study area is refined to focus on the geographic extent of Project impacts that may disproportionately affect minority and/or low-income residents, such as the airshed and groundwater basin in which the Project site is located. This analysis relies on that discussion and updates it to reflect updated census data.

The Draft Solar PEIS identified a minority population as one in which the percentage of minority individuals is both greater than 50 percent of the population and 20 percentage points higher than in the state. Overall, between 2008 and 2012, Nevada had a population that was 72.9 percent white; therefore, its minority percentage was approximately 27.1 percent. Thus, the search for minority populations was limited to those greater than 50 percent, because 20 percentage points greater than the state is 47.1 percent. In 2012, 32 of 487 census tracts in the County had minority populations equal to or greater than 50 percent (Bureau of the Census 2013a). These were located within or adjacent to the Las Vegas metropolitan area and tended to cluster to the northwest of I-15 in the northern portion of the Las Vegas area. None is adjacent to or within 10 miles of the Project site. Additionally, the Moapa River Indian Reservation, though not represented specifically as a census tract in the 2008-2012 American Community Survey, is considered a minority population for the purposes of this environmental justice analysis.

The Draft Solar PEIS identified a low-income population as one in which the percentage of individuals with incomes below the poverty line exceed 50 percent or is at least 20 percentage points greater than the average for the state as a whole. Overall, between 2008 and 2012, 14.2 percent of Nevada's population had incomes below the poverty line. Therefore, a low-income population would include at least 34.2 percent of individuals with incomes below the poverty line. In 2012, 33 of 487 census tracts in the County had a population of 34.2 percent or more with incomes below the poverty line (Bureau of the Census 2013b). These were located within or adjacent to the Las Vegas metropolitan area and tended to cluster to the southeast of I-15 in the eastern portion of the Las Vegas area. None were adjacent to the Project site, and only one was within 10 miles of the Project site.

3.19.2 Applicable Laws, Regulations, Plans, and Standards

No laws, regulations, plans, or standards provide thresholds that are relevant to this analysis of potential impacts on socioeconomics and environmental justice.

3.19.3 Methodology

Section M.19 of Appendix M of the Solar PEIS describes the impact methodology relied upon to analyze the effect of the Western Solar Plan on socioeconomics. Because no Project-specific economic input-output modeling was performed for the Proposed Action, this analysis scales the socioeconomic impact analysis in the Final Solar PEIS based on its assumption for PV facilities that up to 333 MW could be developed in the SEZ (Table 11.3.19.2-4, p. 11.3-93). The Project would develop up to 200 MW, accounting for 60 percent of the total economic impact identified in the Final Solar PEIS. The analysis of employment and resultant housing demand is based on Project-specific employment assumptions provided by the Applicant.

Appendix M of the Draft Solar PEIS did not provide a description of the impact methodology relied upon to analyze the effect of solar development on environmental justice.

3.19.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features, resource surveys, and management plans that are proposed to avoid or reduce potential impacts of the Proposed Action.

3.19.5 Environmental Consequences

This analysis tiers to Sections 11.3.19.2 and 5.18 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-305 et seq.; p. 5-250 et seq.) and Sections 11.3.19.2.4 and 11.3.20.2 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-92 et seq.; p. 11.3-94 et seq.). The analysis and other information provided in those documents remains applicable except as detailed below.

3.19.5.1 Proposed Action

Direct and Indirect Effects

The Project would employ an average of 700 to 800 workers during construction, with a peak not expected to exceed 1,200 workers at any given time. Based on ratio of direct to indirect labor derived from the input-output model prepared for the Solar PEIS (BLM and DOE 2012, p. 11.3-93), it is anticipated that an average labor force of approximately 700 to 800 workers would produce a total of approximately 1,200 to 1,300 jobs including indirect labor, and a total of approximately $80 million in income.

As shown in Table 3.19-2, *Employment in Clark County by Sector, 2012*, there are over 34,000 construction workers in the County. An unemployment rate of 8.3 percent (Table 3.19-3, *Unemployment Rates in Clark County and Nevada, 2004-2014*) would indicate an available construction labor force of approximately 2,800 in the County. Additionally, because construction jobs generally are temporary in nature, the available labor force is likely to be larger than the currently unemployed portion of construction workers. Therefore, it is anticipated that in-migration to the County would be minimal, as the existing labor force likely could meet peak Project demand. Even if some in-migration were to occur, the impact on vacant housing also would be negligible, as there are expected to be over 40,000 vacant units for rent in the County.

During operation, the Project would create approximately five direct full-time equivalent jobs, and less than one indirect job, with a total annual income impact of approximately $0.25 million.

Because the negligible expected in-migration of workers would not result in a measurable increase in the service population of local government or community services, no new service employment would be required to continue to meet existing levels of service in the County. Additionally, because the Project is not expected to result in population growth in the County as a whole or within its individual communities, it is not anticipated that Project construction or operation would cause social change or disruption in these areas.

As described in Section 3.3, *Air Resources*, fugitive dust emissions would fall off quickly outside the Project fence line. Therefore, noise and air pollutants generated at the Project site would not affect minority or low-income populations located in the Las Vegas area, or the Moapa River Indian

Reservation. The Project would not result in impacts that could be experienced disproportionately within the identified minority and low-income areas.

The impacts identified above are within the range of socioeconomic and environmental justice impacts identified in the Solar PEIS, and no new significant impact would occur.

Mitigation Measures

The Regional Mitigation Strategy for the Dry Lake Solar Energy Zone (BLM 2014a) indicates that onsite mitigation for possible adverse impacts of in-migrating workers (e.g., hiring of police, fire fighters, and teachers and providing services to new area workers and families) could include requiring developers to secure agreements for local government services as a condition of a Notice to Proceed. As described above, it is not anticipated that the Project would result in the need for new or expanded local government or community services; therefore, it is not expected that the Project would need to secure such agreements as a condition of its Notice to Proceed. Because no new significant impacts have been identified, no additional mitigation is recommended.

Cumulative Effects

This cumulative effects analysis tiers to Sections 11.3.22.4.18 and 11.3.22.4.19 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-359 et seq.) and Section 11.3.22.4 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-104). Because the Project would not result in impacts that could be experienced disproportionately within the identified minority and low-income areas, it would not contribute to cumulative environmental justice impacts.

As indicated above, it is anticipated that the Project would result in minimal in-migration, and as a result, would not increase the service populations of local government and community services or cause social change or disruption in local communities.

The geographic scope of the analysis for cumulative socioeconomic effects includes the populated areas from which the cumulative construction workforce is likely to be drawn. Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions Near the Dry Lake SEZ,* identifies seven projects whose construction may overlap in time with construction of the Proposed Action (approximately spring 2015 to fall 2016), and which are likely to draw from the same labor pool as the Proposed Action: the two other solar projects proposed within the Dry Lake SEZ, the NV Energy Dry Lake Solar Energy Center; Harry Allen Solar Energy Center; Copper Mountain Solar 2; Moapa Solar; Moapa Solar Energy Center; Nellis Air Force Base Area II Solar; and the Clark, Lincoln, and White Pine Counties Groundwater Development projects. As shown in Table 3.19-9, *Cumulative Scenario Workforce*, these projects along with the Proposed Action would have a combined average workforce of approximately 3,600. As noted above, construction jobs turn over with enough frequency that the anticipated available labor force is likely to be greater than the currently unemployed portion of the overall construction labor force. Therefore, the labor force in Clark County may be adequate to meet the demands of the cumulative scenario. However, some in-migration from outside of Clark County may occur in response to the increase in demand for construction workers. Even if some in-migration were to occur, the impact on vacant housing likely would be minimal, as there are expected to be over 40,000 vacant units for rent in Clark County.

Similarly, effects on services are not expected to result in adverse impacts on their services or in the need for service providers to expand, and social impacts are not anticipated.

TABLE 3.19-9
CUMULATIVE SCENARIO WORKFORCE

Project	Average Workforce, 2015 - 2016
Dry Lake SEZ Parcels 2, 3, and 4	800
NV Energy Dry Lake Solar Energy Center (NV Energy 2014)	400
Harry Allen Solar Energy Center (SWCA Environmental Consultants 2014)	350
Moapa Solar (First Solar 2014)	400
Copper Mountain Solar 2 (Sempra 2013)	628
Moapa Solar Energy Center (Bureau of Indian Affairs, et al. 2014)	300
Nellis Air Force Base Area II Solar Project	NA[a]
Clark, Lincoln, and White Pine Counties Groundwater Development Project (BLM 2012)	720[b]
Total	**3,598**

NOTES:

[a] NA = information not available. As a 15 MW project, the Nellis Air Force Base Area II Solar Project is anticipated to have a relatively small construction workforce.

[b] Derived as an average of years 3 and 4, expected to correspond to 2015 and 2016 (see BLM and DOE 2012, p. p. 3.18-38)

During operation, solar projects in the cumulative scenario are expected to create approximately 20 to 50 long-term positions based on their sizes and technologies. No noticeable in-migration is expected to occur as a result of these jobs being created.

The potential cumulative impacts of the Proposed Action in combination with other reasonably foreseeable projects are within the range of socioeconomic and environmental justice impacts identified in the Solar PEIS, and no new significant impact would occur.

3.19.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts related to socioeconomics or environmental justice from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012) and because the successful bidders at the Dry Lake SEZ auction have demonstrated a substantial commitment to the solar resource (BLM 2014b), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

Specific workforce demands, income, housing demands, and other details about possible future solar development at the site are not available, and so it is only possible at this time to provide a general analysis of potential future solar development that could occur on the site. If the Proposed Action was not constructed, a different PV project could be constructed and presumably would have substantially similar effects on socioeconomics and environmental justice as those of the Proposed Action. The effects of other

technologies on these considerations are expected be comparable to those described for the Proposed Action and to those described in the Solar PEIS.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts related to socioeconomics and environmental justice, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts to these considerations from that development would likely be similar to those described in the Proposed Action section above.

3.20 Transportation

This section tiers to Section 11.3.21 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-323 et seq.) and Section 11.3.21 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-95 et seq.), both of which relate to transportation. The analysis and other information provided in those documents remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of parcels 2, 3, and 4.

3.20.1 Affected Environment

Section 11.3.21 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-323 et seq.) and Section 11.3.21 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-95 et seq.) describe the affected environment for transportation. Those characteristics remain unchanged since publication of the Final Solar PEIS:

- **Interstate 15 (I-15):** Four-lane divided freeway. Passes about 1 mile southeast of the Project. Average traffic volumes about 20,000 to 25,000 vehicles per day near the Project (Nevada Department of Transportation [NV DOT] 2013). Estimated carrying capacity is about 60,000 vehicles per day (Florida Department of Transportation [FDOT] 2012). Current traffic density on this segment is no more than 42 percent.

- **U.S. 93:** Two-lane undivided highway. Borders southwestern edge of Parcels 3 and 4. Average traffic volumes about 2,600 vehicles per day near the Project (NV DOT 2013). Estimated carrying is about 28,600 vehicles per day (FDOT 2012). Current traffic density on this segment is no more than 9 percent.

- **Harry Allen Road:** 2-mile paved road provides access from North Las Vegas Boulevard [frontage road to I-15] to NV Energy's Harry Allen Substation.

3.20.2 Applicable Laws, Regulations, Plans, and Standards

No laws, regulations, plans, or standards provide thresholds that are relevant to the consideration of the impacts of the Proposed Action and No Action Alternative on transportation systems.

3.20.3 Methodology

The analysis of potential traffic congestion and travel delays on I-15 and U.S. 93 during peak construction used an impact indicator of the change in traffic density by road (i.e., percent of carrying capacity). A comparison of the existing traffic density with expected densities during Project construction and operation was evaluated to determine the effect on local traffic.

3.20.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features, resource surveys, and management plans that are proposed to avoid or reduce potential transportation related impacts of the Project.

3.20.5 Environmental Consequences

This analysis of environmental consequences tiers to Section 11.3.21 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-326) and Section 11.3.21 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-95). The analysis and other information provided in those documents remains applicable except as detailed below.

3.20.5.1 Proposed Action

At the time the Solar PEIS was drafted, no detailed Project-level information was available. It conservatively was assumed that construction of single projects could involve up to 1,000 workers each day, with an additional 2,000 one-way vehicle trips per day (maximum) or possibly 4,000 vehicle trips per day if two large projects were developed at the same time.

Typical construction traffic would consist of trucks transporting equipment and materials to and from the site, and vehicles carrying management and construction employees. An average between 700 to 800 construction workers is expected to be onsite with a peak construction workforce not expected to exceed 1,200 workers at any given time. Conservatively assuming all workers would commute to and from the Project site in their own vehicles, Project construction would generate 1,400 to 1,600 one-way vehicle trips per day, with a peak of up to 2,400 daily one-way vehicle trips. Most construction staff and workers would commute daily to the jobsite from within Clark County, primarily from the Las Vegas area, using I-15 and U.S. 93.

The level of construction truck traffic traveling on I-15 and U.S. 93 would vary as the type and intensity of construction activity varies. Assuming that the majority of equipment used onsite would be delivered at the start of construction and would remain onsite for the duration of construction (i.e., would not travel to and from the site each day), it is estimated that truck traffic would average about 100 one-way trips per day, with a peak not expected to exceed 200 daily one-way truck trips. If it were necessary to truck water to the site from water sources in the Las Vegas Metropolitan Area (as described in Section 2.2.6, *Water and Wastewater*), then there would be an additional maximum of about 167 water trucks per day (334 one-way truck trips). The proposed primary access road for the Project would include a new 0.5-mile road that would connect north of the existing gas line to Harry Allen Road. An alternate primary access road is proposed south of the exiting gas line and would connect to the existing paved road for a total length of approximately 1 mile. Only one primary access road would be required.

Direct and Indirect Effects

Construction

The primary transportation impacts from the Project are anticipated to be from commuting construction worker traffic on I-15 and U.S. 93. Truck traffic generated by Project construction activities would add to the increased traffic volumes on I-15 and U.S. 93, but to a lesser extent than would the worker traffic. The Project would cause a temporary increase in traffic volumes on I-15 of up to about 10 percent, and up to a doubling of the traffic level on U.S. 93 north of its junction with I-15 if all Project traffic were routed on U.S. 93. Those levels of increase are consistent with what was analyzed in the Draft and Final Solar PEIS. While percent increase in traffic volumes is a factor to consider when determining impacts, a more relevant measure (criterion) is the change in traffic density. As described above, the current traffic density

on I-15 and U.S. 93 in the Project area is no more than 42 and 9 percent, respectively. The existing-plus-Project traffic densities (with or without added water truck trips) would be no more than 46 and 17 percent, respectively, i.e., clearly remaining within the carrying capacity of the affected roadways. Because spikes in traffic volumes would be experienced during shift changes, traffic on I-15 could experience minor slowdowns during these time periods specifically near Exit 64 (the U.S. 93 and I-15 interchange). However, the anticipated level of traffic during Project construction would not exceed the capacity of I-15, which has two lanes in both directions to accommodate the anticipated increase in traffic while maintaining adequate traffic flow along the freeway mainline. No new significant direct or indirect effects would occur relative to construction-related activities of the Proposed Action.

Operation and Maintenance

Operation of the Project would require a workforce of up to five full time-equivalent positions. This workforce would include administrative and management personnel, operators, and security and maintenance personnel. Employees would be based at the onsite O&M building. Operation and maintenance would require the use of vehicles and equipment such as pickup trucks, crane trucks, and forklifts. Because operation and maintenance of the Project would generate substantially less traffic than construction activities, and because the construction phase would not degrade traffic flow conditions on I-15 or U.S. 93 below acceptable levels (as stated above), no adverse impacts are expected to occur due to the traffic generated during the operation and maintenance phase. No new significant direct or indirect effects would occur relative to operation and maintenance-related activities of the Proposed Action.

Decommissioning and Reclamation

Decommissioning and reclamation activities would result in similar transportation and traffic related impacts as construction. The Solar PEIS fully analyzed the effects of decommissioning and reclamation, and no new significant impacts would occur.

Mitigation Measures

No additional or revised mitigation measures are recommend for the Proposed Action as there would be no new transportation impacts relative to the Solar PEIS.

Cumulative Effects

This cumulative effects analysis tiers to Section 11.3.22 of the Draft Solar PEIS (BLM and DOE 2010, p. 329) and Section 11.3.22 of the Final Solar PEIS (BLM and DOE 2012, p. 96). The geographic scope of the cumulative transportation analysis is the roadways in the Project vicinity, i.e., I-15 and U.S. 93, which would be affected the most by traffic generated by the Proposed Action.

The Project would cause no new significant direct or indirect transportation related effects. Traffic volumes on I-15 and U.S. 93 are relatively low (i.e., about 42 and 9 percent of their carrying capacity, respectively). The construction of the proposed solar energy facilities would increase area traffic volumes over the 18 month construction period. Although the traffic volumes on I-15 and U.S. 93 would be slightly elevated, the available roadway capacity would be sufficient to accommodate the temporary and intermittent traffic increases.

Table 3.2-1, *Ongoing and Reasonably Foreseeable Actions near the Dry Lake SEZ*, identifies other projects in the cumulative scenario. Traffic generated by existing, ongoing projects is reflected in the existing traffic conditions described in Section 3.20.1 above. Reasonably foreseeable projects could result in cumulative impacts if they are operating or under construction during the Proposed Action's construction-related activities. Future projects that are anticipated to be constructed during the 18-month Project construction period include the Dry Lake Solar Energy Center, Harry Allen Solar Energy Center, Moapa Solar Project, Copper Mountain Solar 2 Project, Moapa Solar Energy Center, Nellis Air Force Base Area II Solar Project, and Clark, Lincoln, and White Pine Counties Groundwater Development Project. Each of these projects is expected to contribute some traffic to I-15 in southern Nevada. The cumulative analysis indicates that, in combination with the Proposed Action, these projects could have a combined average construction workforce of approximately 3,600 personnel, generating about 7,200 one-way trips per day. It is also conservatively assumed that each of these projects (most of which are smaller and have a longer construction period) would have an average daily truck trip generation similar to the Proposed Action (i.e., about 100 truck trips per day), for a combined average of 800 daily truck trips (1,600 one-way truck trips per day).

The current traffic density on I-15 and U.S. 93 in the Project area is no more than 42 and 9 percent, respectively. The cumulative traffic densities, with the assumed concurrent trip generation of about 8,800 one-way trips per day, would be no more than 56 and 40 percent, respectively, i.e., clearly remaining within the carrying capacity of the affected roadways.

The proposed primary access for the Project would be on the existing Harry Allen Road, which currently provides access from North Las Vegas Boulevard (frontage road to I-15) to NV Energy's Harry Allen Substation. That access route also would be the primary access point for other projects in the SEZ. Use of Harry Allen Road and North Las Vegas Boulevard by the three projects, if and when all three projects are under construction, would introduce potential conflicts. Coordinated efforts would be necessary among all parties to ensure traffic safety.

As discussed in the Solar PEIS (BLM and DOE 2010, p. 11.3-329 et seq.), development of the Proposed Action in combination with other projects in the ROW could adversely affect the uses of and access to public lands in the vicinity of the SEZ, depending in part on where and how many potential projects are actually built. Although the list of specific projects in the cumulative scenario has been updated since the Final Solar PEIS, the scope of potential cumulative effects on transportation is within that analyzed in the Final Solar PEIS, and no new or increased significant cumulative effects would occur to transportation as a result of the Proposed Action.

3.20.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action there would be no direct or indirect impacts to transportation from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012) and because the development community has demonstrated a substantial commitment to the solar resource (BLM 2014), it is reasonably expected that some form of solar development would occur in this location if the Proposed Action were not authorized.

It is assumed that a different solar proposal within the same project footprint, regardless of technology, would require similar numbers of workers and material delivery trips using similar arrival and delivery schedules to those proposed by the Project. Although no specific details are available about a potential future solar proposal on the Project site, such effects to transportation would be expected be similar to those of the Proposed Action.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts related to transportation, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts to transportation from that development would likely be similar to those described in the Proposed Action section above.

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3.21 Visual Resources

This section tiers to Section 11.3.14 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-213 et seq.) and Section 11.3.14 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-64 et seq.), both of which relate to visual resources. The analysis and information provided in those documents remain applicable except as detailed below for purposes of this project-specific analysis of potential impacts of the proposed solar development of parcels 2, 3, and 4.

3.21.1 Affected Environment

Section 11.3.14.1 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-213 et seq.) and Section 11.3.14.1 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-64 et seq.) describe the setting of the Dry Lake SEZ. The Project is located within the southwestern portion of the SEZ (see Figure 2-1, *Project Location Map*). It is bordered by U.S. Route 93 to the west, the Arrow Canyon Range to the north, and a large existing transmission corridor and the NV Energy Harry Allen Substation to the northeast. I-15 is located approximately 0.6 mile southeast of parcel 4. Figure 3.21-1, *Characteristic Landscape of the Project Site*, shows photos of the Project site.

As shown on Figure 3.21-2, *Visual Resource Inventory Values for Dry Lake SEZ*, the Visual Resources Inventory (VRI) values for the SEZ are VRI Class III, indicating relatively moderate visual values, and VRI Class IV, indicating low visual values. The Solar PEIS also states that "the inventory indicates low scenic quality for the SEZ and its immediate surroundings due to the lack of topographic variability, water features, and diversity of color. Positive scenic quality attributes included adjacent scenery (BLM and DOE 2012, p. 11.3-65). It is noted that the SEZ is located in an area that contains high sensitivity due to the adjacent I-15 transportation corridor. Figure 3.21-3, *Viewshed Analysis for Dry Lake SEZ,* and Figure 3.21-4, *Sensitive Visual Resource Areas and Viewsheds,* illustrate the viewshed analysis and delineation of sensitive resource areas completed in the Final Solar PEIS for the Dry Lake SEZ. This analysis relies on those discussions and updates them to reflect Project-specific information.

3.21.2 Applicable Laws, Regulations, Plans, and Standards

Federal Land Policy and Management Act (FLPMA)

The FLPMA requires that the public lands be managed in a manner that will protect the quality of scenic values (43 USC §1701(a)(8)). To meet this responsibility, the BLM developed the visual resource management (VRM) system. BLM's VRM policy is set forth in Manual 8400 (BLM 1984), with guidance provided in Manual H-8410-1 Visual Resource Inventory (BLM 1986a), and H-8431 Visual Resource Contrast Rating (BLM 1986b). Additional guidance is contained in BLM Washington Office Instruction Memorandum 2009-167, Application of the Visual Resource Management Program to Renewable Energy.

3.21.3 Methodology

Appendix M of the Solar PEIS describes the impact methodology relied upon to analyze visual impacts for the Western Solar Plan. The analysis in this EA relies on a different site-specific methodology because the Solar PEIS generally analyzed the Dry Lake SEZ, and did not include an analysis of visual impacts of

a specific Project. The Project is analyzed in accordance with the BLM's Visual Resource Management system, which is described below.

Visual contrast in the landscape is measured by a systematic evaluation of the basic design elements of form, line, color, and texture, in accordance with the BLM's Handbook H-8431-1 Visual Resource Contrast Rating (BLM 1986b). If the contrast rating reveals nonconformance of the Project or No Action Alternative with VRM class objectives, and mitigation measures are insufficient to bring it into compliance, then the design would need to be mitigated to the greatest extent possible, and to the VRM class objective at a minimum. If a project cannot be mitigated to meet the VRM class objectives, then the application may be denied or the proposal redesigned or relocated to meet the objective. The assessment of visual contrast is distinct from conclusions of *visual impact* presented in this section. A measure of visual impact includes potential human reactions to the visual contrasts arising from a development activity, based on number of viewers, viewer characteristics, including attitudes and values, expectations, and other characteristics that that are viewer- and situation-specific.

The analysis of contrast lends itself to identify specific design-oriented elements that are causing an issue with plan conformance and inversely, the opportunities to bring a non-conforming project into compliance with the VRM class. The contrast analysis may also be used to identify ways to protect against unnecessary and undue degradation of the visual resources and to reduce impacts that the proposal will cause to scenic values held by the public and stakeholders. The contrast rating system is not intended to be the only means of resolving impacts. It is used as a guide in the analysis, tempered by common sense, to ensure that every attempt is made to minimize potential visual impacts. The basic philosophy underlying the system is: The degree to which a management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape (BLM 1986b).

3.21.3.1 Visual Contrast Rating

The degree to which a project adversely affects the visual quality of a landscape relates directly to the amount of visual contrast between it and the existing landscape character. The degree of contrast is measured by separating the landscape into major features (land, water, vegetation, structures) then assessing the contrast introduced by the project in terms of the basic design elements of form,[1] line,[2] color, and texture. The contrast of a project with landscape elements then is rated as none, weak, moderate, or strong, as defined in Table 3.21-1, *Visual Contrast Ratings*. The purpose of this method is to reveal elements and features that cause the greatest visual impact, and to guide efforts to reduce the visual impact of a proposed action or activity. This process is described in detail in Handbook H-8431-1, Visual Resource Contrast Rating, and documented using BLM Form 8400-4. The Visual Contrast Rating Worksheets completed for the Project are available in Appendix E.

1 Contrast in form results from changes in the shape and mass of landforms or structures. The degree of change depends on how dissimilar the introduced forms are to those continuing to exist in the landscape.

2 Contrast in line results from changes in edge types and interruption or introduction of edges, bands, and silhouette lines. New lines may differ in their sub-elements (boldness, complexity, and orientation) from existing lines.

TABLE 3.21-1
VISUAL CONTRAST RATINGS

Degree of Contrast	Criteria	Consistent with…
None	The element contrast is not visible or perceived.	VRM Class I - IV
Weak	The element contrast can be seen but does not attract attention.	VRM Class II - IV
Moderate	The element contrast begins to attract attention and begins to dominate the characteristic landscape.	VRM Class III - IV
Strong	The element contrast demands attention, will not be overlooked, and is dominant in the landscape.	VRM Class IV only

SOURCE: BLM 1986b

3.21.3.2 Key Observation Points

Contrast rating is completed from identified Key Observation Points (KOPs). The intent of establishing KOPs is to visualize the contrast created by a project from places most representative of how the public perceives the affected landscape. The "public" may include highway travelers, travelers on local roads, residents in surrounding interspersed private lands, off-highway vehicle (OHV) users, dispersed recreational users on surrounding public lands, or users of BLM facilities. The sensitivity of these diverse user groups to changes in the landscape are influenced by many factors, including how prominent the view of the project is (in terms of scale, distance and angle of observation), the frequency and duration that viewers are exposed to the view, and whether the viewer groups are aware of their surroundings or expect high-quality views.

Figure 3.21-5, *Project Location Map with KOPs and VRM Classifications,* shows the locations of the four KOPs used in this analysis and Table 3.21-2, *KOP Location and Characteristics*, describes their general locations, disposition, and distance from the Project. Two of the KOPs are along transportation routes. One is on Apex Dry Lake, an area used for recreation, and another is from a travel center adjacent to I-15 within the viewshed of the Project. The KOPs were selected to represent a mix of user types and viewer experiences. The visual contrast created by the Project is rated using visual simulations from each of these KOPs, and used to represent the visual change experienced from different locations and viewer types.

TABLE 3.21-2
KOP LOCATION AND CHARACTERISTICS

ID	Location	Distance and Direction of View	Primary User Type	Comments
KOP 1	U.S. 93 Eastbound	1.2 miles Southeast	Motorists	First view of Project traveling south.
KOP 2	Dry Lake Bed	3.2 miles Southwest	Recreational	Primarily OHV and backcountry driving use.
KOP 3	I-15 Southbound	4.6 miles Southwest	Motorists	Very high number of viewers.
KOP 4	Loves Travel Center	0.8 miles Northwest	Motorists	Viewers include motorists who have temporarily stopped for a gas and rest stop. The gas station receives a high amount of use and activity; most people are focused on activities such as pumping gas and shopping.

3.21.3.3 Visual Simulations

The purpose of preparing visual simulations is to provide a realistic visual portrayal that demonstrates the perceivable changes in landscape features caused by a proposed management activity as seen by the general public. Simulations are useful to assist in better understanding a project and to effectively evaluate the impacts of a proposed project as used in the VRM contrast rating process to show scale, relative placement of disturbing features, and other important information necessary to determine a VRM class objective.

Figures 3.21-6, *View from KOP 1, U.S. 93 Eastbound Looking Southeast*, through 3.21-9, *View from KOP 4, Loves Travel Center Looking Northwest,* show existing conditions and photo-simulations of the Project after construction with design features. The simulations show the scale of the Project, relative placement of features, and other changes in form, line, color, and texture. Figure 3.21-10, *Photovoltaic Array Examples,* provides an example of a solar development.

3.21.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features and management plans that are proposed to avoid or reduce potential visual impacts of the Project. The siting and design of project elements can be very effective in reducing visual impacts. For instance, as shown in Figure 3.21-11, *Inverter Treatment*, the treatment of inverters that previously were painted white to a color that blended with the background was very effective in reducing the visual impacts.

3.21.5 Environmental Consequences

This analysis of environmental consequences tiers to Section 11.3.14.2 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-218 et seq.) and Section 11.3.14.2 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-65 et seq.). The analysis and other information provided in those documents remains applicable except as detailed below.

3.21.5.1 Proposed Action

The Proposed Action would convert approximately 1,700 acres of naturally appearing desert valley containing transmission lines, a large-scale power plant, roads, and other structures to an industrial facility characterized by geometric forms and lines that are dissimilar to the existing undeveloped areas of the valley. The majority of the developed area would be covered with solar PV panels; the remainder would include a substation, O&M facility, and a 230 kV gen-tie line in the northern portion of the site, near the existing power plant. Examples of solar PV projects are shown in Figure 3.21-10, *Photovoltaic Array Examples*.

Direct and Indirect Effects

Construction

During the construction period, earth-moving activities and construction materials, equipment, trucks, and parked vehicles could be visible on the site. Construction would occur over 18 consecutive months, during which a number of activities would take place, including large-scale vegetation removal, earthwork, as well as foundation and equipment installation.

Visual effects of construction also could include the generation of dust and nighttime construction lighting. Affected viewers would include motorists on I-15 and U.S. Route 93 and a low to moderate level of OHV and other dispersed recreational users. Construction is estimated to last 18 months and would be phased, and so would not occur in any one place for the entire period. Construction activities also would be conducted so as to minimize dust emissions as described in AQC2-1 in the Solar PEIS ROD (BLM, 2012, p. 90 et seq.) and as summarized in Table 2-7, *Dry Lake Programmatic Design Features*.

When nighttime construction activities take place, illumination would be provided. To the extent possible, such lighting would be directed downward or toward the area to be illuminated, and shielded from public view to the extent practical pursuant to the Lighting Management Plan.

Areas disturbed by construction activities that would not be needed during the Project's operation and maintenance would be revegetated according to VR2-3 in the Solar PEIS ROD (BLM 2012, p. 98 et seq.). These activities would be described in a BLM-approved Site Rehabilitation and Restoration Plan. Due to the harsh desert environment, a long period of time would be required for the vegetation to become established in order to effectively reduce the visual contrast.

The general visual contrast created by vegetation stripping and the presence of construction materials, equipment, and partially constructed facilities would contribute to a strong visual contrast in the landscape. The color of the underlying earth (light tan) stands in greater contrast within the landscape. However, the overall degree of visual impact would be somewhat lessened because the area covered by any one phase of construction would be smaller compared to full build-out of the Project, and the visual effects would be temporary. No new significant direct or indirect effects would occur relative to the analysis in the Solar PEIS.

Operation and Maintenance

The BLM's visual contrast rating system was used to analyze the visual impacts of the Project from four KOPs. Figures 3.21-6, *View from KOP 1, U.S. 93 Eastbound Looking Southeast*, through 3.21-9, *View from KOP 4, Loves Travel Center Looking Northwest*, present both the existing and simulated conditions. Documentation of the visual contrast ratings (BLM Form 8400-4, Visual Contrast Rating Worksheet) is included in Appendix D, which has been reviewed and verified by the BLM.

The Project would present a moderate contrast in line, color, and texture, particularly as seen from U.S. Route 93, I-15, and the gas station. Table 3.21-3, *Visual Contrast Rating Summary – Structures*, summarizes the contrast rating from the KOPs used in this analysis.

Contrasts created by the Project common to KOPs 1, 3, and 4 include:

1. The rectilinear edge that is created by the overall layout of the solar arrays and its contrast with the surrounding random pattern and relatively even vegetation textures of the desert. The site plan is shown in Figure 2-2, *Preliminary Site Plan*.
2. The dark gray color of the PV modules as contrasted with the sand, light tan, red, and brown colors of the desert soils and mountain backdrop.
3. The steel frames and tracker structures on to which the modules would be mounted, in addition to other exposed metal components.

TABLE 3.21-3
VISUAL CONTRAST RATING SUMMARY - STRUCTURES

ID	Location	Contrast				Contrast Summary
		Form	Line	Color	Texture	
KOP 1	U.S. 93 Eastbound	Weak	Moderate			

3.22 Water Resources

This section tiers to Sections 4.9 (BLM and DOE 2010, p. 4-37 et seq.), 5.9 (BLM and DOE 2010, p. 5-37 et seq.), and 11.3.9 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-53 et seq.) and Sections 5.9 (BLM and DOE 2012, p. 5-7 et seq.) and 11.3.9 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-17 et seq.). The analysis and other information provided in those documents remains applicable except as detailed below for purposes of this project-specific analysis of potential impacts for the proposed solar development of parcels 2, 3, and 4.

3.22.1 Affected Environment

Sections 4.9 (BLM and DOE 2010, p. 4-37 et seq.) and 11.3.9 (BLM and DOE 2010, p. 11.3-53 et seq.) of the Draft Solar PEIS, as updated in Section 11.3.9 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-17 et seq.), describe the water resource-related context of the Dry Lake SEZ. This analysis relies on those discussions, and describes relevant changes that have occurred since publication of the Final Solar PEIS. For surface water resources, the study area consists of Dry Lake SEZ parcels 2, 3, and 4. For groundwater resources, the study area is the Garnet Valley Groundwater Basin (Basin 216). All waters in Nevada are public property and the Nevada Department of Water Resources (NDWR) is the agency responsible for managing both surface and groundwater resources.

Surface Water Resources. The Project site is within the Lower Colorado–Lake Mead subbasin of the Lower Colorado River Basin hydrologic region in Garnet Valley (also called Dry Lake Valley). Arrow Canyon Range is to the west, Dry Lake Range to the southeast. Average precipitation is about 5 inches per year. The Basin is closed, all runoff evaporates or infiltrates into the ground. There are no perennial surface water features. The Dry Lake, located northeast of the Project area, and associated major intermittent/ ephemeral channels are not within the proposed development area. The site lies outside of the 100-year (Figure 2-2, *Preliminary Site Plan*) and 500-year floodplain areas associated with the Dry Lake. After signing of the Solar PEIS ROD, BLM's Southern Nevada District Office staff reduced the developable area within the Dry Lake SEZ from 5,717 acres to 3,471 acres. This resulted in a reduced potential for alterations to drainage and erosion processes and affects to ephemeral channels as compared to those presented in the Final Solar PEIS.

Groundwater Resources. Garnet Valley groundwater basin is a basin-fill aquifer covering approximately 342,400 acres and consisting of unconfined alluvium and lacustrine deposits of sand, silt, and clay, with an average thickness of around 600 feet. Regional-scale carbonate rock aquifers underlay the basin-fill aquifers in Garnet Valley and are a part of a regional-scale groundwater system that generally flows southward and terminates at Muddy River Springs, Rogers and Blue Point Springs, and the Virgin River. The recharge estimate is 800 acre-feet per year (ac-ft/yr). Flow near the SEZ goes from west to east. Preferred uses include industrial and wildlife purposes. Perennial yield (per NDWR) is 400 ac-ft/yr. The basin currently is over-appropriated, with approximately 3,400 ac-ft/yr committed for beneficial uses.

3.22.2 Applicable Laws, Regulations, Plans, and Standards

Federal Clean Water Act, as Amended (33 U.S.C. 1251 et seq.) and Chapter 445A of the Nevada Revised Statutes

In order to discharge stormwater from construction activities that disturb one or more acres of land, construction projects must apply for coverage under the Nevada Division of Environmental Protection (NDEP) Construction Stormwater General Permit (NDEP 2007; NDEP 2014). This permit requires preparation and implementation of a Stormwater Pollution Prevention Plan (SWPPP), among other measures. Many of the permit measures control erosion and sedimentation to limit the amount of soil lost during construction activities.

Nevada State Engineer's Ruling 6257

On January 29, 2014, the Nevada State Engineer (State Engineer) denied all applications for appropriations on the grounds that there is no unappropriated groundwater. This ruling also closed the basin to any new water rights appropriations.

3.22.3 Methodology

Sections 5.9 (BLM and DOE 2010, p. 5-37 et seq.) and 11.3.9.2 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-57 et seq.) and Section 11.3.9.2 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-18 et seq.) describe the methodologies relied upon to analyze impacts to water resources from utility-scale solar energy development in the Dry Lake SEZ. See also Appendix M of the Draft Solar PEIS (BLM and DOE 2010, p. M-14 et seq.) and Appendix O of the Final Solar PEIS (BLM and DOE 2012, p. O-i et seq.). Technical reports and studies also were considered in preparing this EA to confirm the descriptions of surface and groundwater resources presented in the Solar PEIS. The analysis included consideration of the design features adopted in Section A.4.1.10 of Appendix A of the 2012 FEIS ROD (BLM 2012, p. 67) to avoid, minimize, and/or mitigate potential impacts on water resources from solar development.

3.22.4 Proposed Design Features

Section 2.2.17, *Protective Measures*, describes design features, resource surveys, and management plans (e.g., Groundwater Monitoring and Reporting Plan (GMRP), Site Drainage Plan, Surface Water Quality Management Plan, and SWPPP) that are proposed to avoid or reduce potential impacts of the Proposed Action. See also the protective measures identified in Section A.4.1.10 of Appendix A of the Solar PEIS ROD (BLM 2012, p. 67).

3.22.5 Environmental Consequences

This analysis of environmental consequences tiers to Sections 5.9 (BLM and DOE 2010, p. 5-37 et seq.) and 11.3.9.2 (BLM and DOE 2010, p. 11.3-57) of the Draft Solar PEIS and Sections 5.9 (BLM and DOE 2010, p. 5-7 et seq.) and 11.3.9.2 (BLM and DOE 2012, p. 11.3-18) of the Final Solar PEIS. The analysis and other information provided in those documents remains applicable except as detailed below.

3.22.5.1 Proposed Action

Direct and Indirect Effects

Potential direct and indirect impacts on water resources result from land disturbance (such as construction related activities) and water use requirements during construction, operation, maintenance, and decommissioning/reclamation of the Project. Both land disturbance and use of groundwater can affect groundwater and surface water flows, cause drawdown of groundwater surface elevations, modify natural drainage pathways, obstruct natural recharge zones, and/or alter surface water—groundwater connectivity. Water quality also could be degraded through the generation of wastewater, chemical spills, increased erosion and sedimentation, and increased salinity (e.g., by excessive withdrawal from aquifers).

Surface Water Hydrology and Water Quality

The Proposed Action would include the permanent disturbance of approximately 1,550 acres and the temporary disturbance (during construction) of approximately 24 acres within parcels 2, 3, and 4 as well as offsite locations (i.e., wells and pipelines). Construction activities could affect natural surface water systems by diverting and/or channelizing onsite and offsite flows to accommodate access road and facility construction. Surface disturbances associated with the solar facility footprint and related infrastructure could disturb natural hydrologic processes relevant to surface waters. In desert valley regions, surface hydrologic features include intermittent and ephemeral stream channels, alluvial fans, springs, playas, and dry lakebeds, which all have functional value to both surface water and groundwater resources. Surface grading and removing vegetation disturbs these surface water features and can affect groundwater recharge processes, disrupt flows in ephemeral stream channels, and alter drainage patterns with potential adverse impacts resulting from either an increase (e.g., erosion) or a decrease (e.g., loss of water delivery) in runoff. Potential water quality impacts could be caused by runoff, dust, and potential chemical releases.

Potential impacts on water resources during operation and maintenance activities include land disturbance-related issues, water use, wastewater generation, and potential chemical releases affecting water quality. Land disturbance activities include truck traffic, soil disturbance while servicing Project facilities, and surface runoff and erosion resulting from the altered hydrology imposed by the solar facility structures. Decommissioning activities would result in temporary disturbances similar in nature to those described for the construction phase.

Programmatic design features would avoid, minimize, and/or mitigate impacts associated with surface water hydrology and water quality identified in this analysis and disclosed in Sections 5.9 (BLM and DOE 2010, p. 5-37 et seq.) and 11.3.9.2 (BLM and DOE 2010, p. 11.3-57) of the Draft Solar PEIS and Sections 5.9 (BLM and DOE 2012, p. 5-7 et seq.) and 11.3.9.2 (BLM and DOE 2012, p. 11.3-18) of the Final Solar PEIS. Further, the Project would avoid all major existing drainages on the Project site (see Section 2.2.11, *Stormwater Management,* of this EA) and would be designed and engineered to maintain the existing hydrology. An analysis of the Project site has been conducted that complies with the Clark County Regional Flood Control District's Hydrologic and Drainage Design Manual (CCRFCD 1999) and local entity requirements. Runoff generated on the Project site would be conveyed as sheet flow across the site. This would maintain existing terrain.

The Project would incorporate soil stabilization and erosion-control measures required by regulatory agency permits and contract documents as well as other measures selected by the contractor. Project-

specific BMPs would be designed by the contractor and included in an approved SWPPP. The Applicant will also prepare and implement a Site Drainage Plan, Surface Water Quality Management Plan, and Spill Prevention and Emergency Response Plan. Further, water erosion and dust-control measures would be implemented to prevent an increased sediment load to ephemeral washes around the construction site and to comply with Clark County dust control requirements.

The analysis of such environmental consequences presented in Sections 5.9 (BLM and DOE 2010, p. 5-37 et seq.) and 11.3.9.2 (BLM and DOE 2010, p. 11.3-57) of the Draft Solar PEIS and Sections 5.9 (BLM and DOE 2012, p. 5-7 et seq.) and 11.3.9.2 (BLM and DOE 2012, p. 11.3-18) of the Final Solar PEIS remains applicable to the Proposed Action. The Project would not result in any new impact.

Flood Hazards

The final SEZ boundary excludes the 100-year floodplain area that included the Dry Lake and two intermittent/ephemeral streams (see Section 11.3.9.2 of the Final Solar PEIS [BLM and DOE 2012, p. 11.3-18]). Because the Proposed Action is located outside the 100-year and 500-year floodplain areas associated with the Dry Lake (Figure 2-2, *Preliminary Site Plan*), it is not considered to be at risk of flooding or associated consequences of flooding. The temporary or permanent alteration of natural drainage pathways during construction, operation, maintenance, or decommissioning however could lead to increased flooding and flood risks on- and offsite due to changes in stormflow depth and velocity. An evaluation of functional aspects of stream channels with respect to flood conveyance is presented in Section 11.3.9.2 and Appendix O of the Solar PEIS (BLM and DOE 2012, pp. 11.3-18, p. O-i et seq.). The analysis of such impacts remains valid and applicable to the Proposed Action and no new flood-related impacts are expected. Potential impacts would be reduced for the Proposed Action through the application of the proposed design features described in Section 3.22.4, *Proposed Design Features*, below, and the measures described in Section 2.2, *Proposed Action,* and Table 2-7, *Dry Lake Programmatic Design Features, of this EA*. Implementation of a Site Drainage Plan would ensure that existing stormwater drainage patterns are reviewed to inform Project grading plans and minimize increases to stormflow depth and velocity on- and offsite to control erosion and avoid increased flood risks.

Groundwater

The Proposed Action may include the construction and use of a groundwater well within Nevada's Garnet Valley hydrologic basin to provide water for construction and operation. An estimated 1,350 acre-feet (AF) of water would be required over an approximately 18-month period for construction-related activities. Water consumption during operation would require up to 15 ac-ft/yr. The proposed well would be designed to produce up to approximately 250 gallons per minute (gpm). Three potential well locations and the locations of the offsite pipeline needed to serve each potential well location are shown on Figure 2-1, *Project Location Map*. The new well would require approvals of the Nevada State Engineer including place of use, manner of use and point of diversion.

As described in Section 2.2.6.2, *Wastewater*, of this EA, the Project also would generate onsite domestic water and sanitary waste from the O&M building. A septic tank and drain field system would be used for collection, treatment, and disposal of sanitary waste. The sanitary waste system would not receive other wastes or surface runoff from the O&M area (i.e., hazardous materials or contaminated runoff). No connection to any existing sanitary sewer system is anticipated. The proposed septic system would be designed and permitted in accordance with state and County requirements, which include the permit

requirements by the Nevada Division of Environmental Protection to control and reduce pollution of Waters of the State. Through adherence to the required regulations, groundwater quality would be protected from degradation.

Further, as discussed in detail in Section 11.3.9.1.3 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-56 et seq.), the NDWR, led by the State Engineer, is the agency responsible for managing both surface water and groundwater resources, which includes overseeing water right applications, appropriations, and interbasin transfers. The NDWR generally does not grant new water rights in a basin that is over-appropriated. As described above, Garnet Valley groundwater basin is over-appropriated with up to approximately 3,400 ac-ft/yr committed for beneficial uses, hence the Applicant proposes to meet supply requirements through existing water rights obtained from municipal and private holders.

The analysis of such environmental consequences relating to groundwater use in the Dry Lake SEZ is presented in Sections 5.9 (BLM and DOE 2010, p. 5-37 et seq.) and 11.3.9.2 (BLM and DOE 2010, p. 11.3-57) of the Draft Solar PEIS and Sections 5.9 (BLM and DOE 2012, p. 5-7 et seq.) and 11.3.9.2 (BLM and DOE 2012, p. 11.3-18) of the Final Solar PEIS and remains applicable to the Proposed Action and no new impacts are anticipated. Appendix M of the Draft Solar PEIS provide details of the aquifer characteristics of the Garnet Valley hydrologic basin and presents results of numeric groundwater flow model analysis conducted to examine the influence of potential groundwater withdrawal to support utility-scale solar energy development at the Dry Lake SEZ.

The groundwater model assessment presented in the Draft Solar PEIS evaluated the potential drawdown and associated affects for groundwater pumping rates over a 20-year period for three water demand scenarios (high, medium, and low). Further, as detailed in Section 11.3.9.2 of the Final Solar PEIS, the reduction of the Dry Lake SEZ boundaries subsequent to publication of the Draft Solar PEIS resulted in significant changes to the estimated water use requirements during construction and operations phases. The Final Solar PEIS presents additional analyses pertaining to groundwater affects. The additional analyses of groundwater included a basin-scale groundwater budget and a simplified, one-dimensional groundwater model of potential groundwater drawdown. Detailed methods and results are presented in Appendix O of the Final Solar PEIS. Table 11.3.9.2-1 in the Final Solar PEIS (p. 11.3-27) presents the revised estimates of water requirements for both construction and operation of solar facilities at the proposed Dry Lake SEZ assuming full build out of the SEZ and accounting for its decreased size. A basin-scale groundwater budget was assembled using available data on groundwater inputs, outputs, and storage, with results presented in Table 11.3.9.2-2 (p. 11.3-28) in the Final Solar PEIS.

The estimated total water use requirements during the peak construction year assuming full build out of the SEZ assessed in the Final Solar PEIS are as high as 1,740 ac-ft/yr, which is more than two times the estimated annual inputs to the basin as per the water budget presented in Table 11.3.9.2-2 (p. 11.3-28) in the Final Solar PEIS and substantially higher than the water use estimated for the Proposed Action.The low, medium, and high pumping scenarios result in groundwater withdrawals that range from 26 to 4,586 ac-ft/yr, or 520 to 91,720 ac-ft over the 20-year operational period, also substantially higher than that anticipated for the Proposed Action. The proposed water use for the Proposed Action is reduced as compared to the range of water demand scenarios assessed for construction, operations, maintenance, and decommissioning phases for solar development within the Dry Lake SEZ and presented in the Solar

PEIS. The other two projects proposed within the Dry Lake SEZ propose to meet water supply needs via offsite sources (SWCA 2014; NV Energy 2014).

The Applicant would purchase up to 1,350 AF of water for construction from existing water rights held by municipal and private entities. This water would be withdrawn from the Garnet Valley Basin and potentially other basins in the Las Vegas Valley, including the Black Mountain Basin. Specifically, up to 900 AF of water for construction would be purchased from the City of North Las Vegas and up to 450 AF from a private holder of water rights. Water supply for the Proposed Action would be met through purchases of water from holders of existing water rights and as such would not exceed NDWR authorized pumping. The remainder of the Project's construction water requirements, if any, would be met by transporting water to the site from water sources in the Las Vegas Metropolitan Area. A water services memorandum of agreement/contract would be established as necessary with retail water purveyors. Even under existing water rights, the withdrawal of groundwater for Project construction, operation, maintenance, and decommissioning activities could result in very minor lowering of water levels of the source aquifer if it represents new water pumping (as would be the case with some or all of the proposed water use). As analyzed, the BLM concludes that the limited water needs for the Proposed Action- an estimated 1,350 acre-feet of water over an approximately 18-month period for construction-related activities and five to 15 afy for the duration of Project operations – would not withdraw groundwater to the extent that adverse effects would occur (see Section 3.9, *Threatened, Endangered, and Candidate Wildlife Species* [Moapa dace] for more information).

The design features adopted in the Solar PEIS ROD minimize, avoid, and/or mitigate the disclosed environmental consequences relating to the construction and use of a water supply well for groundwater pumping to support the Proposed Action. One of the primary mitigation measures to protect groundwater resources is the implementation of long-term monitoring and adaptive management (described in Section 3.22.4, above). Implementation of the GMRP would document pre-construction baseline groundwater conditions, guide groundwater monitoring and reporting, and document groundwater use.

Mitigation Measures

No impacts in addition to those identified in the Solar PEIS are anticipated. The design features recommended in the ROD are adequate, and no additional mitigation measures are recommended.

Cumulative Effects

This analysis tiers to Section 11.3.22.4.8 of the Draft Solar PEIS (BLM and DOE 2010, p. 11.3-352) and Section 11.3.22.4 of the Final Solar PEIS (BLM and DOE 2012, p. 11.3-104). Consistent with the Draft Solar PEIS, the geographic scope of the cumulative effects analysis for surface water hydrology includes the Dry Lake and its ephemeral wash tributaries and for groundwater the White River Groundwater Flow System.

Cumulative impacts on surface water hydrology from the Proposed Action and other projects proposed within the Dry Lake SEZ are expected to be less than those described in the Draft and Final Solar PEIS. This is because the Project area plus the areas to be developed by other projects (i.e., parcels 1 through 6), would be approximately 3,230 acres, whereas the areas of analysis (proposed Dry Lake SEZ) in the Draft and Final Solar PEIS were 15,649 acres and 6,186 acres, respectively, resulting in reduced cumulative

impacts relating to land disturbance and associate impacts such as drainage, erosion, and water quality. Further as with the Proposed Action, projects included in the cumulative scenario, would employ industry standard BMPs to avoid and minimize impacts to water resources and would be required to adhere to all applicable local, state and federal requirements.

Increased water withdrawals from concurrent state, private, and Tribal activities within the White River Groundwater Flow System could affect groundwater and natural hydrologic processes. Given the limited water needs for the Proposed Action (an estimated 1,350 acre-feet of water over approximately 18 months for construction-related activities and 5 to 15 ac-ft/yr for the remaining duration of the Project) and the use of existing water rights, no adverse impacts to groundwater are anticipated separately or cumulatively. In addition, the Applicant would develop a GMRP to be reviewed and approved by the BLM. The GMRP would document pre-construction baseline groundwater conditions, guide groundwater monitoring and reporting, and document groundwater use.

Although the list of specific projects in the cumulative scenario has been updated since the Final Solar PEIS (see Table 3.2-1, *Ongoing And Reasonably Foreseeable Future Actions Near The Dry Lake SEZ*), the scope of potential cumulative effects on water resources is within that analyzed in the Final Solar PEIS, and no new or increased significant cumulative effects would occur to water resources as a result of the Proposed Action.

3.22.5.2 No Action Alternative

Direct and Indirect Effects

In the absence of the Proposed Action, there would be no direct or indirect impacts related to water resources from the Project. However, because the site is located in a SEZ where solar development is a designated priority (BLM 2012) and because the successful bidders at the Dry Lake SEZ auction have demonstrated a substantial commitment to the solar resource (BLM 2014), it is possible that some form of solar development could occur in this location if the Proposed Action were not authorized.

Specific disturbance areas, water supply source(s), the rate of groundwater pumping, and other details about possible future solar development at the site are not available, and so it is only possible at this time to provide a general analysis of potential future solar development that could occur on the site. If the Proposed Action was not constructed, a different PV project could be constructed and presumably would have substantially similar effects on water resources as those of the Proposed Action. The effects of implementing a different solar technology on water resources could be similar, less, or greater than those of the Project depending on specific facts.

Cumulative Effects

Because the No Action Alternative would result in no direct or indirect impacts related to water resources, there would be no cumulative impacts associated with the No Action Alternative. If the BLM authorized some form of solar development in this location in the future, the cumulative impacts to water resources from that development would likely be similar to those described in the Proposed Action section above.

CHAPTER 4
Coordination

4.1 Introduction

As described in the Solar PEIS ROD, extensive coordination, consultation, and public involvement specific to solar energy development in SEZs occurred as part of the NEPA process for the Western Solar Program. The BLM used this input on the Solar PEIS to inform its decision to designate the SEZs and will use it to further evaluate project-specific development within those SEZs. Additional public involvement for projects in SEZs will be consistent with the requirements of NEPA. This EA for the solar development of Dry Lake SEZ parcels 2, 3 and 4 incorporates by reference the coordination, consultation, and public involvement completed for the Solar PEIS. This EA will be released to the public for review and comment. In addition, a public meeting will be held to provide information to the public and receive comments.

A summary of the coordination, consultation, and public involvement completed through the Solar PEIS and follow-on work completed specific to the Dry Lake SEZ is provided below.

4.1.1 Solar PEIS

A Notice of Intent (NOI) to prepare the Solar PEIS was published in the Federal Register on May 29, 2008 (73 Fed. Reg. 30908). The NOI initiated the first scoping period, which lasted from May 29 to July 15, 2008. During that period, the BLM invited the public to provide comments on the scope and objectives of the Solar PEIS, including identification of issues and alternatives that should be considered in the Solar PEIS analyses. Public meetings were held at 11 locations across the 6 states. A second scoping period was announced through a Notice of Availability (NOA) of Maps and Additional Public Scoping published in the Federal Register on June 30, 2009 (74 Fed. Reg. 31307). During this scoping period, the BLM solicited comments about environmental issues, existing resource data, and industry interest with respect to 24 proposed solar energy study areas (later the terminology was changed to solar energy zones, or SEZs). It is estimated that approximately 15,900 individuals, organizations, and government agencies provided comments during the first scoping process and approximately 300 entities provided comments during the second scoping process. The results of the first scoping process were documented in a report issued in December 2008. The comments received during the second scoping process are summarized in Chapter 14 of the Draft Solar PEIS.

After publication of the Draft Solar PEIS in December of 2010, 14 public meetings were held in the six-state study area between January and March 2011. More than 86,000 comments were received. The public, as well as many cooperating agencies and key stakeholders, offered suggestions on how the BLM could increase the utility of the document, strengthen elements of the proposed Solar Energy Program,

and increase certainty regarding solar energy development on BLM-administered lands. These comments were considered in preparation of the Supplement to the Draft Solar PEIS, published in October of 2011. BLM and the DOE held five public meetings in the study area between November 2011 and January 2012 to present the new information provided in the Supplement. During the public comment period on the Supplement to the Draft Solar PEIS, more than 134,000 comments were received.

In addition to public scoping, the BLM initiated government-to-government consultation with 316 tribes, chapters, and bands with a potential interest in solar energy development on BLM-administered lands in the six-state study area. The BLM also coordinated with appropriate agencies in accordance with the requirements of Section 106 of the NHPA and Section 7 of the ESA.

Nineteen federal, state, and local government agencies worked with the BLM as cooperating agencies on the Solar PEIS. As cooperators, these agencies were involved in the development of the Draft Solar PEIS, the Supplement to the Draft Solar PEIS, and the Final Solar PEIS.

4.1.2 Dry Lake SEZ

Comments were received during the Solar PEIS process specific to the Dry Lake SEZ. Many of the comments received on the Dry Lake SEZ were in favor of identifying the area as a SEZ with proper siting and design. For example, The Wilderness Society et al. and the Nevada Wilderness Project recommended excluding the dry lake, playa, and washes to avoid impacts on wildlife and special status species habitat, and removing the portion of the SEZ that is southeast of I-15 to avoid impacts on the Old Spanish National Historic Trail. The Cultural Resources Preservation Coalition and Partnership for the National Trails System also recommended adjusting the SEZ boundary to reduce impacts on the National Historic Trail. The U.S. Department of Defense (DoD) expressed concerns regarding impacts on use of the area for emergency aircraft bailout purposes. The U.S. Fish and Wildlife Service (USFWS) identified the entire SEZ as an area of concern for desert tortoise recovery. Western Watersheds Project recommended that the Dry Lake SEZ be eliminated to avoid impacts on desert tortoise habitat.

Based on the comment received, the Dry Lake SEZ was reconfigured to include only the southernmost area northwest of I-15, excluding the northern portion of the SEZ. This reconfiguration was intended to mitigate some potential impacts including impacts on desert tortoise and other wildlife and potential impacts on military operations. In addition, 469 acres of floodplain and wetland were identified as non-development areas within the remaining SEZ boundaries resulting in a developable area of 5,717 acres.

The SRMS for the Dry Lake SEZ, released on March 17, 2014, was prepared to meet a commitment from the ROD for the Solar PEIS to develop regional mitigation strategies for each of the SEZs (BLM 2014). Preparation of the SRMS involved a significant amount of public involvement, including four public workshops, several web-based meetings, and several public comment opportunities. The SRMS describes anticipated adverse impacts and makes recommendations for offsite mitigation actions and costs that the BLM will consider when processing ROW applications in the SEZ. The mitigation actions and costs identified in the strategy are recommended to compensate for loss of habitat, ecological services, and visual resources that are expected to occur from development of the Dry Lake SEZ. A more detailed description of the SRMS recommendations is provided in Chapter 2, *Proposed Action and Alternatives*.

4.2 Persons, Groups, and Agencies Consulted

Table 4-1 lists those who were consulted for purposes of this EA.

4.3 Summary of Public Participation

The process used to involve the public included the direct mail of letters to Tribes; federal, state, and local agencies; private landowners, and other interested parties as documented in Table 4-1, *List of all Persons, Agencies and Organizations Consulted for Purposes of this EA*, to solicit comments and concerns about the Proposed Action. A public comment period will be offered between December 9, 2014 and January 7, 2015, as an opportunity for the BLM to keep the public apprised of the NEPA process and informed about what has happened since the designation of the Dry Lake SEZ and the auction. During the public comment period, an open house is scheduled to be held on December 10, 2014 from 6:00 to 8:00 pm at the BLM Southern Nevada District Office, located at 4701 North Torrey Pines Drive in Las Vegas, Nevada.

4.4 List of Preparers

The BLM staff and environmental resource specialists of the BLM's consultant (Environmental Science Associates) who participated in the development of this EA are identified below in Table 4-2 and Table 4-3, respectively.

TABLE 4-1
LIST OF ALL PERSONS, AGENCIES AND ORGANIZATIONS CONSULTED FOR PURPOSES OF THIS EA

Name	Purpose & Authorities for Consultation or Coordination	Findings and Conclusions
Tribes and Native American Interests		
State Historic Preservation Office (SHPO)	Consultation for undertakings, as required by the National Historic Preservation Act (NHPA) (16 USC 470).	SHPO has concurred, by letter dated October 23, 2014, with the BLM's determinations of the direct and indirect APEs, the adequacy of the identification efforts actions outline for the proposed undertaking, and eligibility of specified cultural resources for inclusion on the National Register of Historic Places. (Refer to Appendix F)
Chemehuevi Indian Tribe Colorado River Indian Tribe Fort Mojave Indian Tribe Kaibab Band of Paiutes Las Vegas Paiute Tribe Moapa Band of Paiutes Pahrump Paiute Tribe (non-federally recognized) Paiute Indian Tribe of Utah San Juan Southern Paiute Tribe The Hopi Tribe Timbisha Shoshone	Consultation as required by the American Indian Religious Freedom Act of 1978 (42 USC 1531) and NHPA Section 106 (16 USC 1531).	Letters requesting government-to-government consultation under Section 106 and the American Indian Religious Freedom Act (AIRFA) were sent to the following Tribes on October 16, 2014. To date, one response to the BLM's consultation letters has been received. A letter was sent and/or phone calls made on October 16, 2014. The Hopi Tribe responded by letter dated November 3, 2014 that the Dry Lake SEZ projects are unlikely to affect cultural resources significant to them.
Federal Agencies		
U.S. Army Corps of Engineers		A meeting was held September 4, 2014 with Pat McQueary Chief, St. George Regulatory Office, Sacramento District, US Army Corps of Engineers, at the Project site to review Jurisdictional Water delineation survey, analysis and reporting methods. The Applicant is preparing a jurisdictional delineation report for submittal to the ACOE, and the agency will prepare a jurisdictional delineation.
U.S. Department of Defense, Nellis Air Force Base		The Plan of Development for the Proposed Action and an e-mail were sent to James P. Callahan, GS-12, DAF, Chief, Airspace Management, Nellis AFB, Creech AFB, NTTR.
U.S. Fish and Wildlife Service	Consultation for undertakings, as required by Section 7 of the Endangered Species Act (ESA) (16 USC §1536).	The BLM and USFWS currently are proceeding with ESA Section 7 consultation. A project-specific Biological Opinion (BO) will be developed that tiers to the programmatic BO prepared for the Western Solar Plan. The project-specific BO will include information such as the translocation location(s) and stipulations associated with that activity.
U.S. Environmental Protection Agency Region IX	Notification as required by Master Memorandum of Understanding between the DOI-BLM AZ, CA, NV and the US Environmental Protection Agency	BLM notified USEPA Region 9 on September 12, 2014 of the Proposed Action.
National Park Service – Lake Mead National Recreation Area		BLM coordinated informally with the NPS Renewable Energy Specialist on September 11 and November 5, 2014, who indicated that Lake Mead National Recreation Area had no concerns relative to the Proposed Action (Christ 2014). BLM also consulted with NPS National Historic Trails staff September 12, October 28, and November 5th, 2014 regarding any potential adverse effect to the Old Spanish National Historic Trail (OSNHT). Viewshed analysis by both NPS and BLM concluded that there was no adverse effect to the congressionally designated section of the OSNHT (Howard 2014).

TABLE 4-1 (Continued)
LIST OF ALL PERSONS, AGENCIES AND ORGANIZATIONS CONSULTED FOR PURPOSES OF THIS EA

Name	Purpose & Authorities for Consultation or Coordination	Findings and Conclusions
State Agencies		
Nevada Department of Wildlife		The Applicant filed an NDOW Cost Recovery Agreement with agency on September 2, 2014.
Public Utilities Commission of Nevada	Utilities Environmental Protection Act (UEPA) permit to construct solar facility and gen-tie	Notice of initiation of federal environmental review process was submitted to the PUCN on September 3, 2014. The Application will be filed upon completion of the EA.
Local Agencies		
Clark County	Notification as required by 43 CFR 2807.14	BLM notified Clark County on September 16, 2014 of the Proposed Action. The letter indicated that if no response was received, BLM would assume Clark County had no problems or issues with BLM granting the ROW. No Response was received.
Clark County Department of Comprehensive Planning	Special Use Permit (SUP) including Variances; Grading Permit	SUP application filed with Clark County on October 29, 2014; a County Commission hearing is scheduled for December 17, 2014.
Stakeholders and Contiguous Property Holders		
Chemical Lime Co. Central Telephone dba Century Link FTV Comm c/o Level 3 Genscape Inc. Great Basin Transmission, LLC Holly Energy Partners Kern River Gas Transmission Co. LA & SL RR Co. Level 3 Lhoist North America MCI Worldcom Network Svc Inc. NV Power Co. dba NV Energy Sierra Pacific Power Co. Southwest Gas Corporation	Notification as required by 43 CFR 2807.14	BLM notified adjacent right-of-way holders on September 16, 2014 and/or September 17, 2014 notifying them of the Proposed Action. The letter indicated that if no response was received, BLM would assume the adjacent ROW holder had no problems or issues with BLM granting the ROW. A response from NV Energy was received on October 2, 2014 indicating the Applicant is required to submit engineering plans to NV Energy Property Services Department before NV Energy determines whether concurrence can be given. A response also was received from Southwest Gas Corporation on October 9, 2014 indicating no objection to the Proposed Action.

TABLE 4-2
BLM STAFF CONTRIBUTING TO THE PREPARATION OF THIS EA

Name	Title	Responsible for the Following Section(s) of this Document
Nancy Christ	Planning and Environmental Coordinator	All sections
Lisa Christianson	Environmental Protection Specialist	Air Resources Hazards and Hazardous Materials
Melanie Cota	Wildlife Biologist	Wildlife, Excluding Federally Listed Species Threatened, Endangered, and Candidate Animal Species Migratory Birds Areas of Critical Environmental Concern
Stan Plum	Archaeologist	Cultural Resources Native American Religious Concerns
Greg Helseth	Project Manager	Military and Civilian Aviation Transportation
Sean McEldery	Fire Management Specialist	Vegetation, Excluding Federally Listed Species Invasive and Noxious Weeds
Evan Allen	Geologist	Geology and Mineral Resources
Boris Poff	Hydrologist	Soil Water Resources
Ben Klink	Range Specialist	Vegetation, Excluding Federally Listed Species Invasive and Noxious Weeds
Kathryn Foster	Realty Specialist	Lands/Access
Chris Linehan	Recreation Planner	Recreation
Fred Edwards	Botanist	Vegetation, Excluding Federally Listed Species Invasive and Noxious Weeds Forestry
John Schumacher	Natural Resource Specialist	Visual Resources
Randy Kyes	Wilderness Planner	Aras of Critical Environmental Concern

TABLE 4-3
ENVIRONMENTAL SCIENCE ASSOCIATES STAFF CONTRIBUTING TO THE PREPARATION OF THIS EA

Name	Responsible for the Following Section(s) of this Document
Shannon Stewart, Project Director	All sections
Janna Scott, Project Manager	All sections
Alexandra Thompson, Deputy Project Manager	All sections, primarily including Socioeconomics and Environmental Justice
Greg Ainsworth	Wildlife, Excluding Federally Listed Species Threatened, Endangered, and Candidate Animal Species Vegetation, Excluding Federally Listed Species Invasive and Noxious Weeds Migratory Birds
Madeline Bray	Cultural Resources Native American Religious Concerns
Michael Burns	Hazards and Hazardous Materials
Allisa Carlson	Visual Resources
Matt Fagundes	Air Resources
Pete Hudson	Geology and Mineral Resources Soil Resources Water Resources
Jack Hutchison	Transportation
Karen Lancelle	Hazards and Hazardous Materials Geology and Mineral Resources Soil Resources
Tommy Molioo	Wildlife, Excluding Federally Listed Species Threatened, Endangered, and Candidate Animal Species Migratory Birds
Matthew Morales	Air Resources
Dallas Pugh	Wildlife, Excluding Federally Listed Species Threatened, Endangered, and Candidate Animal Species Vegetation, Excluding Federally Listed Species Invasive and Noxious Weeds Migratory Birds
Matthew South	Wildlife, Excluding Federally Listed Species Threatened, Endangered, and Candidate Animal Species Vegetation, Excluding Federally Listed Species Invasive and Noxious Weeds Migratory Birds
Megan Steer	Military and Civilian Aviation Recreation
Monica Strauss	Cultural Resources Native American Religious Concerns
Justin Taplin	Water Resources
Terrence Wong	Air Resources
Michelle Williams	Lands/Access Areas of Critical Environmental Concern

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APPENDIX A
Legal Description

Parcel 2 as shown on NREL GIS map titled "Dry Lake SEZ", dated April 2014, contains an aggregate of 222.8 acres, more or less, as described below:

Mount Diablo Meridian, Nevada

T. 17 S., R. 63 E., Sec. 35, Beginning at the intersection of the section line of sections 2 and 35, Townships 17 and 18 South, Range 63 East with the westerly right-of-way for transmission line, BLM Nevada case file N 75025; thence N. 89°23′ W., along the section line, to an intersection with the easterly right-of-way for transmission line, BLM Nevada case file N 75607; thence northeasterly, along easterly right-of-way for transmission line, BLM Nevada case file N 75607, to an intersection with the westerly right-of-way for transmission line, BLM Nevada case file N 75025 (if right-of-ways do not intersect, extend them until they do); thence southeasterly, along westerly right-of-way for transmission line, BLM Nevada case file N 75025, to an intersection with the section line of sections 2 and 35, and the Point Of Beginning;

T. 18 S., R. 63 E., Sec. 2, Beginning at the intersection of the section line of sections 2 and 35, Townships 17 and 18 South, Range 63 East, with the westerly right-of-way for transmission line, BLM Nevada case file N 75025; thence N. 89°23′ W., along the section line, to an intersection with the easterly right-of-way for transmission line, BLM Nevada case file N 75607; thence southwesterly, along easterly right-of-way for transmission line, BLM Nevada case file N 75607, to an intersection with the section line of sections 2 and 3; thence S. 0°04′ W., along the section line, to an intersection with the northerly right-of-way for an oil and gas pipeline, BLM Nevada case file N 42581; thence easterly, along the northerly right-of-way for an oil and gas pipeline, BLM Nevada case file N 42581, to an intersection with the westerly right-of-way for transmission line, BLM Nevada case file N 75025; thence northwesterly, along westerly right-of-way for transmission line, to the intersection with the section line of sections 2 and 35, and the Point Of Beginning;

T. 18 S., R. 63 E., Sec. 3, Beginning at the intersection of the section line of sections 2 and 3, with the easterly right-of-way for transmission line, BLM Nevada case file N 75607; thence S. 0°04′ W., along the section line, to an intersection with the northerly right-of-way for an oil and gas pipeline, BLM Nevada case file N 42581; thence westerly, along the northerly right-of-way for an oil and gas pipeline, BLM Nevada case file N 42581, to an intersection with the easterly right-of-way for transmission line, BLM Nevada case file N 75607 (if right-of-ways do not intersect, extend them until they do); thence northeasterly, along the easterly right-of-way for transmission line, BLM Nevada case file N 75607, to an intersection with the section line of sections 2 and 3, and the Point Of Beginning.

Parcel 3 as shown on NREL GIS map titled "Dry Lake SEZ", dated April 2014, contains of an aggregate of 758.7 acres, more or less, as described below:

Mount Diablo Meridian, Nevada

T. 18 S., R. 63 E., Sec. 1, SW1/4, SW1/4NW1/4(excluding that portion of land identified as non-development on Argonne National Laboratory map titled "Developable Area for the Proposed Dry Lake SEZ", dated July 2012, and excluding that portion of land southwesterly of the westerly right-of-way for transmission line, BLM Nevada case file N 75025, and excluding that portion of land hereinafter described in Parcel 4;

Sec. 2, S1/2, S1/2NE1/4, S1/2NW1/4(excluding that portion of land north of the southerly right-of-way for an oil and gas pipeline, BLM Nevada case file N 4258;

Sec. 3, lots 9, 10, 13 and 14, NE1/4SE1/4, S1/2NE1/4, S1/2NW1/4, (excluding that portion of land north of the southerly right-of-way for an oil and gas pipeline, BLM Nevada case file N 42581.

Parcel 4 as shown on the National Renewable Energy Laboratory (NREL) GIS map titled "Dry Lake SEZ", dated April 2014, contains an aggregate of 729.0 acres, more or less, as described below:

Mount Diablo Meridian, Nevada

T. 18 S., R. 63 E., Sec. 1, S1/2SW1/4(excluding that portion of land previously described in Parcel 3, excluding that portion of land identified as non-development on Argonne National Laboratory map titled "Developable Area for the Proposed Dry Lake SEZ", dated July 2012, and excluding that portion of land northeasterly of the westerly right-of-way for transmission line, BLM Nevada case file N 75025);

Sec. 10, lot 1; Sec. 11, lots 1, 3 thru 5, and 9, NE1/4, N1/2SE1/4, SE1/4SE1/4, NE1/4NW1/4 (excluding that portion of land identified as non-development on Argonne National Laboratory map titled "Developable Area for the Proposed Dry Lake SEZ", dated July 2012);

Sec. 12, W1/2(excluding that portion of land identified as non-development on Argonne National Laboratory map titled "Developable Area for the Proposed Dry Lake SEZ", dated July 2012, and excluding that portion of land southeasterly of the northwesterly right-of-way for utility corridor line, BLM Nevada case file N 52787, and excluding that portion of land southeasterly of the northwesterly right-of-way for utility corridor, identified in 96 and extended through this area;

Sec. 14, lot 1 (excluding that portion of land southeasterly of the northwesterly right- of-way for utility corridor line, BLM Nevada case file N 52787.

This legal description is derived from the Federal Register Notice of Competitive Auction for Solar Energy Development on Public Lands in the State of Nevada, a Notice by the Land Management Bureau on 05/30/2014.

APPENDIX B

Figures

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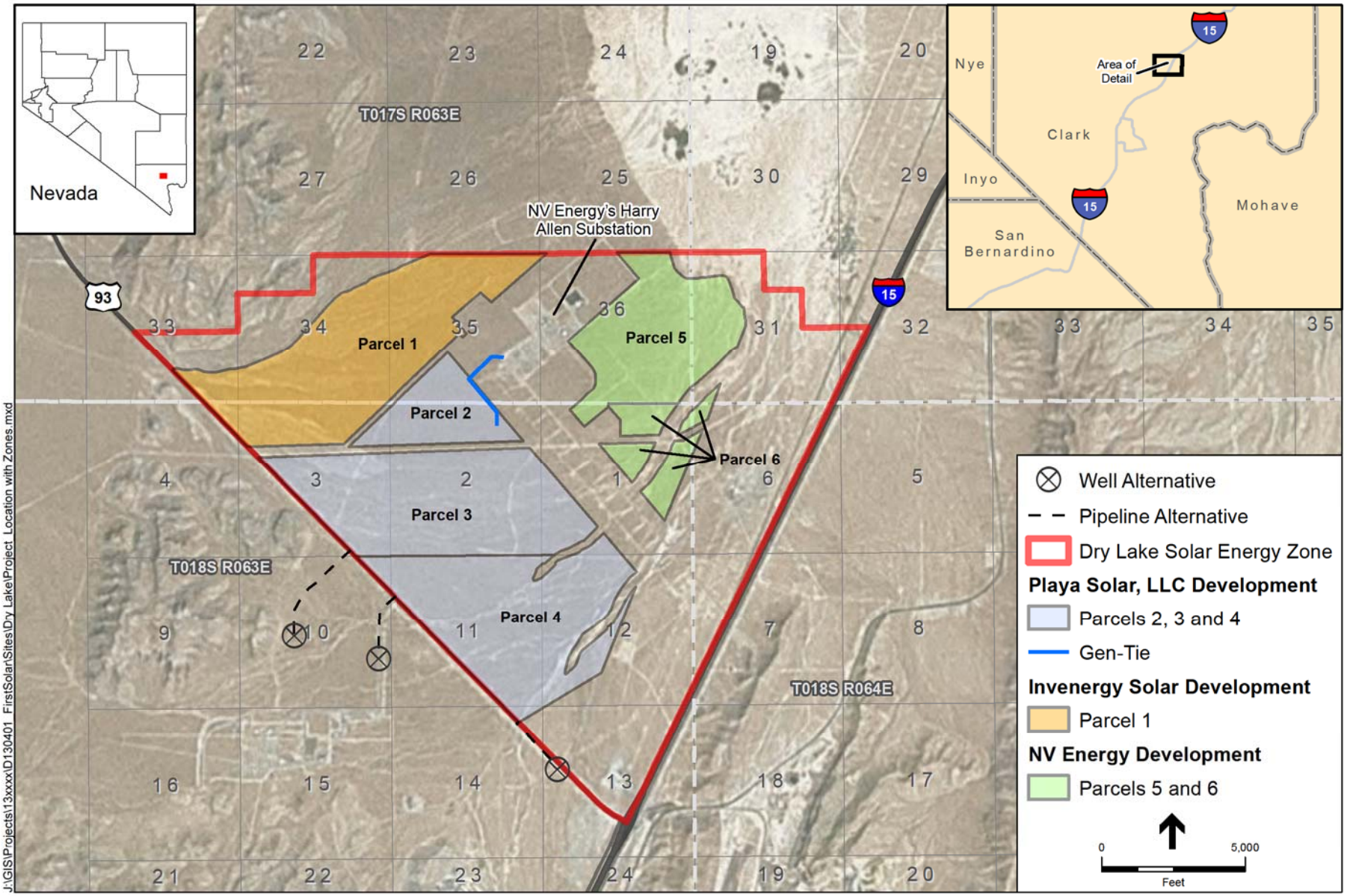
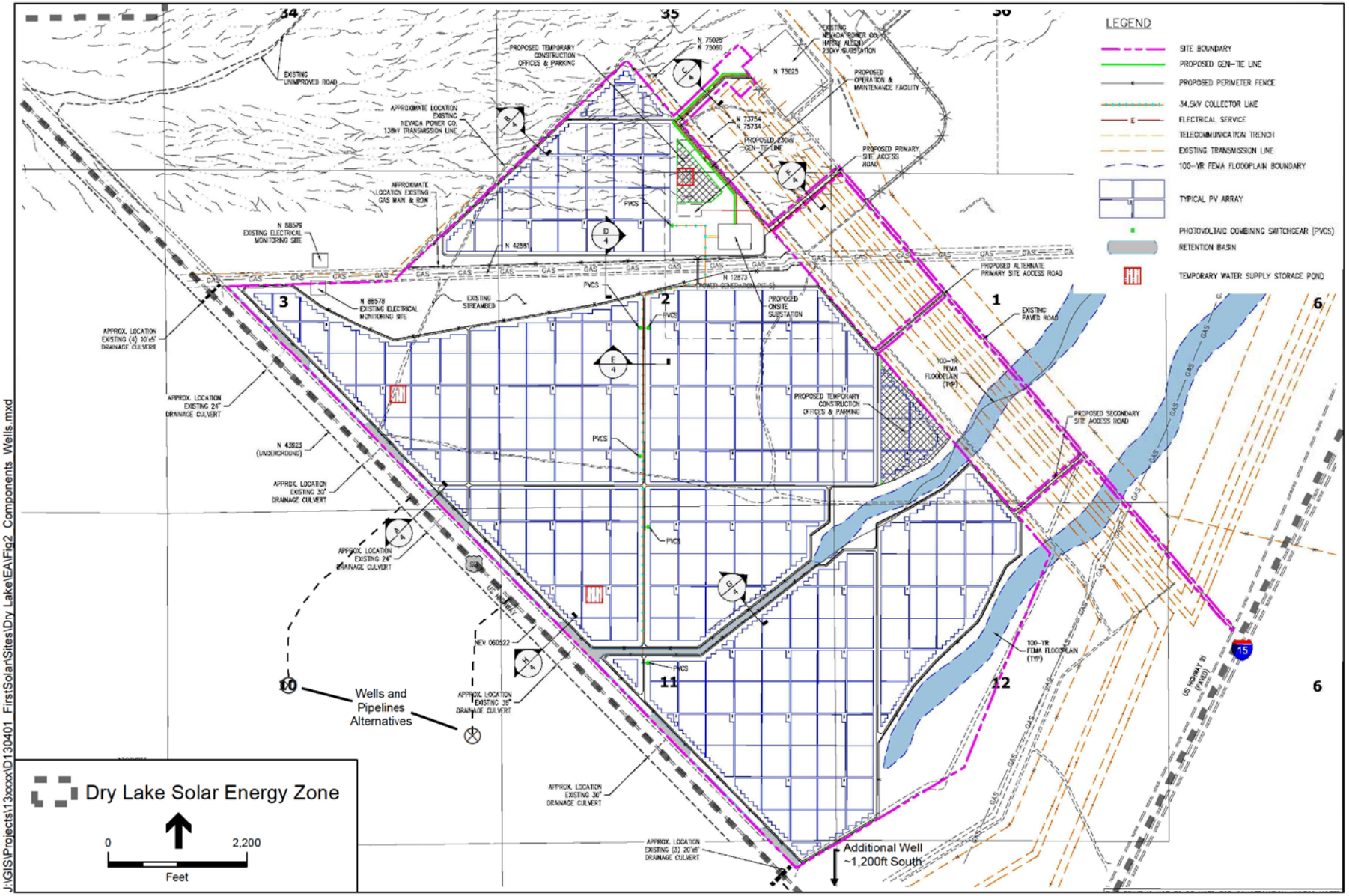


SOURCE: ESRI Imagery

Playa Solar Project - D.140515

Figure 2-1
Project Location Map

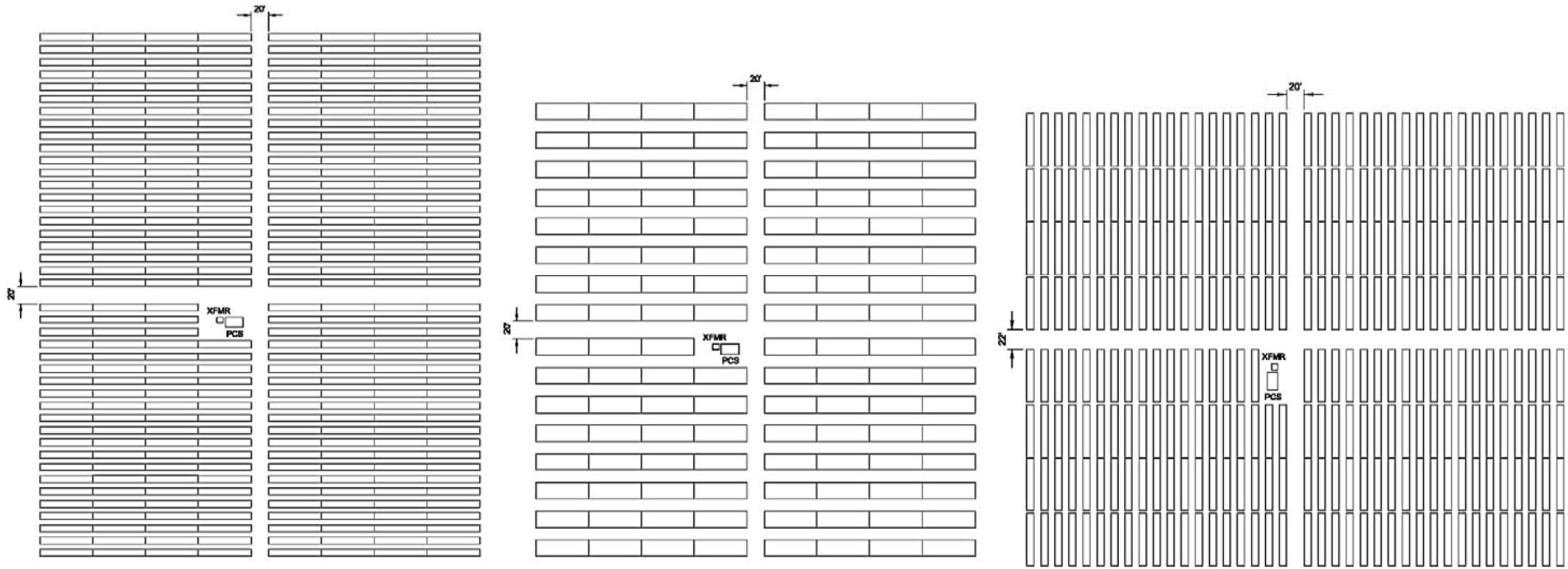


SOURCE: Playa Solar, LLC

Playa Solar Project - D.140515

Figure 2-2

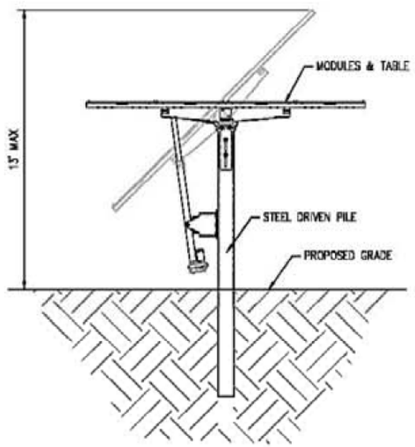
Preliminary Site Plan

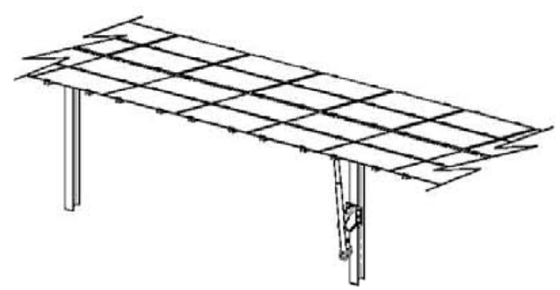


SOURCE: Playa Solar, LLC

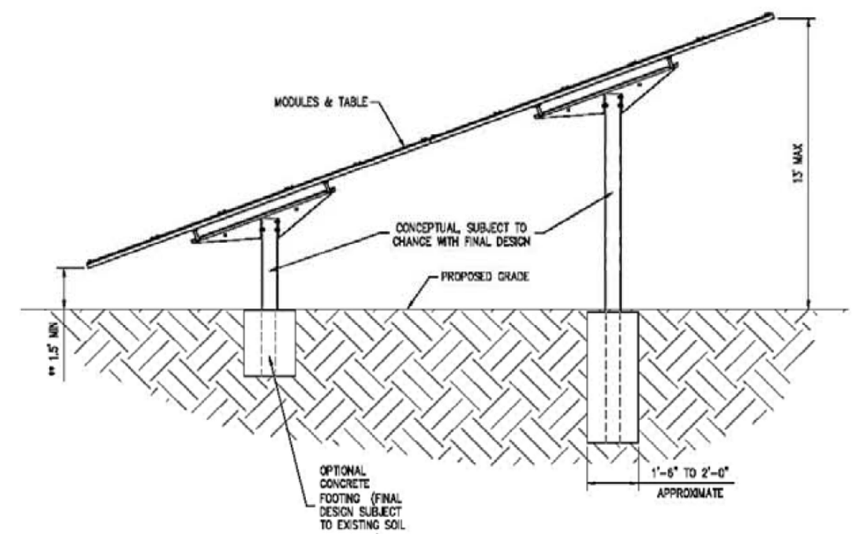
Playa Solar Project . D140515

Figure 2-3
Typical Array Configurations

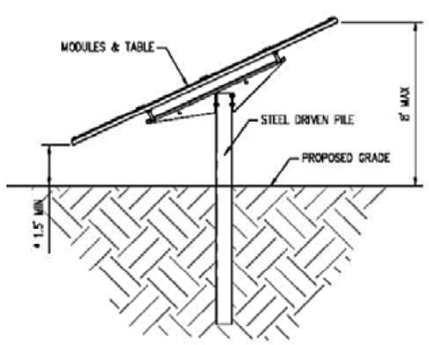




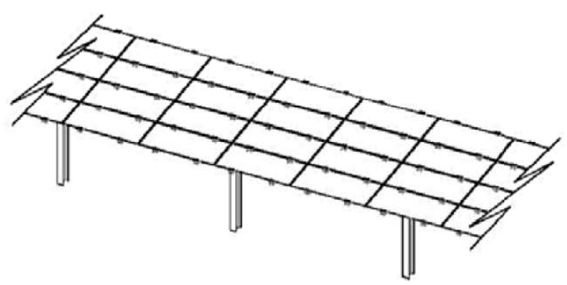
SINGLE AXIS TRACKER
NOT TO SCALE



** NOTE: MINIMUM HEIGHT MAY VARY DUE TO FLOOD CONDITIONS.

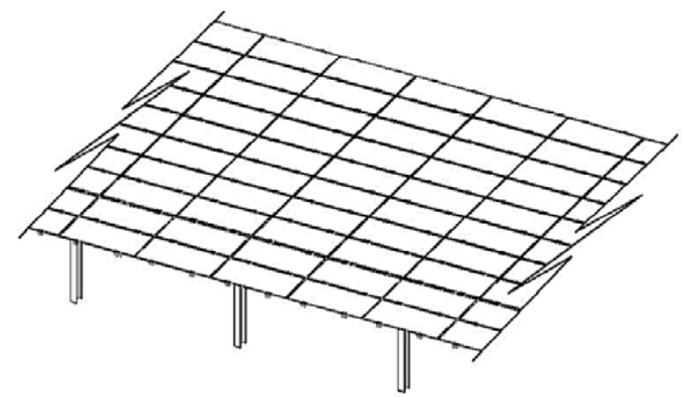


* NOTE: MINIMUM HEIGHT MAY VARY DUE TO FLOOD CONDITIONS.



FOUR HIGH SYSTEM
FIXED TILT
NOT TO SCALE

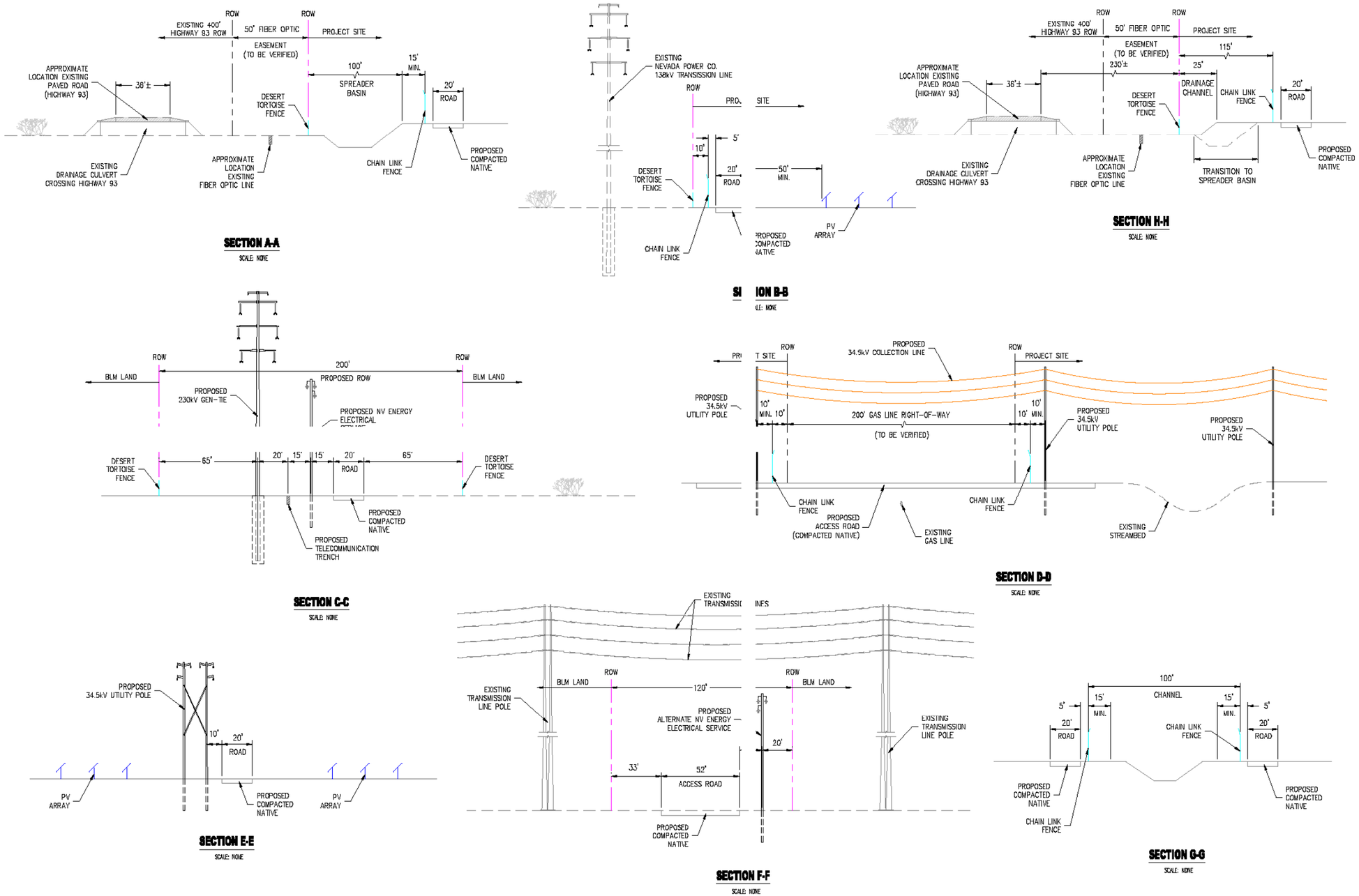
TABLE SYSTEM INFORMATION		
TYPE	ROW SPACING	ROW ORIENTATION
FIXED	14'-0" TO 16'-0"	EAST-WEST
TRACKER	16'-0" TO 22'-0"	NORTH-SOUTH
TEN HIGH	22'-0"	EAST-WEST



TEN HIGH SYSTEM
FIXED TILT
NOT TO SCALE

SOURCE: Playa Solar, LLC

Playa Solar Project . D140515
Figure 2-4
Typical Mounting System



SOURCE: Playa Solar, LLC

Playa Solar Project . D140515

Figure 2-5
Power Line Details

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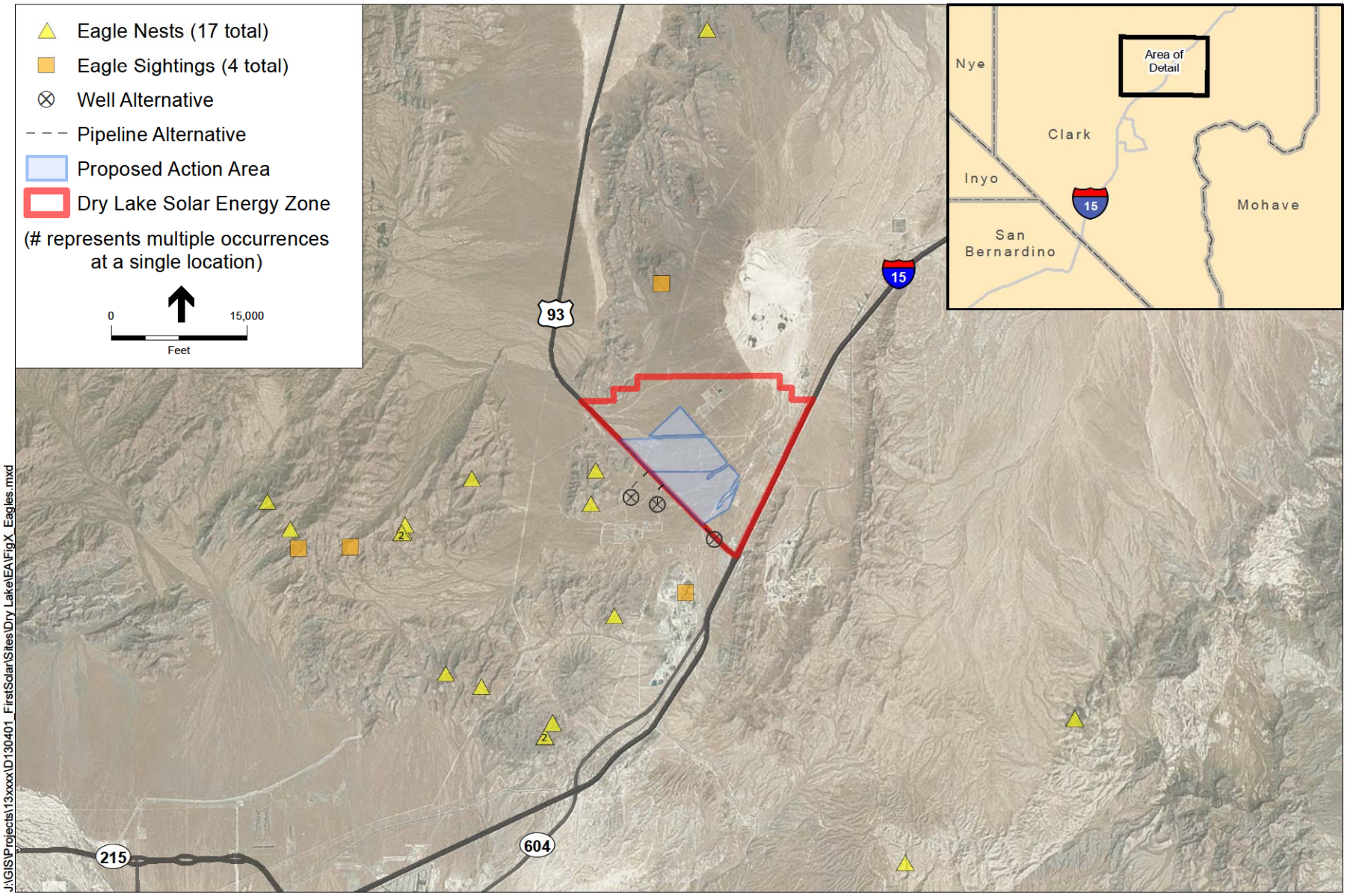
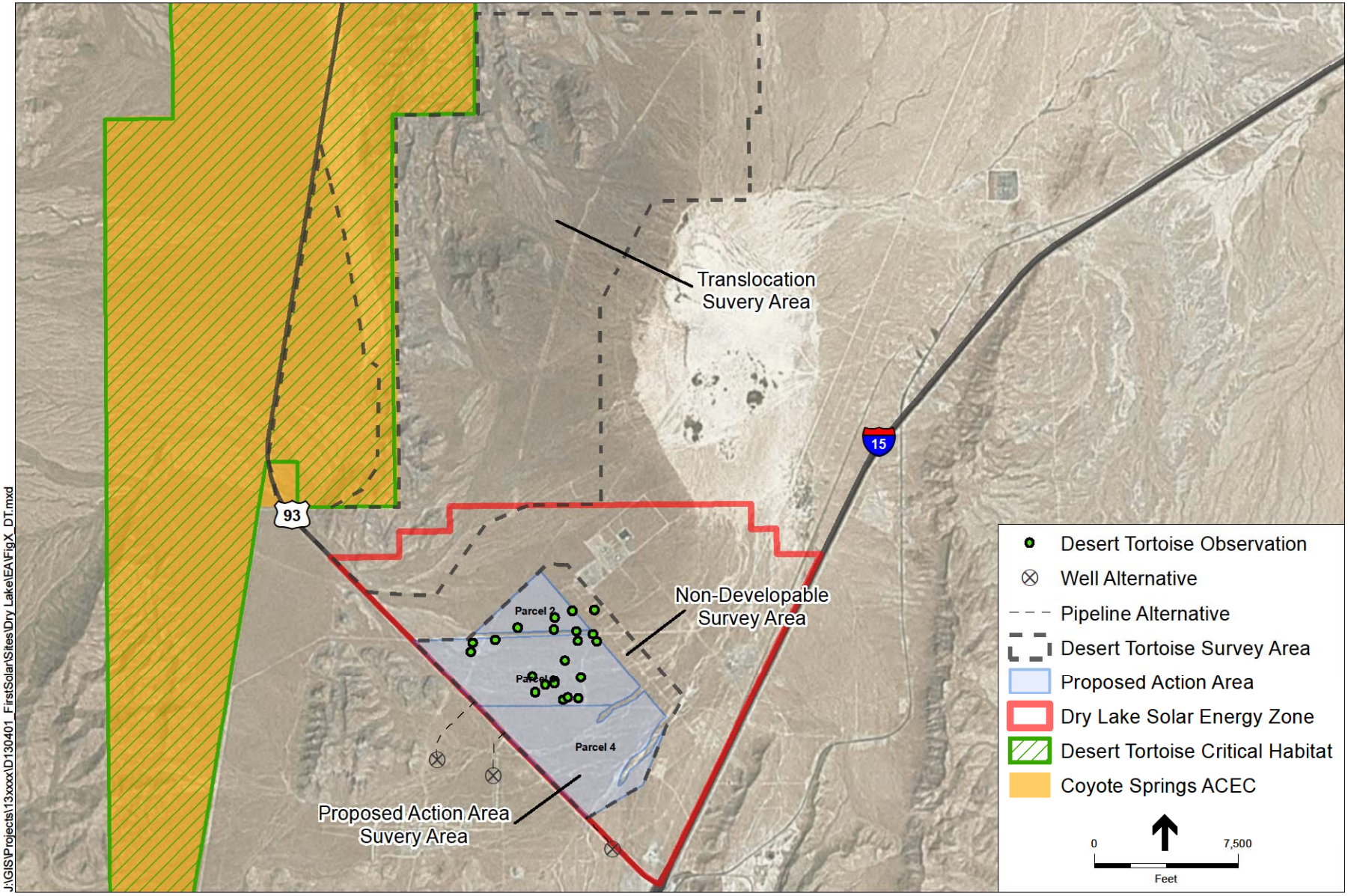


SOURCE: ESRI Imagery

Playa Solar Project - D.140515

Figure 3.8-1
Eagle Nests and Observations

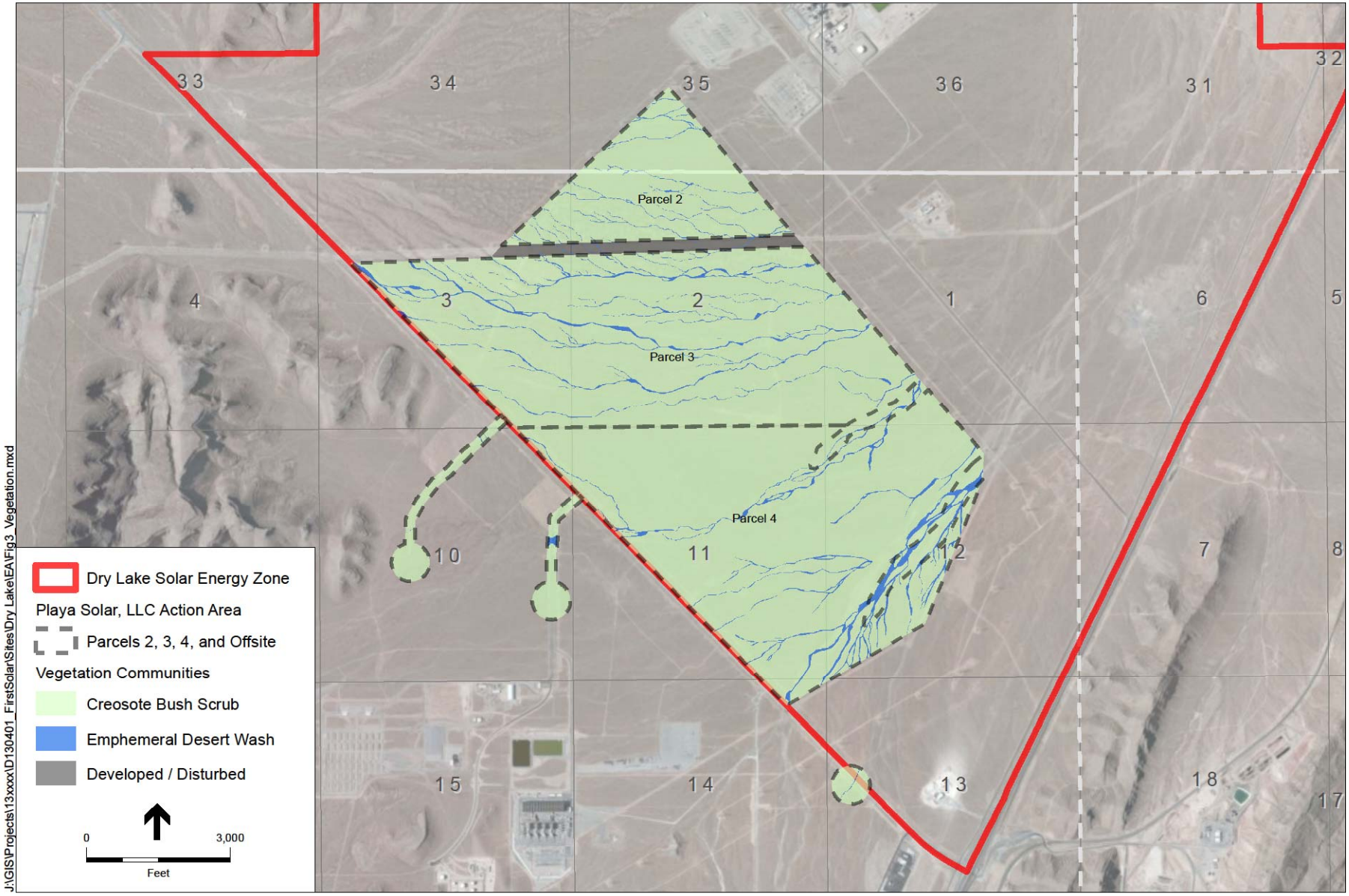


J:\GIS\Projects\13xxxx\D130401_FirstSolar\Sites\Dry Lake\EA\FigX_DT.mxd

SOURCE: ESRI Imagery

Playa Solar Project - D.140515

Figure 3.9-1
Desert Tortoise Translocation



SOURCE: ESRI Imagery

Playa Solar Project - D.140515

Figure 3.10-1
Vegetation Map

Looking west, towards northern edge of Dry Lake SEZ

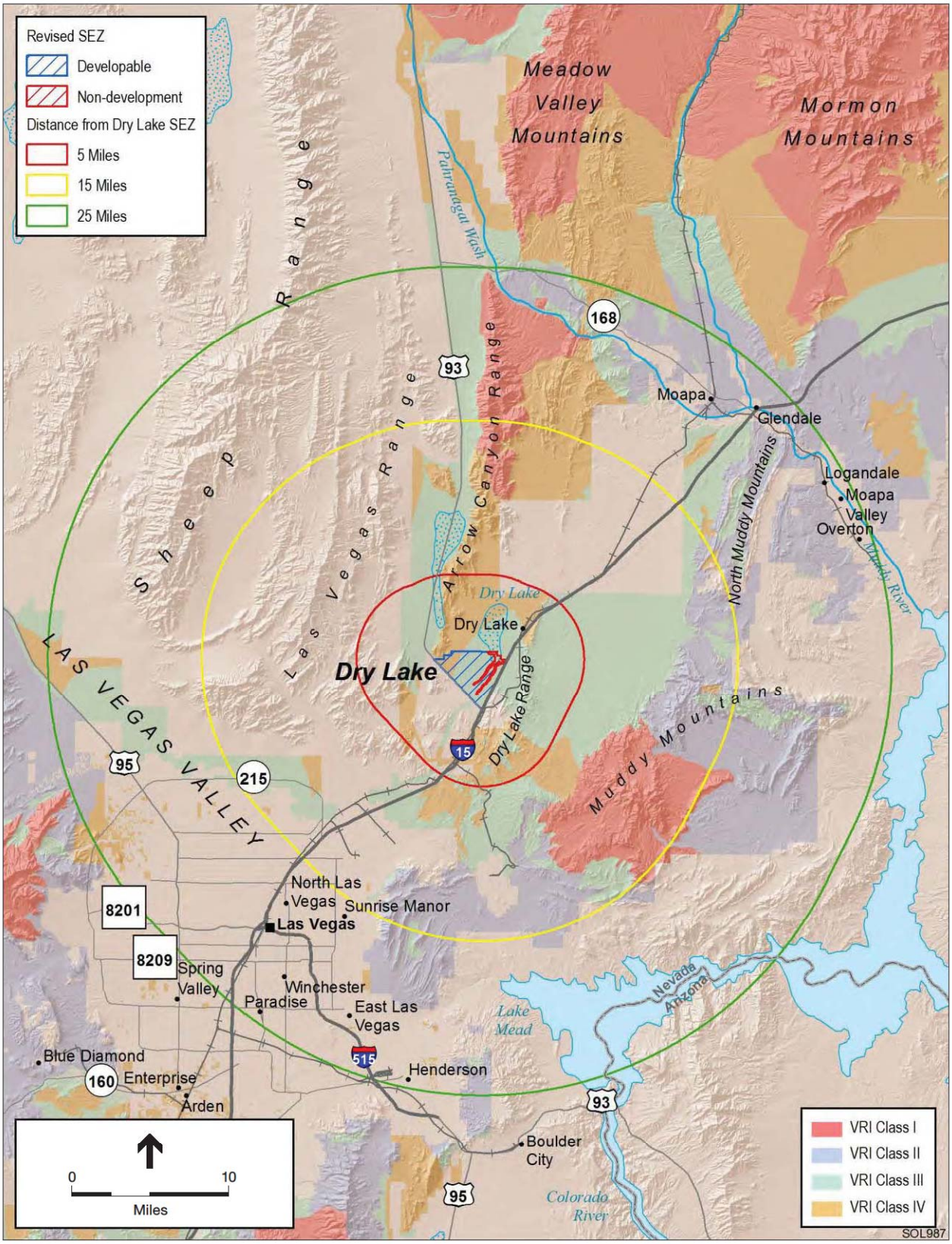
Existing transmission lines, northeast side of Playa Solar, LLC Development

Existing transmission lines and Harry Allen Substation, north side of Playa Solar, LLC Development

SOURCE: ESA, 2014

Playa Solar Project . D140515

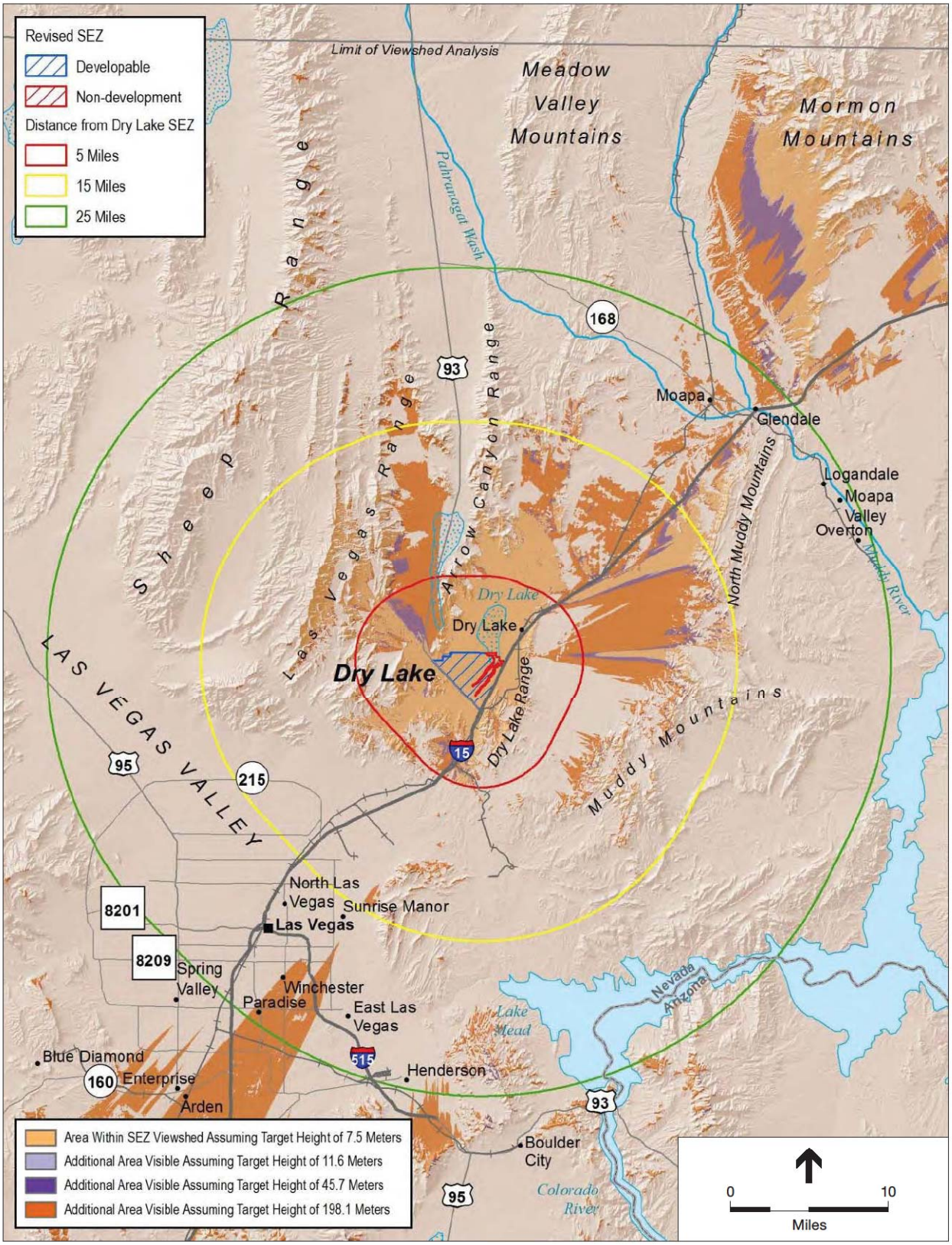
Figure 3.21-1
Characteristic Landscape of the Project Site



SOURCE: DOE and BLM, 2012 (FPEIS)

Playa Solar Project . D140515

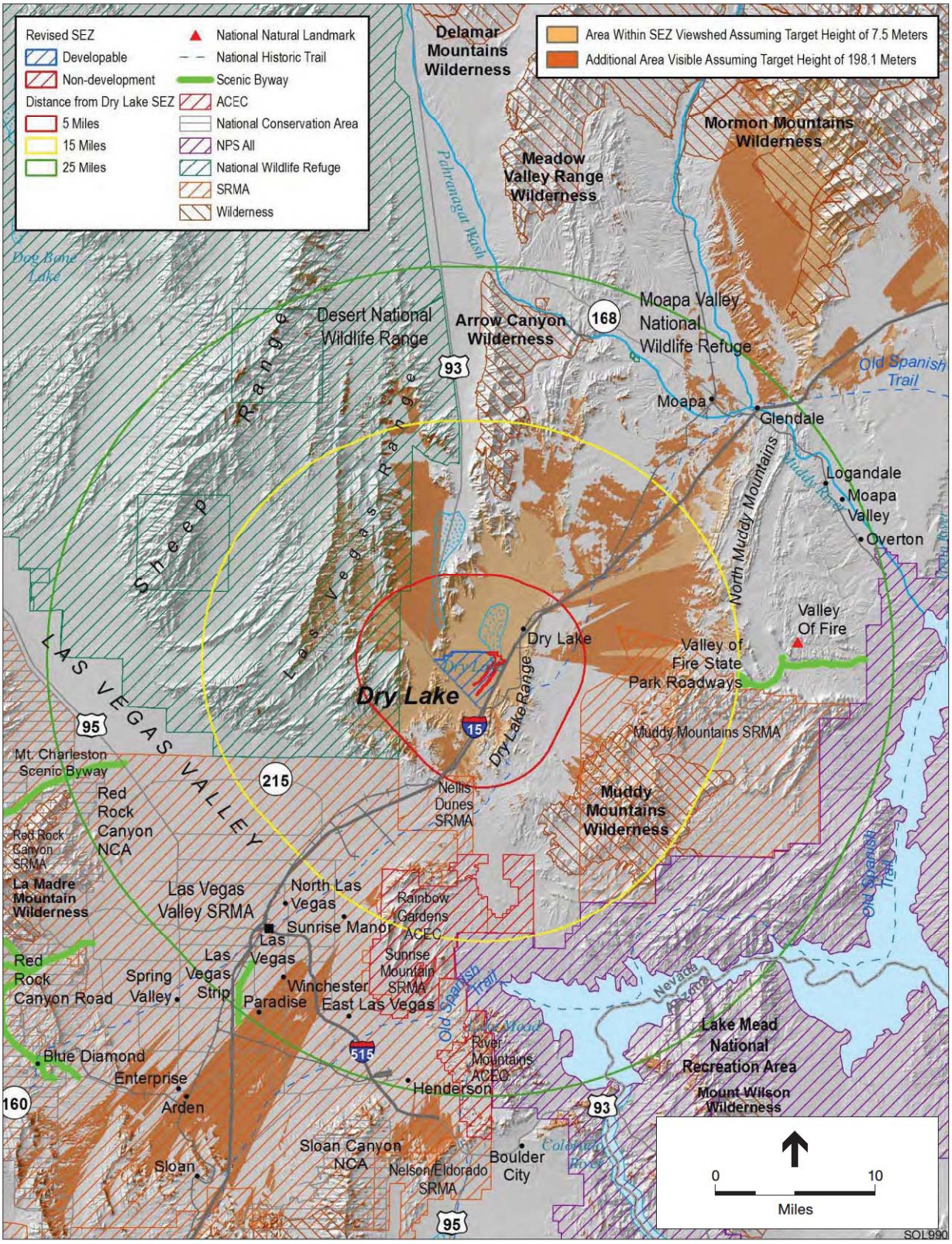
Figure 3.21-2
Visual Resource Inventory Values for Dry Lake SEZ



SOURCE: DOE and BLM, 2012 (FPEIS)

Playa Solar Project . D140515

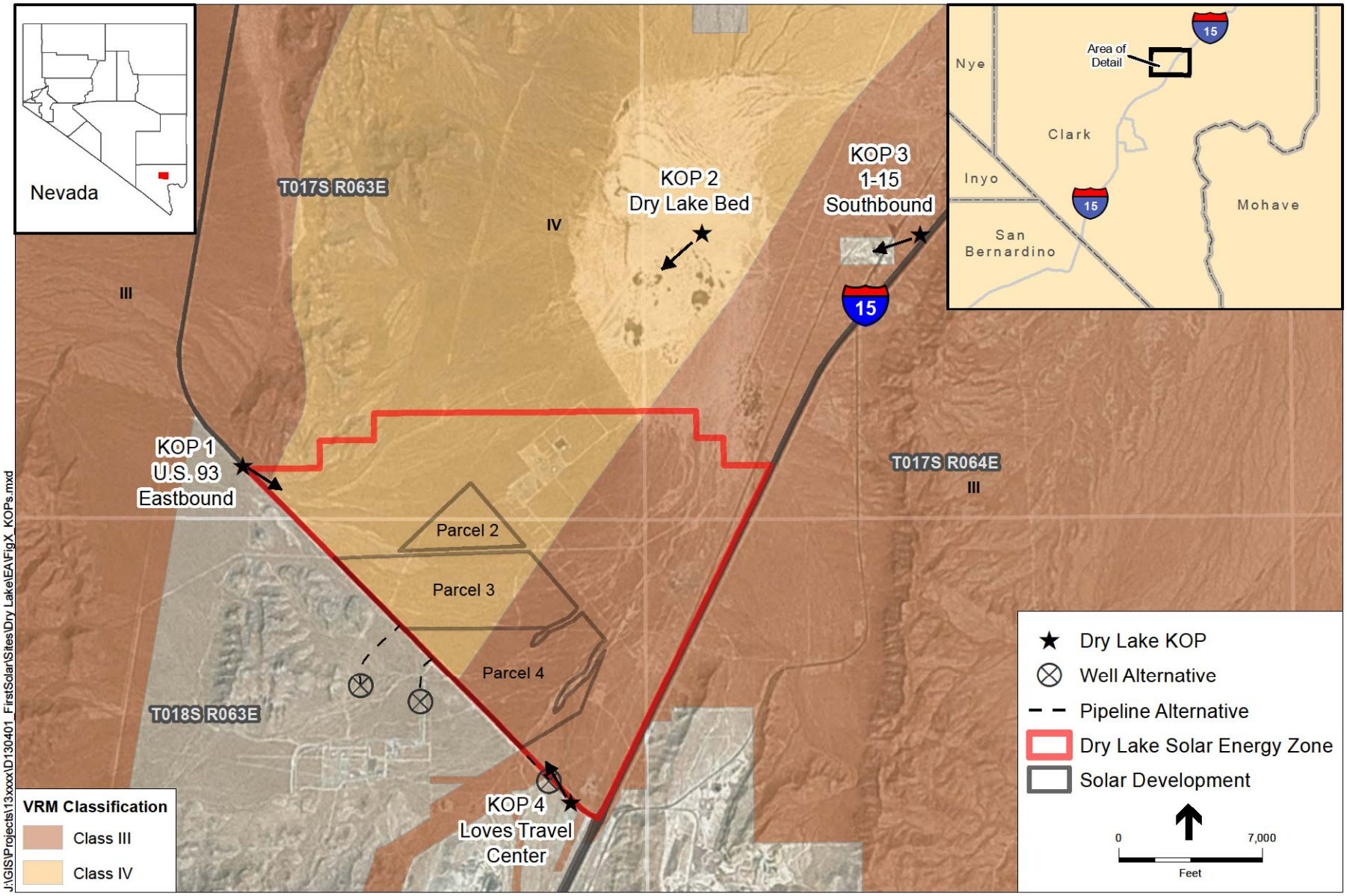
Figure 3.21-3
Viewshed Analysis for Dry Lake SEZ



SOURCE: DOE and BLM, 2012 (FPEIS)

Playa Solar Project . D140515

Figure 3.21-4
Sensitive Visual Resource Areas and Viewsheds



SOURCE: ESRI Imagery, BLM

Playa Solar Project - D.140515

Figure 3.21-5

Project Location Map with KOPs and VRM Classifications

Existing Condition

Simulated Condition

SOURCE: VisionScape Imagery, 2014

Playa Solar Project . D140515

Figure 3.21-6
View from KOP 1, U.S. 93 Eastbound
Looking Southeast

Existing Condition

Simulated Condition

SOURCE: VisionScape Imagery, 2014

Playa Solar Project . D140515

Figure 3.21-7
View from KOP 2, Dry Lake Bed
Looking Southwest

Existing Condition

Simulated Condition

SOURCE: VisionScape Imagery, 2014

Playa Solar Project . D140515

Figure 3.21-8
View from KOP 3, I-15 Southbound
Looking Southwest

Existing Condition

Simulated Condition

SOURCE: VisionScape Imagery, 2014

Playa Solar Project . D140515

Figure 3.21-9
View from KOP 4, Loves Travel Center
Looking Northwest

SOURCE: Robert Sullivan, Argonne National Laboratory

Playa Solar Project . D140515

Figure 3.21-10
Photovoltaic Array Examples
Silver State North Solar

Inverters Painted White

Inverters Treated to Blend with Backdrop

SOURCE: Robert Sullivan, Argonne National Laboratory

Playa Solar Project . D140515

Figure 3.21-11
Inverter Treatment

SOURCE: Marc Sanchez, BLM

Playa Solar Project . D140515

Figure 3.21-12
Nighttime Lighting at
PV Solar Facility Buildings

APPENDIX C

Affected Resources Form

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1.1. Project Information

NEPA (ePlanning) Number	DOI-BLM-NV-S010-2014-0127-EA
Project Name	Dry Lake SEZ - First Solar Project
Project Lead/Manager	Nancy Christ,
Project/Activity Type	ROW
Case File Number	N-93306
Comment Due Date	9/1/2014
Applicant/Proponent	NV Dry Lake LLC (First Solar)
Cost Code	13400000 KH0000 LXSS189F0000 LLNV930000 14X
General Location	Dry Lake SEZ (parcels 2, 3 and 4)
Legal Description	The project is located in portions of T17S R63E section 35, portions of T18S R63E section 1, 2, 3, 10, 11, 12, 14.
Map (7.5–mintue USGS topo map)	See Maps and GIS folders
Amount of new disturbance (acres)	1544
Amount of previous disturbance (acres)	0
Amount of TOTAL disturbance (acres)	1544
Duration of project	08/25/2014 — 08/24/2044
Tiered off EA/EIS/BO/other	Final Programmatic EIS for Solar Energy Development in Six Southwestern States/Programmatic BO

Description: NV Dry Lake, LLC (First Solar) is proposing to develop a solar photovoltaic generation facility of up to 200 megawatts in the Dry Lake SEZ. Related project components include a 230kV gen-tie line, access road extension, and drainage control detention basins, and an on-site well. The BLM held a competitive auction to develop the Dry Lake SEZ and NV Dry Lake, LLC was the successful bidder for Parcels 2, 3, and 4. The project is located in portions of T17S R63E section 35, portions of T18S R63E section 1, 2, 3, 10, 11, 12, 14. The complete Plan of Development is available in the POD folder.

DETERMINATION OF STAFF: (Choose one of the following abbreviated options for the left column)

NP = not present in the area impacted by the proposed or alternative actions
NI = present, but not affected to a degree that detailed analysis is required
PI = present with potential for relevant impact that need to be analyzed in detail in the EA

Table 1.1. Affected Resources Form

Determination	Resource	Rationale for Determination	Digital check off	Date
NI ***(PI per Solar PEIS — N. Christ)***	Air Resources	Ensure dust control permit is obtained from DAQ for all soil disturbing activities of .25 acres or greater, in the aggregate and all permit stipulations are in compliance for the duration of the project(s). Currently, no dust palliatives (chemicals) are authorized on BLM managed land. ***(Dust palliatives are approved per Mark Slaughter — N. Christ***	Lisa Christianson, Air Resources Specialist	09/12/2014
PI	Areas of Critical Environmental Concern	The proposed project area is not within an ACEC or any designated critical habitat for any federally listed species. However, the project proposes to displace a large number of desert tortoises which requires an approved translocation plan and associated permits. A portion of the translocation area selected by BLM/FWS is within the Coyote Springs ACEC. This ACEC is designated Critical Habitat for the species and has Relevant & Importance Criteria to manage desert tortoise habitat for recovery of the species. This ACEC is approximately 1/2 mile from the SEZ boundary. The ACEC's configuration is intended to provide functional corridors of habitat between tortoise recovery units in order to enhance long term persistence of the species. It consists of the western portion of the Mormon Mesa Critical Habitat Unit, protecting moderate to high densities of desert tortoises between the Desert National Wildlife Refuge, the Arrow Canyon Wilderness, and the Mormon Mesa ACEC. The EA should evaluate potential effects to this ACEC such as genetics, disease	Melanie Cota	09/08/2014

		transmission, lack of information on carrying capacity of the recipient areas, and translocation during drought, etc. if translocation proceeds in the Coyote Springs ACEC.		
NP	BLM Natural Areas	There are no designations within the Las Vegas Field Office.	Randy Kyes	08/27/2014
PI	Cultural Resources	A Class III survey performed by Sagebrush Consultants in 2014 found a single ineligible lithic scatter on the eastern edge of the project area. However, a trace of the Old Spanish Trail exists as a National Register Eligible site which runs along Interstate 15. The project could potentially be seen as an adverse effect per 36CFR800.5.2.(v), "Introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features;" Further consultation with the Old Spanish Trail Association will aid in the determination of effect and potential mitigation of any adverse effects.	Stan Plum	9/22/2014
NI	Greenhouse Gas Emissions	Currently there are no emission limits for suspected Greenhouse Gas (GHG) emissions, and no technically defensible methodology for predicting potential climate changes from GHG emissions. However, there are, and will continue to be, several efforts to address GHG emissions from federal activities, including BLM authorized uses.	Lisa Christianson, Air Resources Specialist	09/12/2014

NP	Environmental Justice	There are no environmental justice communities within 50-mi (80-km) radius around the boundary of the SEZ. Ensure the EA is consistent with the Cause and Effect form.	Nancy Christ	09/24/14
NP	Farmlands (Prime or Unique)	There are no prime or unique farmland designations in the District	Krystal Johnson	9/11/2014
PI	Fish and Wildlife Excluding Federally Listed Species	Wildlife species in the general area include small mammals, birds and reptiles. Additionally, the BLM is directed to conserve special status species through BLM Manual 6840. These sensitive species include western burrowing owl, Mojave shovel-nosed snake, desert glossy snake, Mojave Desert sidewinder, chuckwalla, banded Gila monster, desert bighorn sheep, Le Conte's thrasher, Bendire's thrasher, peregrine falcon, golden eagle, bald eagle, Swainson's hawk, Lewis woodpecker, loggerhead shrike, and 20 sensitive bat species that may be present in the general area. These species may be found on the adjacent undisturbed lands and could wander into the proposed project area. The primary direct impact of the proposed action on wildlife would be injury or mortality resulting from construction, operation and maintenance activities. Wildlife species in the general area are common and widely distributed throughout the area and the loss of some individuals and/or their habitat would have a negligible impact on populations of the species throughout the region. Impacts to BLM Sensitive Species are not anticipated to lead to further decline of	Melanie Cota	09/08/2014

		the species range wide as the SEZ is overall a small portion of the general habitat. The EA should evaluate potential effects such as loss of habitat, fragmentation, displacement and noise disturbance, potential for injury/mortality resulting from collision with solar panels, fencing, power lines, ponds, and associated predation issues with solar facilities and associated infrastructure. Please include any pre-clearance survey avoidance and minimization measures to protect BLM sensitive species (i.e. burrowing owls, Gila monster, chuckwalla). The EA should also evaluate species within the project's vicinity that are on the NDOW State Wildlife Action Plan species of concern list. The Solar PEIS may have already evaluated some of the above mentioned BLM special status species. If the effects have been analyzed for the above mentioned impacts and there is no change in present information or additional impacts not considered, further analysis may not be needed. There also may be a way to group some of the species with similar impacts in the EA.		
NP	Floodplains	The SEZ is located outside of FEMA designated floodplains.	Boris Poff	8/28/14
NI	Fuels/Fire Management	The proponent's POD fully addresses wildland fire management concerns identified by the BLM risk assessment (2012) and meets or exceeds design features for wildland fire as directed by the Solar PEIS ROD (2012). The proponent intends to develop a fire plan, establish and maintain a fire break, meet Clark County Fire Codes, provide and maintain a fire protection system, address emergency response planning, and provide worker	Sean McEldery	9/18/2014

		awareness safety training. Existing disturbances such as roads, barren areas, washes or xeriscaping may also function as fire breaks and can be utilized where appropriate. Mitigation and minimization measures will ensure compliance during annual fire restrictions which are generally enacted May through October. Any non-compliant activities that are not currently addressed may be permitted on a case by case basis by a line officer after review and approval by the Fire Management Officer (43 CFR 9212). In the event of an unplanned wildfire ignition the proponent will be held responsible for all costs of suppression and damaged resources pending a fire Origin and Cause Investigation. An Origin and Cause Investigation will be done on any human caused fire by BLM Law Enforcement or their designated representative.		
PI	Geology / Mineral Resources/Energy Production	No mining claims or mining operations present. If excavation that produces mineral materials within the ROW is necessary, the mineral materials must be used within the ROW or stockpiled on site for disposal by the BLM. If mineral materials are to be stockpiled on site for a future disposal, specific BLM use authorization in the form of a contract, free use permit or material site right-of-way will be necessary before the stockpiled mineral materials can removed from the ROW. Please analyze the stockpiling, future disposal and removal of mineral materials from the site in the NEPA document. Affected Environment, Environmental Effects and Mitigation sections are provided below.	Evan Allen	9/23/2014

		See below for additional suggested text for the EA		
PI for parcels with non-de-vel-opable areas; other-wise NI	Hydrologic Conditions	Development may alter ephemeral stream channels that can impact flooding and debris flows during storms, groundwater recharge, and ecological habitats.. A hydrologic basin model has been completed, showing that the water is over-allocated, but not over-pumped at this time.	Boris Poff	8/28/14
PI	Invasive Species/Noxious Weeds	Due to the large footprint, volume of vehicle/equipment traffic and soil disturbance, the proposed action introduces considerable risk of spreading infestations or establishing new invasive species / noxious weeds. The applicant will be responsible to ensure that all standard BLM weed stipulations and BMP's are followed throughout project activities. In addition, the applicant will be required to conduct a preliminary weed inventory of the proposed project area and develop a weed management plan to mitigate the spread and establishment of invasive species in the area. The weed management plan must be completed and signed before any new disturbance occurs. Contact Lauren Brown or Ben Klink for assistance with weed inventory and development of the associated management plan.	Ben Klink	9/17/14
PI	Lands/Access	Will notify adjacent ROW holders per 43 CFR 2807.14. Complete additional analysis identified in the Cause and Effect form	Per conversation with Kathryn Foster (N. Christ)	09/24/14
NP	Livestock Grazing	Not present.	Per conversations with Fred Edwards (N. Christ)	09/24/14

PI	Migratory Birds	Migratory birds may be present on and adjacent to the project site. The Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 et. seq.) protects migratory birds and their nests (nests with eggs or young). The proponent must comply with the MBTA and avoid potential impacts to protected birds within the project area. A list of MBTA protected birds are found in 50 C.F.R. 10.13 (http://www.gpo.gov/fdsys/pkg/CFR-2012-title50-vol1/xml/CFR-2012-title50-vol1-sec10-13.xml). The Lower Muddy River Important Bird Area (IBA) and Lake Mead National Recreation Area (NRA) are approximately 4.5 miles and 18 miles to the east of the SEZ boundary respectively. If migratory birds are nearby project activities that require the use of heavy equipment, they may be temporarily disturbed or displaced by noise. This indirect impact would likely be negligible and short term. The EA should fully evaluate the potential impacts to migratory birds such as loss of habitat, fragmentation, potential for injury/mortality resulting from collision with solar panels, fencing, power lines, ponds, and associated predation issues with solar facilities and associated infrastructure. Discussion on potential for solar projects to mimic a "lake effect" or "polarized light pollution" and attraction by waterbirds or other birds should be included. The project shall include the following best management practices to comply with MBTA: Seasonal clearing restrictions: 1) To prevent undue harm, habitat-altering projects or portions of projects should be scheduled outside bird breeding season. In upland	Melanie Cota	09/08/2014

		desert habitats and ephemeral washes containing upland species, the season generally occurs between February 15th through August 31st. 2) If a project that may alter any breeding habitat has to occur during the breeding season, then a qualified biologist must survey the area for nests prior to commencement of construction activities. This shall include burrowing and ground nesting species in addition to those nesting in vegetation. If any active nests (containing eggs or young) are found, an appropriately-sized buffer area must be avoided until the young birds fledge. As the above dates are a general guideline, if active nest are observed outside this range they are to be avoided as described above. Lighting: Migratory birds are known to collide with lite structures, including buildings. Any lighting on facilities and associated infrastructure should be down-shielded to keep light within the boundaries of the site and the minimum amount and intensity allowable. The minimum amount of lighting required by the FAA should be used. Unless otherwise required by the FAA, only pulsating lights should be used at night, and these should be the minimum number, minimum intensity, and minimum number of flashes per minute allowable by the FAA. Solid red or white lights should not be used as they are known to attract birds. Collision/electrocution/ perching: Due to potential for electrocution, collision and nesting/perching by migratory birds on overhead power lines, the applicant should follow Avian Power Line Interaction Committee (APLIC) guidelines (Suggested		

		Practices for Avian Protection on Power Lines (2006) and Reducing Avian Collisions with Power Lines (2012) to reduce this risk through facility design and comply with MBTA and other federal wildlife laws. Lattice structures and guy wires shall not be used. BBCS and Monitoring Plan: Applicant will be required to complete a Bird and Bat Conservation Strategy (BBCS) that includes a robust systematic monitoring and adaptive management plan to assist in avoiding and minimizing impacts to migratory birds by the project. This monitoring should include overall annual mortality, species composition, and spatial differentiation based on established searcher efficiency and carcass persistence trials at the site. Monitoring plans should be designed to account for seasonal differences and fatality events of rare species. Consideration should be given to working with USFWS to design a pilot study on effective methods for reducing bird mortality at the solar facility if the BLM feels mortality reaches an unacceptable level in which mitigation would not compensate for impacts to migratory birds. This study could look at the use of visual markers, deterrents, panel positioning, and other applicable best management practices. The Solar PEIS may have already evaluated some impacts to migratory birds. If the effects have been analyzed for the above mentioned impacts and there is no change in present information or additional impacts not considered, further analysis may not be needed.		

PI	Native American Religious Concerns	Consultation with the Moapa Band of Paiutes, the Las Vegas Paiute Tribe, the Chemehuevi Indian Tribe, and the Paiute Indian Tribe of Utah will occur prior to any development.	Stan Plum	8/28/2014
NI	Paleontology	No issues. In the event of a discovery, the BLM archaeologist will be notified prior to continuing any work in the immediate vicinity of the find. No further review required.	Stan Plum	8/28/2014
NI	Rangeland Health Standards	Per ID Team meeting, Sean McEldery will defer to specific resources that impact rangeland health	Nancy Christ	09/24/14
	Recreation	Proceed per the Cause and Effect form	Staff unavailable until the end of the month (N. Christ)	09/24/14
NI	Socio-Economics	This action will not disproportionately impact social or economic values. Ensure EA is consistent with Cause and Effect form	Nancy Christ	09/24/14
PI	Soils	**Direct:** Soils in the SEZ likely to be impacted through compaction and erosion. Soil loss through sediment transport may occur. Loss of biotic soils and desert pavement. **Indirect**: Increased runoff into the Dry Lake basin may result in soil/sediment transport. Increased wind erosion caused by grading (if needed). Soil contamination from spills could occur. **Cumulative2:** Solar energy development would be a major contributor to cumulative impacts on soil from foreseeable development in the region.	Boris Poff	8/28/14
NP	Threatened, Endangered or Candidate Plant Species	Not present. See Vegetation Excluding Federally Listed Species section below for BLM sensitive species.	Per comments from Fred Edwards and conversations with Melanie Cota (N. Christ)	09/24/2014

PI	Threatened, Endangered or Candidate Animal Species	This project will be in compliance with section 7 of the Endangered Species Act of 1973 as amended (16 U.S.C. 1531 et seq.;) for consultation with the USFWS on effects to federally listed, proposed, and candidate species. This action has a may affect, likely to adversely affect determination for the threatened desert tortoise (Gopherus agassizii). The SEZ project boundary is not within desert tortoise critical habitat however, portions of the area proposed for translocation is within the Coyote Springs ACEC, which is a designated Critical Habitat Unit for the desert tortoise. The proposed project is within the range of several other listed species including the endangered Moapa dace (Moapa coriacea), endangered Southwestern Willow flycatcher (Empidonax traillii extimus), endangered Yuma clapper rail (*Rallus longirostris yumanensis), and* proposed threatened western yellow-billed cuckoo (*Coccyzus americanus).* While there is no suitable habitat within the project area for these four species, the BLM is currently in discussions with the USFWS to determine potential for adverse effects to these species by the proposed project. These federally listed species should be included in the EA to evaluate potential for project specific impacts. Historical survey data for the project area indicates that the area within the proposed SEZ project boundary is high to moderate density tortoise habitat and very low to very high density tortoise habitat within the proposed translocation area. High value contagious habitat for desert tortoise is between 0.9-0.8 within the SEZ and between 0.9-0.7 for the translocation area. In addition, the SEZ	Melanie Cota	09/08/2014

		boundary is within the least cost corridor for the desert tortoise, known as habitat linkages for sustaining healthy populations. Since tortoises have been found in the vicinity and undisturbed habitat exists in and adjacent to the project site, there is potential for tortoises to wander into the project area. If not noticed and avoided during construction/maintenance activities, desert tortoises could be either injured or killed (by crushing) or they may be harassed (being moved out of harm's way). The project proposes to displace a large number of desert tortoises which requires an approved translocation plan and associated permits. Tortoise surveys for the project and translocation area are currently underway. Long term monitoring is a requirement of the USFWS translocation guidance. The BLM recommends mowing/disking/tilling of the project area as opposed to grading whenever possible as recovery of desert tortoise habitat in the Mojave Desert can take many decades. The EA should evaluate potential effects to desert tortoises such as impacts associated with genetics, disease transmission, predation, lack of information on carrying capacity of the recipient areas, and translocation during drought, etc. The EA should also evaluate potential effects such as loss of habitat, fragmentation, displacement and noise disturbance, population connectivity within the critical habitat and area north of the SEZ, "heat island effect", potential for injury/mortality resulting from project construction/ operation/maintenance, and decommissioning, cumulative		

		effects, etc. The project will also require a Raven Management Plan to comply with the Endangered Species Act and Biological Opinion. The proponent will be required to pay remuneration fees for loss of habitat that will be based on the current year's rate of $836/acre of disturbance. This rate is subject to change if fees are paid after March 1, 2015. Each proposed project within the SEZ boundary will require a Biological Assessment that outlines project actions and avoidance and minimization measures to protect the species. A project specific Biological Opinion will be issued that will include non-discretionary reasonable and prudent measures and terms and conditions to minimize take and be exempted from section 9 of the Endangered Species Act. The Solar PEIS may have already evaluated some of the above mentioned federally listed, candidate, or proposed species. If the effects have been analyzed for the above mentioned impacts and there is no change in present information or additional impacts not considered, further analysis may not be needed.		
NI	Wastes (hazardous or solid)	Hazardous material / waste, solid, nonhazardous substances and/or wastes must be handled and disposed of in accordance with applicable federal, state and local regulations and BLM Policy. Please include standard waste stipulations in grant.	Lisa Christianson, HMRR and Air Resources Specialist	09/12/2014

PI	Water Resources/Quality (drinking/surface/ground)	Impacts will be constrained by the limited availability of water rights, and via oversight by state and local water authorities. Large drawdowns due to solar energy demands are not expected given state and local oversight of groundwater supplies and fully allocated supplies in this hydrographic groundwater. However, pressure on water supplies will continue to grow from multiple demands.	Boris Poff	8/28/14
NP	Wetlands/Riparian Zones	There are no wetlands/riparian zones present in the project area.	Boris Poff	8/28/14
NP	Wild and Scenic Rivers	Not present	Randy Kyes	08/27/2014
NP/NP	Wilderness/WSA	The SEZ is not within Wilderness or Wilderness Study Areas.	Randy Kyes	08/27/2014
NI	Woodland / Forestry	Cactus and yucca are present. Cactus and yucca are considered government property and are regulated under the BLM Nevada forestry program. Cactus and yucca will need to be avoided. If avoidance is not possible then plants will need to be salvaged by a contractor with at least 3 years experience salvaging cactus and yucca in the Mojave desert using BLM salvage protocols. Salvaged plants will need to translocated to the BLM stockpile at Ann Road. Unless otherwise directed by the BLM botanist, all replanted cactus and yucca must be watered and otherwise maintained for a period of one year. Or other arrangements made with the BLM botanist.	Per conversations with Fred Edwards//ID Team meeting (N. Christ)	09/24/14

PI	Vegetation Excluding Federally Listed Species	The BLM sensitive species rosy two-tone penstemon (*Penstemon bicolor* ssp *roseus*) is known to occur adjacent to the SEZ and the SEZ contains suitable habitat for the species. The project may result in the direct loss of individual plants as well as loss of habitat. This species, as well as nearby populations of other BLM sensitive plant species including three-corner milkvetch (*Astragalus geyeri* var. *triquetrus*) and Beaver Dam breadroot (*Pediomelum castoreum*), may also be indirectly impacted if the project leads to the introduction and spread of invasive species. Mitigation for the loss of rosy two-toned penstemon individuals and habitat is described in the SEZ Regional Mitigation Plan. The project will also lead to the direct loss of all vegetation over all or part to the project footprint. There may also be indirect impacts to the surrounding vegetation communities due to increased dust emissions leading to reduced photosynthetic rates and potential introduction and spread of invasive species. If the project alters surface runoff patterns in the area, there may also be impacts to the vegetation communities down-gradient of the project due to reduced water availability. Mitigation for the loss of the vegetation communities is discussed in the SEZ Regional Mitigation Plan. Areas proposed to be restored, including the overall site as part of project decommissioning, will require the development of a restoration plan which must be approved by the BLM Botanist. Guidance on requirements of restoration plan can be provided by the BLM Botanist.	Mathew Hamilton	09/24/2014

PI	Visual Resources	I will need a shape file of the boundary of this project to determine what portion of the project is in Class III. Further analysis will be done once the project boundaries are determined. KOPs will be determined and require photo simulations of the entire SEZ, as well as those portions of the project and other solar projects that are within Class III of the SEZ.	John Schumacher	9/22/2014
NP	Wild Horses and Burros	The proposed action is not located in an active herd management area. There will be no impacts to wild horses or burros.	Krystal Johnson	9/11/2014
NP	Areas with Wilderness Characteristics	There are no designations within the Las Vegas Field Office.	Randy Kyes	08/27/2014

APPENDIX D

Air Quality Modeling Results and Assumptions

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EMISSION ESTIMATION FOR CONSTRUCTION

ESTIMATED ON-SITE CONSTRUCTION EQUIPMENT FOR PV AREAS CONSTRUCTION

Equipment Description	Daily Quantity	Horsepower	Fuel Type	Equivalent Full-Load Operating Time (hr/day)	Vehicle Miles (VMT) per Day on Unpaved Surface	Load Factor	Phase	Emissions				
Install BMP Measures (Part of Site Preparation)								ROG	Nox	CO	PM10	PM2.5
Rough Terrain Forklift	4	75	Diesel	1.7	10	0.402	Site Prep	0.1	2.4	1.9	8.5	1.3
Delivery / Work Trucks	6	200	Diesel	2	5	0.59		0.8	14.5	11.6	5.0	1.4
Site Prep - Arrays								ROG	Nox	CO	PM10	PM2.5
Truck, Pick-Up (Survey Crew)	4	180	Gas	1.7	5	0.59		0.01	0.02	0.18	0.00	0.00
Grader	12	200	Diesel	6.8	20	0.4087		3.6	68.4	54.4	23.1	8.7
Backhoe/Front Loader	4	120	Diesel	3.4	20	0.3685	Site Prep	0.4	7.1	4.9	17.0	2.6
Tractor / Disc	6	210	Diesel	6.8	40	0.3685		1.7	32.4	25.8	35.7	6.9
Scraper	8	265	Diesel	3.4	30	0.4824		1.9	35.7	28.4	27.1	5.5
Compactor	4	120	Diesel	1.7	10	0.4154		0.2	4.0	2.8	8.5	1.3
Water Truck	13	175	Diesel	6.8	N/A	0.3819		3.2	60.6	48.2	6.8	6.8
Fugitive Dust - Disturbed Area	26	acres/day					Site Prep ppd	11.9	225.1	178.0	145.1	36.0
							Site Prep 2015 tpy	1.1	20.7	16.4	13.4	3.3
							Site Prep 2016 tpy	0.7	13.6	10.8	8.8	2.2
Site Prep - Roads								ROG	Nox	CO	PM10	PM2.5
Grader	6	200	Diesel	6.8	20	0.4087		1.8	34.2	27.2	19.6	5.2
Backhoe/Front Loader	2	120	Diesel	6.8	10	0.3685	Initial Access Roads	0.4	7.1	4.9	9.0	1.8
Compactor	4	120	Diesel	6.8	20	0.4154		0.8	15.9	11.1	17.9	3.5
Water Truck	13	175	Diesel	6.8	N/A	0.3819		3.2	60.6	48.2	6.8	6.8
Dump Truck	10	235	Diesel	2.7	10	0.3819		1.3	24.9	19.8	10.8	3.6
Fugitive Dust - Disturbed Area	6	acres/day					Initial Acces Rds ppd	7.5	142.7	111.1	67.1	21.1
							Initial Access Rds 2015 tpy	0.1	2.1	1.7	1.0	0.3
Install Fencing								ROG	Nox	CO	PM10	PM2.5
Rough Terrain Forklift	4	75	Diesel	1.7	10	0.402	Fencing	0.1	2.4	1.9	8.5	1.3
Delivery / Work Trucks	6	200	Diesel	1	5	0.59		0.4	7.3	5.8	4.5	0.9
							Fencing ppd	0.5	9.7	7.6	13.0	2.2
							Fencing 2015 tpy	0.05	0.89	0.70	1.19	0.20
Post Installation								ROG	Nox	CO	PM10	PM2.5
Delivery / Work Trucks	4	200	Diesel	1	5	0.59	Post Installation	0.3	4.8	3.9	4.3	0.7
Post Machine	14	45	Diesel	8.1	1	0.4154		1.3	24.9	22.9	6.9	6.2
Rough Terrain Forklift	4	75	Diesel	6.8	10	0.402		0.5	9.6	7.4	9.8	2.6
							Post Installation ppd	2.1	39.3	34.2	21.0	9.5
							Post Installation 2015 tpy	0.2	3.0	2.6	1.6	0.7
							Post Installation 2016 tpy	0.1	2.4	2.1	1.3	0.6
Install Support Structure								ROG	Nox	CO	PM10	PM2.5
Rough Terrain Forklift	12	75	Diesel	6.8	10	0.402		1.5	28.9	22.2	13.5	6.3
Delivery / Work Trucks	4	200	Diesel	1	5	0.59		0.3	4.8	3.9	4.3	0.7
Install Inverters and Switchgear & sub-structure												
Crane	4	125	Diesel	4.5	1	0.2881		0.4	7.6	5.3	2.1	1.4
Backhoe/Front End Loader	4	120	Diesel	6.8	10	0.3685		0.7	14.1	9.8	9.9	2.7
Delivery / Work Trucks	4	200	Diesel	1	5	0.59		0.3	4.8	3.9	4.3	0.7
DC and AC Wire Installation (UG)												
Backhoe/Front Loader	8	120	Diesel	6.8	10	0.3685	System Install	1.5	28.2	19.6	11.9	4.7
Crawling Trencher	4	100	Diesel	4.1	1	0.5025		0.5	9.7	6.7	1.8	1.1
Mini-Excavator	8	42	Diesel	6.8	10	0.3819		0.5	10.2	9.4	10.7	3.5
Delivery / Work Trucks	4	200	Diesel	1	5	0.59		0.3	4.8	3.9	4.3	0.7
DC and AC Wire Installation (AG)												
Rough Terrain Forklift	6	75	Diesel	1.7	10	0.402		0.2	3.6	2.8	8.7	1.5
Delivery / Work Trucks	4	200	Diesel	1	5	0.59		0.3	4.8	3.9	4.3	0.7
Module Installation												
Rough Terrain Forklift	30	75	Diesel	1.7	10	0.402		0.9	18.0	13.9	11.4	4.2
Delivery / Work Trucks	10	200	Diesel	1	5	0.59		0.6	12.1	9.6	4.9	1.3
Fugitive Dust - Disturbed Area	8	acres/day					System Install ppd	8.0	151.8	114.8	96.4	30.1
							System Install 2015 tpy	0.6	11.6	8.8	7.4	2.3
							System Install 2016 tpy	1.1	20.8	15.7	13.2	4.1
O&M Building								ROG	Nox	CO	PM10	PM2.5
Rough Terrain Forklift	2	75	Diesel	1	1	0.402		0.0	0.7	0.5	0.9	0.2
Manlift	4	110	Diesel	3	1	0.3082		0.3	4.8	3.3	1.6	0.9
							O&M Bld ppd	0.3	5.5	3.9	2.5	1.1
							O&M Bldg 2016 tpy	0.03	0.50	0.35	0.23	0.10
Misc. (Across Project Site)								ROG	Nox	CO	PM10	PM2.5
Crane, Hydraulic, Rough Terrain	2	125	Diesel	1.5	N/A	0.2881		0.1	1.3	0.9	0.2	0.2
Delivery: Truck, Semi, Tractor	2	310	Diesel	0.5	5	0.59		0.1	1.9	1.0	4.1	0.5
Delivery: Truck, Flatbed, 1 Ton	2	180	Diesel	0.5	5	0.59		0.1	1.1	0.9	4.1	0.5
Forklift, less than 5 Ton	6	75	Diesel	3.8	5	0.201		0.2	4.0	3.1	5.5	1.9
Forklift, greater than 5 Ton	4	85	Diesel	3.8	5	0.201		0.2	3.0	2.3	5.2	1.6
Motor, Auxillary Generator	8	24	Diesel	8	N/A	0.4154	Miscellaneous	0.4	7.5	8.4	1.8	1.8
Trailer, Office, 40'	28	N/A	N/A	N/A	N/A	0.59						
Trailer, Office, 20'	8	N/A	N/A	N/A	N/A	0.59						
Skid Steers	10	75	Diesel	1.7	5	0.3685		0.3	5.5	4.2	5.1	1.5
AWD Gator/Cart	40	15	Diesel	8.1	10	0.3417		1.0	19.5	22.0	13.8	6.6
Water Truck	8	175	Diesel	6.8	N/A	0.3819		2.0	37.3	29.7	4.2	4.2
Delivery / Work Trucks	20	200	Diesel	1	5	0.59		1.3	24.2	19.3	5.7	2.1
Electrical Generators/Pumps	8	50	Diesel	8.1	N/A	0.4154		0.8	15.8	12.2	2.9	2.9
							Misc Total ppd	6.4	121.1	104.0	52.6	23.8
							Misc Total 2015 (tpy)	0.7	13.0	11.1	5.6	2.5
							Misc Total 2016 (tpy)	1.1	20.3	17.4	8.8	4.0

ESTIMATED ON-SITE CONSTRUCTION EQUIPMENT FOR SUBSTATION CONSTRUCTION

Equipment Description	Daily Quantity	Horsepower	Fuel Type	Equivalent Full-Load Operating Time	Vehicle Miles (VMT) per Day on Unpaved	Load Factor	Phase	Emissions				
Steel Structures								ROG	Nox	CO	PM10	PM2.5
Boom Truck - 33 Ton	2	290	Diesel	1.5	1	0.59		0.3	5.3	4.2	1.2	0.5
Manlift	2	110	Diesel	1.2	1	0.335		0.1	1.0	0.7	1.0	0.2
Material Delivery - Hwy Tractor w 40' Flat	6	220	Diesel	0.2	4	0.59		0.1	1.6	1.3	3.3	0.4
Insulators, Bus, & Electrical Equipment								0.0	0.0	0.0	0.0	0.0
Boom Truck	2	220	Diesel	1.5	1	0.59		0.2	4.0	3.2	1.1	0.4
Manlift	4	110	Diesel	1.2	1	0.335		0.1	2.1	1.4	1.1	0.4
Welder Truck	4	210	Diesel	1.2	4	0.59		0.3	6.1	4.9	3.6	0.8
Material Delivery - Hwy Tractor w 40' Flat	8	310	Diesel	0.2	4	0.59	Substation Construction	0.2	3.0	1.7	3.3	0.5
Material Delivery - Heavy Haul	2	300	Diesel	1.5	4	0.59		0.3	5.4	3.0	3.5	0.6
Crane	2	500	Diesel	1	N/A	0.2881		0.5	10.3	5.7	0.3	0.3
Control Wiring												
Boom Truck	2	220	Diesel	0.6	1	0.59		0.1	1.6	1.3	0.9	0.2
Manlift	4	110	Diesel	0.8	1	0.335		0.1	1.4	1.0	1.0	0.3
1 ton crew vehicle	2	260	Diesel	0.2	4	0.59		0.0	0.6	0.5	3.2	0.4
Fiber Splicer Van	2	180	Gas	0.6	4	0.59		0.00	0.01	0.07	0.00	0.00
Test Equipment Van	2	180	Gas	1.7	4	0.59		0.00	0.01	0.07	0.00	0.00
Rough Terrain Forklift	2	75	Diesel	1.7	6	0.402		0.1	1.2	0.9	5.0	0.7
							Total ppd	2.3	43.6	29.9	28.6	5.6
							Substation Total 2015 (tpy)	0.1	2.7	1.8	1.7	0.3
							Substation Total 2016 (tpy)	0.2	3.3	2.3	2.2	0.4

ESTIMATED ON-SITE CONSTRUCTION EQUIPMENT GEN-TIE CONSTRUCTION

Steel (Hauling, Shake-Out, Assembly and Erection)								ROG	Nox	CO	PM10	PM2.5
Crane, Hydraulic, 150/300 Ton	2	250	Diesel	1.8	5	0.2881		0.1	2.7	2.1	4.4	0.8
Crane, Hydraulic, Rough Terrain, 25 Ton	2	125	Diesel	1.8	5	0.2881		0.1	1.5	1.1	4.3	0.7
Truck, Flatbed w/Boom, 12 Ton	2	235	Diesel	1	10	0.59		0.1	2.8	2.3	8.2	1.0
Truck, Crew Cab, Flatbed, 1 Ton	12	180	Gas	1.1	10	0.59		0.04	0.09	1.06	0.00	0.00
Truck, Semi Tractor	2	310	Diesel	6	10	0.59		1.2	22.5	12.6	9.1	1.9
Trailer, Flatbed, 40'	2	N/A	N/A		10	0.59					8.0	0.8
Water Truck	2	175	Diesel	4.5	N/A	0.3819		0.3	6.2	4.9	0.7	0.7
Motor, Auxillary Power	2	5	Gas	1	0	0.4154		0.0	0.1	0.1	0.0	0.0
Compressor, Air	2	75	Gas	2	15	0.4154		0.01	0.02	0.27	0.00	0.00
Conductor / Shield Wire / OPGW (Stringing, Sagging, Deadending and Clipping)												
Truck, Flatbed, w/ Bucket	3	235	Diesel	3	15	0.59		0.7	12.8	10.2	12.9	2.1
Tension Machine, Conductor	2	135	Diesel	1.5	1	0.59		0.1	2.8	1.9	1.0	0.3
Tension Machine, Static	2	135	Diesel	0.2	1	0.59		0.0	0.4	0.3	0.8	0.1
Truck, Sock Line, Puller, 3 Drum	2	310	Diesel	2.3	1	0.59		0.5	8.6	4.8	1.2	0.5
Truck, Wire Puller, 1 Drum	2	310	Diesel	2.3	1	0.59	Gen-Tie Construction	0.5	8.6	4.8	1.2	0.5
Truck, Semi, Tractor	4	310	Diesel	6	10	0.59		2.4	45.0	25.2	10.2	3.0
Water Truck	2	175	Diesel	4.5	N/A	0.3819		0.3	6.2	4.9	0.7	0.7
Truck, Crew Cab, Flatbed, 1 Ton	6	180	Gas	1.4	10	0.59		0.02	0.05	0.53	0.00	0.00
Back Hoe, w/ Bucket	2	85	Diesel	3	1	0.3685		0.1	2.2	1.7	0.5	0.5
Truck, Mechanics	2	260	Diesel	3	15	0.59		0.5	9.4	7.5	0.7	0.7
Crane, Hydraulic, Rough Terrain	2	125	Diesel	1	10	0.2881		0.0	0.8	0.6	0.1	0.1
Motor, Auxillary Power	4	5	Gas	2.3	N/A	0.4154		0.0	0.5	0.6	0.1	0.1
Cleanup												
Truck, Flatbed, w/ Bucket, 5 Ton	2	235	Diesel	2	5	0.59		0.3	5.7	4.5	0.4	0.4
Excavator, Bucket Type	2	165	Diesel	4.5	5	0.3819		0.4	6.7	4.6	0.9	0.9
Truck, Semi, Tractor	2	310	Diesel	4.5	10	0.59		0.9	16.9	9.4	0.8	0.8
Truck, Dump, 10 Ton	2	235	Diesel	3	10	0.59		0.4	8.5	6.8	0.6	0.6
Motor Grader	2	110	Diesel	8	20	0.4087		0.4	8.4	5.9	1.0	1.0
Truck, Flatbed	2	210	Diesel	2.1	10	0.59		0.3	5.3	4.2	0.4	0.4
Truck, Pick-Up	2	210	Diesel	2.1	10	0.59		0.3	5.3	4.2	0.4	0.4
Motor, Auxillary Power	2	5	Gas	0.5	N/A	0.4154		0.0	0.1	0.1	0.0	0.0
Fugitive Dust - Disturbed Area	4	acres/day					Total ppd	10.1	190.5	127.2	72.9	19.3
							GenTieTotal 2015 (tpy)	0.5	8.8	5.9	3.4	0.9
							GenTie Total 2016 (tpy)	0.6	11.5	7.7	4.4	1.2

Total Emission Summary	ROG	Nox	CO	PM10	PM2.5
Subtotal TPY (2015)	2.7	62.7	41.3	30.2	9.4
Workers tpy (2015)	0.5	1.0	14.5	0.0	0.0
Paving offgas (2015)	0.0	0.0	0.0	0.0	0.0
Total tpy (2015)	3.2	63.8	55.7	30.2	9.4
Subtotal tpy (2016)	4.9	93.2	72.0	52.1	16.7
Workers tpy (2016)	0.8	1.6	22.6	0.0	0.0
Total tpy (2016)	5.7	94.8	94.7	52.1	16.7

Particulate Matter Dispersion Results

Maximum Daily Particulates	432.2	127.6		
Emission Rate	3E-05	8.71E-06	ppd	
Disturbed Acres/Day	38	acres	g/s-m^2	*Adjusted for 12-hr work day
	153779	m^2		

PM10	AERMOD	Fenceline	Grand Cany Max
Annual [ug	0.71	7.00E-02	2.96
24-hour [u	7.64	0.99	55.28

PM2.5	AERMOD	Fenceline	Grand Cany Max
Annual [ug	0.2	2.00E-02	0.85
24-hour [u	2.2	0.29	15.89

ENGINE TIER EMISSION FACTORS

Tier 2	hp	Emission Factors (g/bhp/hr) ROG	Nox	CO	PM10	PM.25	NMHC+Nox
	0	0.28	5.32	6	0.6	0.6	5.6
	25	0.28	5.32	4.9	0.6	0.6	5.6
	50	0.28	5.32	4.1	0.45	0.45	5.6
	100	0.28	5.32	3.7	0.3	0.3	5.6
	175	0.245	4.655	3.7	0.22	0.22	4.9
	300	0.245	4.655	2.6	0.15	0.15	4.9
	600	0.24	4.56	2.6	0.15	0.15	4.8
	750	0.24	4.56	2.6	0.15	0.15	4.8
	1000000	0.24	4.56	2.6	0.15	0.15	4.8

For NMHC+Nox, to separate Nox assume to be 95% based on ARB document: https://www.aqmd.gov/CEQA/handbook/mitigation/offroad/Off-Road_MM_Overview.pdf

PARTICULATE MATTER EMISSION FACTORS AND CONTROLS

	Controlled**		Uncontrolled
PM10	0.8	# / VMT	1.6
PM2.5	0.08	#/VMT	0.16

Based on U.S. EPA AP-42 emission factors for unpaved roads

	PM10	PM2.5
k	1.5	0.15
a	0.9	0.9
b	0.45	0.45

**conservatively assumes 50% dust control with watering and speed restriction on unpaved surfaces, with greater control efficiency expected with

Disturbed Area - Uncontrolled Emission Factors (Based on CalEEMod/AP-42)

EF_{PM10} = 0.051*((7.1)^2.0)*0.6

$EF_{PM2.5}$ = 0.04*((7.1)^2.5)*0.031

E_{PM10} = (1.5lb/VMT)*(Acres/12ft)*(43,560sf/acre)*(1mile/5280ft)

$E_{PM2.5}$ = (0.167lb/VMT)*(Acres/12ft)*(43,560sf/acre)*(1mile/5280ft)

Controlled Emission Factors**

E_{PM10} = (1.5lb/VMT)*(Acres/12ft)*(43,560sf/acre)*(1mile/5280ft)*0.5

$E_{PM2.5}$ = (0.167lb/VMT)*(Acres/12ft)*(43,560sf/acre)*(1mile/5280ft)*0.5

**conservatively assumes 50% dust control with watering and speed restriction on unpaved surfaces, with greater control efficiency expected with

WORKER ON-ROAD VEHICLE EMISSIONS

Vehicle Type	Emission Rates (grams/mile)					
	ROG	NOx	CO	PM10	PM2.5	CO2
LDA	0.084	0.125	2.52	0.005	0.004	351.6611
LDT2	0.138	0.347	4.02	0.009	0.008	479.6141
Average EF for LDVs	0.111	0.236	3.27	0.007	0.006	415.6376

Average Daily workers	750
Assume 2 workers/vehicle	375
Roundtrip to central Vegas (miles)	50

Notes: ROG, NOx, CO, PM10, & PM2.5 emissions are based on MOVES model and were obtained from the AFLEET spreadsheet based on 2005 vehicles (AFLEET_TOOL 2013.xlsx)
CO2 emission factors were obtained from the EMFAC2011 software and do not assume corrections for Pavley.

CONSTRUCTION SCHEDULE ASSUMED

Month #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total		
Month Start Date:	6/1/2015	7/1/2015	8/1/2015	9/1/2015	10/1/2015	11/1/2015	12/1/2015	1/1/2016	2/1/2016	3/1/2016	4/1/2016	5/1/2016	6/1/2016	7/1/2016	8/1/2016	9/1/2016	10/1/2016	11/1/2016		Total Days	% Total
PV Areas																					
Initial Access Roads	1																		1	30	0.72%
Set-up Office & Site Services	1	1																	2	61	1.44%
Site Preparation		1	1	1	1	1	1	1	1	1	1								10	305	7.19%
Survey		1	1	1															3	92	2.16%
Fencing		1	1	1	1	1	1												6	184	4.32%
Post Installation			1	1	1	1	1	1	1	1	1								9	274	6.47%
Underground work (AC/DC/Fiber trenching)			1	1	1	1	1	1	1	1	1								9	274	6.47%
Underground work (PCS Vaults and Transformer Pads)			1	1	1	1	1	1	1	1	1								9	274	6.47%
Soil Stabilization/apply non-drivable palliative			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	16	488	11.51%
System Installation (Tilt Brackets, Tables, Wire Harnesses, Combiner Boxes)				1	1	1	1	1	1	1	1	1	1	1	1	1			13	396	9.35%
System Installation (Modules)				1	1	1	1	1	1	1	1	1	1	1	1	1			13	396	9.35%
System Installation (PVCS, PCS Shelters and Transformers)				1	1	1	1	1	1	1	1	1	1	1	1	1			13	396	9.35%
Commissioning/pre-functional and functional testing						1	1	1	1	1	1	1	1	1	1	1	1	1	13	396	9.35%
O&M Building								1	1	1	1	1	1						6	182	4.32%
Substation				1	1	1	1	1	1	1	1	1							9	274	6.47%
Gen Tie					1	1	1	1	1	1	1								7	213	5.04%
																		Totals	139	4235	100.00%
Days/Month	30	31	31	30	31	30	31	31	29	31	30	31	30	31	31	30	31	30			

OPERATIONAL EMISSIONS

Total offset emissions (tons/year) = CAP * 8,760 * CF * CEF/2,000

Where:	CAP	capacity in MW
	8,760	total hours in a year
	CF	capacity factor (unitless), the % of time that the plant can produce power at its full capacity
	CEF	composite emission factor (lb/MWh)
	2,000	conversion factor from pounds to tons

Offsets (tpy) = 200 MW * 8,760 * 20% * CEF/2000

	lb/MWh; lb/GWh for Hg	
CEF from DPEIS:	2.82	SO2
	2.42	NOx
	0.0161	Hg
	1553	CO2

			Emissions Avoided (tons/yr; 10^3 tpy for CO2)			
Area Size (ac)	Capacity (MW)	Power Generation (GWh/yr)	SO2	NOx	Hg	CO2
1,550	200	350.4	494.064	423.984	0.002821	272085.6

APPENDIX E

Visual Contrast Rating Sheets

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Form 8400-4
(September 1985)

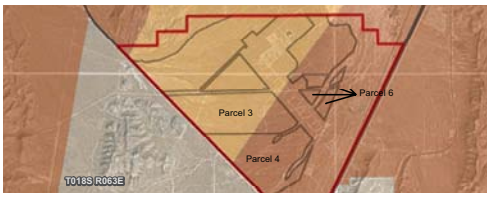
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	10/15/14
District	Southern Nevada
Resource Area	Renewable Energy
Activity (program)	Solar (PV)

SECTION A. PROJECT INFORMATION

1. Project Name
   Dry Lake SEZ - First Solar
2. Key Observation Point
   KOP 1 - U.S. 93 Eastbound
3. VRM Class
   VRM Class III / IV
4. Location
   Township 17, 18 S
   Range 63 E
   Section Multiple
5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Rolling valley, surrounded by rugged rounded to angular mountains and hills	Numerous low rounded shrubs puncuated with low vertical Yucca forms	Flat road, vertical power poles, geometric buildings in background
LINE	Horizontal valley floor to irregular, curvilinear and angular lines in the mountains	Horizontal at base of hills where density of plants changes, otherwise indistinct	Straight road with slight bend in distance
COLOR	Light tans to dark, reddish browns	Muted olive greens	Medium gray road, dark brown and gray powerpoles, beige buildings in background
TEX-TURE	Fine valley transitioning to medium and coarse in the hills and mountains	Medium, continuous in valleys, scattered on hills.	Fine roads and medium patchy power poles and buildings

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No apparent change	See Structures description	Flat and smooth solar fields, horizontal and regular
LINE	No apparent change	Line created at boundary of solar project, see Structures description	Horizontal band created by solar fields
COLOR	No apparent change	See Structures description	Dark grey to light glaring color, depending on time of day, uniform
TEX-TURE	No apparent change	See Structures description	Smooth and continuous solar fields

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

	FEATURES											
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS: Form				X			X				X	
ELEMENTS: Line				X		X				X		
ELEMENTS: Color				X			X			X		
ELEMENTS: Texture			X				X			X		

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☒ Yes ☐ No (Explain on reverse side)

Evaluator's Names	Date
Allisa Carlson	10/15/14
Shannon Stewart	

Rel. 8-30
1/17/86

Comments from item 2.

The Project as viewed from KOP 1 is located in a broad valley surrounded by hills transitioning to mountain ranges, immediately adjacent to U.S. 93. KOP 1 represents the views that motorists would have when traveling southeast on U.S. 93. The Project would be situated at an elevation that is below the viewer. The length of time the project would be in view would be brief, however, the viewer would have longer views of the Project if the length of time they are traveling along U.S. 93 is considered. Moderate contrast in color could be created by glare resulting from solar rays hitting the PV panels, but this would be dependent on the time of day and orientation of the PV panels. The Project would be partially obscured by hills located to the northeast. Due to the large scale of the valley and distance from KOP 1, the Project would begin to attract attention, but would not completely dominate the landscape.

Additional Mitigating Measures (See item 3)

Mitigation Measures are discussed in the EA.

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Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

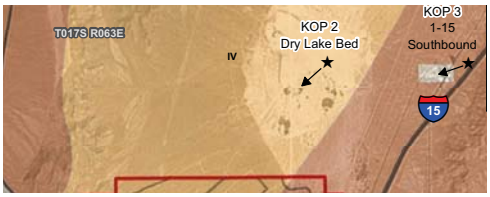
Date	10/15/14
District	Southern Nevada
Resource Area	Renewable Energy
Activity (program)	Solar (PV)

SECTION A. PROJECT INFORMATION

1. Project Name
   Dry Lake SEZ - First Solar
2. Key Observation Point
   KOP 2 - Dry Lake Bed
3. VRM Class
   VRM Class III / IV

4. Location
   Township 17, 18 S
   Range 63 E
   Section Multiple

5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat lake bed, gently sloping bajadas backdropped by rounded to angular mountains	Numerous low rounded shrubs, none in lake	Vertical and geometric transmission poles and towers, blocky geometric structures, irregular
LINE	Horizontal lake bed and valley, curvilinear and angular lines in the mountains	Horizontal line at edge of lake, curvilinear soft lines at base of hills where vegetation texture changes	Regular, straight, angular, hard , geometric
COLOR	Sandy beige lake bed, soft reds, browns, and grays in the valley and mountains beyond	Muted olive greens and golds	Dark brown and gray transmission poles and towers, beige and white structures
TEX-TURE	Smooth lake bed and valley, transitioning to medium and coarse in the hills and mountains	Medium and random, continuous	Medium-coarse

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No apparent change	See Structures description	Flat and smooth solar fields, horizontal and regular
LINE	No apparent change	Line created at boundary of solar project, see Structures description	Horizontal line created by solar fields
COLOR	No apparent change	See Structures description	Dark grey to light glaring color, depending on time of day, uniform
TEX-TURE	No apparent change	See Structures description	Smooth and continuous solar fields

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

	FEATURES											
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS: Form				X			X				X	
ELEMENTS: Line				X			X				X	
ELEMENTS: Color				X			X				X	
ELEMENTS: Texture			X				X				X	

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☐ Yes ☐ No (Explain on reverse side)

Evaluator's Names	Date
Allisa Carlson	10/15/14
Shannon Stewart	

Rel. 8-30
1/17/86

Comments from item 2.

The Project as viewed from KOP 2 is located in a broad valley surrounded by hills transitioning to mountain ranges, beyond large-scale transmission lines and the Harry Allen Power Station. KOP 2 represents the views that recreationalists would have when at Apex Dry Lake. The Project would be situated at an elevation that is level with the viewer. The length of time the project would be in view could be long, however, the viewers could be focused on recreational activities in the lake bed. Contrast in color could be created by glare resulting from solar rays hitting the PV panels, but this would be dependent on the time of day and orientation of the PV panels. The brightness of the solar panels may compete with the bright color of the dry lake, which can be very intense at certain times of the day. The Project would be largely obscured by topography, vegetation, and transmission towers. Due to the large scale of the valley existing cultural modificatons, and distance from KOP 2, the Project contrast would be seen, but would not attract attention.

Additional Mitigating Measures (See item 3)

Mitigation Measures are discussed in the EA.

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Form 8400-4
(September 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	10/15/14
District	Southern Nevada
Resource Area	Renewable Energy
Activity (program)	Solar (PV)

SECTION A. PROJECT INFORMATION

1. Project Name
   Dry Lake SEZ - First Solar
2. Key Observation Point
   KOP 3 - I-15 Southbound
3. VRM Class
   VRM Class III / IV
4. Location
   Township 17, 18 S
   Range 63 E
   Section Multiple
5. Location Sketch

SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Gently sloping bajadas backdropped by rounded to angular mountains	Numerous low rounded shrubs	Vertical and geometric transmission poles and towers, blocky geometric structures, irregular flat road/rail line
LINE	Horizontal valley, curvilinear and angular lines in the mountains	Horizontal and curvilinear lines created by washes in foreground, indistinct in background	Regular, straight, angular, hard , geometric
COLOR	Sandy beige in foreground soft reds, browns, and grays in the valley and mountains beyond	Muted olive greens, grays, and golds	Dark brown and gray transmission poles and towers, beige and white structures, medium gray road and rail
TEX-TURE	Smooth valley, transitioning to medium and coarse in the hills and mountains	Medium and random, continuous	Medium-coarse transmission poles and towers, structures, rail line, smooth road

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No apparent change	See Structures description	Flat and smooth solar fields, horizontal and regular
LINE	No apparent change	Line created at boundary of solar project, see Structures description	Horizontal band created by solar fields
COLOR	No apparent change	See Structures description	Dark grey to light glaring color, depending on time of day, uniform
TEX-TURE	No apparent change	See Structures description	Smooth and continuous solar fields

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

	FEATURES											
	LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS: Form				X			X				X	
ELEMENTS: Line				X			X			X		
ELEMENTS: Color			X				X			X		
ELEMENTS: Texture			X				X			X		

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☒ Yes ☐ No (Explain on reverse side)

Evaluator's Names	Date
Allisa Carlson	10/15/14
Shannon Stewart	

Rel. 8-30
1/17/86

Comments from item 2.

The Project as viewed from KOP 3 is located in a broad valley surrounded by hills transitioning to mountain ranges, surrounded by transmission line corridors and adjacent to the Harry Allen Power Station, railroad line, and I-15. KOP 3 represents the views that motorists would have when traveling southwest on I-15. The Project would be situated at an elevation that is below the viewer. The length of time the project would be in view would be brief, however, the viewer would have longer views of the Project if the length of time they are traveling along I-15 is considered. Moderate contrast in color could be created by glare resulting from solar rays hitting the PV panels, but this would be dependent on the time of day and orientation of the PV panels. Most of the project would be in view. Due to the large scale of the valley and distance from KOP 3, the Project would begin to attract attention, but would not completely dominate the landscape.

Additional Mitigating Measures (See item 3)

Mitigation Measures are discussed in the EA.

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Form 8400-4
(September 1985)

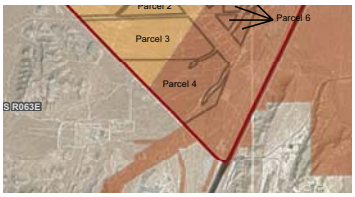
UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

VISUAL CONTRAST RATING WORKSHEET

Date	10/15/14
District	Southern Nevada
Resource Area	Renewable Energy
Activity (program)	Solar (PV)

SECTION A. PROJECT INFORMATION

1. Project Name
   Dry Lake SEZ - First Solar
2. Key Observation Point
   KOP 4 - Loves Travel Center
3. VRM Class
   VRM Class III / IV
4. Location
   Township 17, 18 S
   Range 63 E
   Section Multiple
5. Location Sketch



SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat valley and gently sloping bajadas backdropped by rounded to angular mountains, angular boulders in FG	Numerous low rounded shrubs, a few medium rounded trees	Vertical and geometric transmission poles and towers, irregular blocky geometric structures, flat road and parking lot, rounded vehicles
LINE	Horizontal valley, curvilinear and angular lines in the mountains	Horizontal line against base of hills where texture changes	Irregular, straight, angular, hard, geometric, curvilinear
COLOR	Sandy beige in foreground; reds, browns, and grays in the valley and mountains beyond	Olive greens and grays	Dark brown and gray transmission poles and towers, white structures, gray road and parking lot, various and random colors of vehicles
TEX-TURE	Smooth valley, transitioning to medium and coarse in the hills and mountains	Medium and random, continuous in valley, sparse on hills and around parking area/gas station	Medium-coarse transmission poles and towers, structures, and medium vehicles, smooth road and parking lot

SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	No apparent change	See Structures description	Flat and smooth solar fields, horizontal and regular
LINE	No apparent change	Line created at boundary of solar project, see Structures description	Horizontal band created by solar fields, broken by trees, transmission poles, and vehicles in the foreground
COLOR	No apparent change	See Structures description	Dark grey to light glaring color, depending on time of day, uniform
TEX-TURE	No apparent change	See Structures description	Smooth and continuous solar fields, partially screened by trees, power poles, topography, and vehicles in foreground

SECTION D. CONTRAST RATING ☐ SHORT TERM ☒ LONG TERM

1. DEGREE OF CONTRAST

		FEATURES											
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		Strong	Moderate	Weak	None	Strong	Moderate	Weak	None	Strong	Moderate	Weak	None
ELEMENTS	Form			X				X				X	
	Line			X			X				X		
	Color			X				X			X		
	Texture			X			X				X		

2. Does project design meet visual resource management objectives? ☒ Yes ☐ No (Explain on reverse side)

3. Additional mitigating measures recommended ☒ Yes ☐ No (Explain on reverse side)

Evaluator's Names	Date
Allisa Carlson	10/15/14
Shannon Stewart	

Rel. 8-30
1/17/86

Comments from item 2.

The Project as viewed from KOP 4 is located in a broad valley surrounded by hills transitioning to mountain ranges, beyond large-scale transmission lines, U.S. 93, and a gas station parking lot. KOP 4 represents the views that people would have when exiting the gas station. The Project would be situated at an elevation that is relatively level with the viewer. The length of time the project would be in view would typically be brief due to the viewer being preoccupied with other activites at the gas station, such as gasing vehicles and shopping. However, the viewer could experience longer views at this location as well, though they would be partially screened by existing vegetation, vehicles, and structures. Due to the amount and types of surrounding activities and existing structures as viewed from this KOP, moderate contrast in line,color, and texture would be created by the Project. The Project would attract attention, but would not completely dominate the landscape.

Additional Mitigating Measures (See item 3)

Mitigation Measures are discussed in the EA.

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APPENDIX F

State Historic Preservation Office Letter of Concurrence

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EO M. DROZDOFF, P.E.
Director
Department of Conservation and
National Resources

REBECCA L PALMER
State Historic Preservation Officer

BRIAN SANDOVAL
Governor

STATE OF NEVADA

Address Reply to:
901 S. Stewart St, Suite 5004
Carson City, NV 89701-5248
Phone: (775) 684-3448
Fax: (775) 684-3442

shpo.nv.gov

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION OFFICE

October 23, 2014

Shonna Dooman
Assistant Las Vegas Field Office Manager
Bureau of Land Management
Las Vegas Field Office
4701 North Torrey Pines Drive
Las Vegas, NV 89130

RE: A Class III Cultural Resource Inventory of Dry Lake SEZ, Clark County, Nevada.
BLM Report: NVS0100-8100 5-2708/ Undertaking #2014-3286

Dear Ms. Dooman:

The Nevada State Historic Preservation Office (SHPO) has reviewed the subject documents in compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended.

Areas of Potential Effect (APE):
The SHPO concurs with the Bureau of Land Management's (BLM) determination of the direct APE as defined in the subject documents.

The SHPO concurs with the BLM's determination of the indirect APE as defined in the subject documents.

Identification and National Register Eligibility:
The SHPO concurs with the BLM's determination that the identification efforts actions outline for the above-mentioned undertaking under NHPA are adequate for the both the direct and indirect APE.

The SHPO concurs with the BLM's determination that the following cultural resources are not eligible for the National Register of Historic Places under any of the Secretary's criteria:

26CK6136 26CK9947

As the historic road 26CK9405 is not fully recorded, the SHPO would concur with BLM's determination that the recorded portion does not embody any of the Secretary's criteria. We would, however, note that unidentified sections of the site remain unevaluated.

19615

The BLM, in consultation with the Old Spanish Trail Association (OSTA) has identified a segment of the Old Spanish Trail, 26CK3848 within the indirect APE, which is eligible for the National Register of Historic Places under Criteria A and D.

The SHPO notes that the associated cultural resources inventory report identified 15 historic properties located within the indirect APE, which have been previously determined eligible for the National Register of Historic Places. It is currently unclear if this determination of National Register status was established in consultation with the SHPO. Could you please provide additional clarification on this point?

The SHPO notes that the associated cultural resources inventory report identifies the 19 cultural resources located within the indirect APE, which are unevaluated for the National Register of Historic Places.

Consultation:
The SHPO reminds the BLM that the agency must consult with Native American representatives concerning properties of religious or cultural significance that could be affected by the undertaking (36 CFR Part 800.4.a.4.). What efforts have been made to provide these representatives with an opportunity to comment on this undertaking? Please see BLM Instructional Memorandum No. NV-2011-073 for additional guidance.

The SHPO acknowledges receipt of documentation that consultation with the affected members of the public and representatives of organizations that have a demonstrated interest in historic properties that could be affected by the undertaking, such as OSTA, has been concluded per 36 CFR 800.3.c.5. and 36 CFR 800.3.d.

Effect:
Based upon the subject documents submitted to the SHPO which include identification of historic properties within the APE through professional survey and consultation with consulting parties, such as OSTA, the SHPO notes that there seems to be a potential for substantial alteration of the historic landscape. Based on this information the SHPO would concur with a BLM's determination that the proposed undertaking will pose an adverse effect to the identified historic properties within this established APE.

The SHPO looks forward to further consultation on this undertaking with the BLM, which should include a formal federal agency determination of effect to historic properties and, potentially, the development of an agreement document to address a determination of adverse effect, should that be the federal agency's determination of effect for this undertaking.

Should you have any questions concerning this correspondence, please contact Jessica Axsom at (775)684-3445 or by e-mail at jaxsom@shpo.nv.gov.

Sincerely,

Julie H. Ernstein, Ph.D., RPA
Deputy State Historic Preservation Officer