

# Environmental Considerations

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## 5.1 General Description of Site Characteristics and Potential Environmental Issues

NextLight selected the Project site with a view toward minimizing environmental impacts. The site is not located within or adjacent to environmentally protected areas. It is located next to a utility corridor containing several electrical transmission lines, a major natural gas pipeline, a railroad, and an interstate highway. Good land management planning practice would encourage location of facilities like solar energy generating facilities near such corridors. Although detailed studies have not yet been conducted, this section provides a preliminary assessment of the effects the Project will likely have on air quality, biological resources, cultural resources, recreation, and land use.

The Project site is located on a broad alluvial fan spreading out to the west of the lower slopes of the Lucy Gray Mountains. This fan drains into both the Ivanpah Dry Lake, to the west and south, and to the Roach Dry Lake, to the northwest. The dry lakes are 2 to 0.5 miles respectively from the Project boundary, and the exposed slopes of the Lucy Gray Mountains are about 0.5 mile away at the nearest boundary point.

### 5.1.1 Special or Sensitive Species or Habitats

The vegetation type found on the entire Project site is commonly called creosote bush scrub or Mojave creosote bush scrub. This vegetation type is characterized by widely spaced evergreen and drought-deciduous shrubs, cacti, and yucca ranging in height from 1 to 9 feet. Creosote bush (*Larrea tridentata*) is the dominant species. Other common constituents are burrowbrush or white bursage (*Ambrosia dumosa*), cheesebush (*Hymenoclea salsola*), Nevada ephedra (*Ephedra nevadensis*) and Mojave yucca (*Yucca schidegigera*).

The Project will modify approximately 1,800 acres that are currently undeveloped. Because this area currently serves as habitat for wildlife and vegetation, BLM will require that NextLight conduct detailed natural resources surveys to determine whether species listed as threatened or endangered or designated sensitive under various natural resources conservation programs are present on the Project site.

Sensitive species are those listed under the federal ESA as threatened or endangered, candidate species, or species of concern; those listed by BLM as Special Status species in Nevada; or those listed as protected by Nevada state law or proposed for state-protected status. The first step in conducting the surveys will be to conduct a literature search to identify sensitive or protected species. The literature review will include federally listed sensitive-species from lists provided by of the USFWS office for Clark County, the BLM list of special-status species, and the Nevada Natural Heritage Database.

Table 5-1 is the list of Nevada sensitive species that have been known to occur (are recorded as occurring or having occurred) within the area defined as the USGS 7.5-minute

topographic quadrangle that includes the project site (Roach and Desert quadrangles) and the 8 quadrangles that surround this quadrangle. 5-1 is a map showing the locations at which sensitive species are recorded as having previously been found in the nine-quadrangle area.

According to Figure 5-1, the desert tortoise (*Gopherus agassizii*) has been identified from locations adjacent to the Project site to the west (map identifier #3583) and north of the Project site (map identifier #8237). The Project site is also within a broader area where yellow twotone beardtongue (*Penstemon bicolor* sp. *bicolor*) has been found and is located near the area within the McCulloch Mountains where New York Mountains catseye (*Cryptantha tumulosa*) has been found.

**TABLE 5-1**  
Sensitive Species Reported for the Nine-Quadrangle Area Including and Surrounding the Project<sup>a</sup>

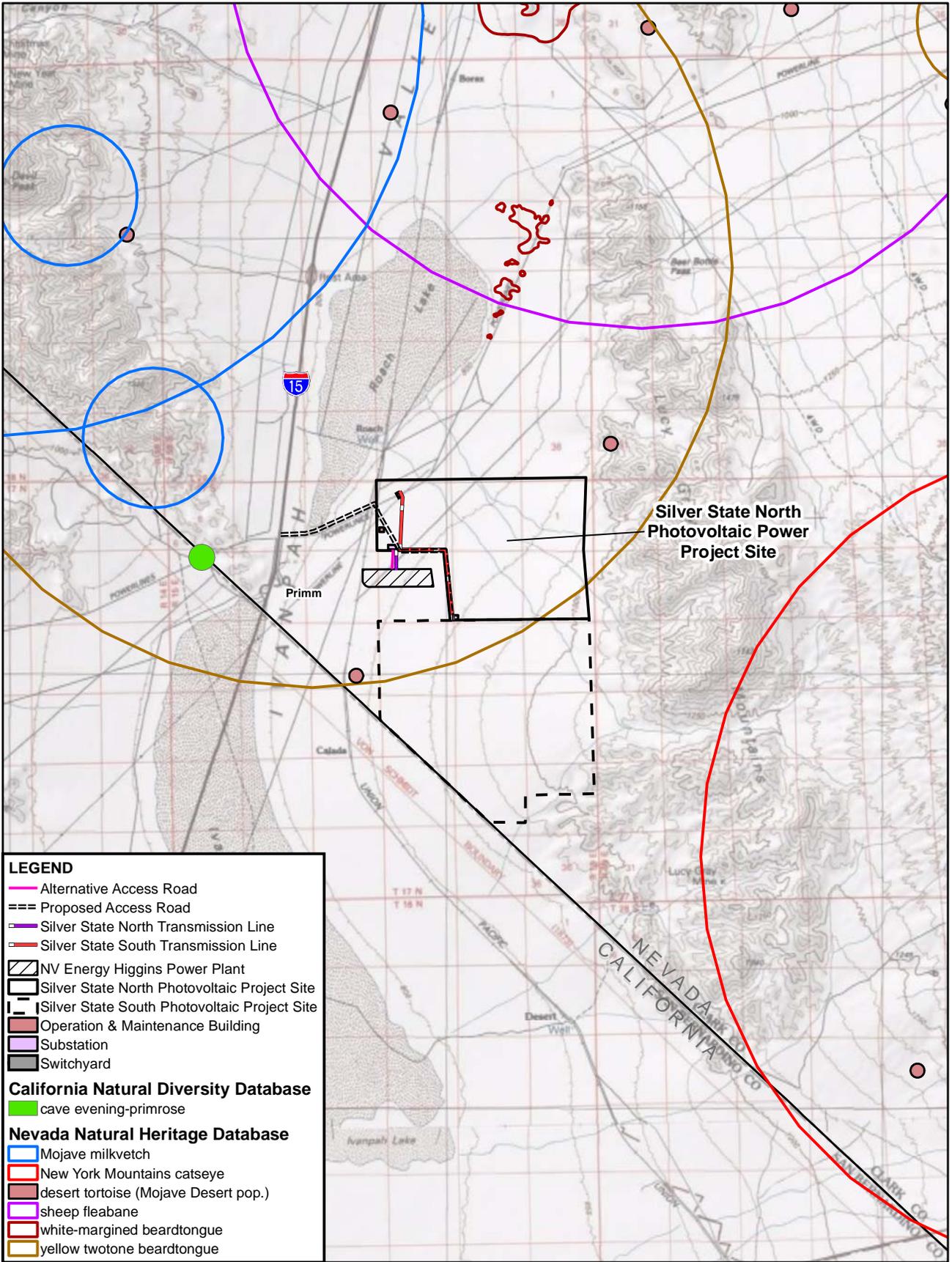
Scientific Name	Common Name	Federal ESA	BLM	Nevada Native Plant Society
<b>Wildlife, Reptiles</b>				
<i>Gopherus agassizii</i>	desert tortoise (Mojave Desert)	Threatened	Listed	—
<b>Vascular Plants</b>				
<i>Astragalus mohavensis</i> var. <i>mohavensis</i>	Mojave milkvetch	—	—	—
<i>Astragalus remotes</i>	Spring Mountains milkvetch	—	Sensitive	Watch list
<i>Cryptantha tumulosa</i>	New York Mountains catseye	—	—	Watch list
<i>Erigeron ovinus</i>	sheep fleabane	—	Sensitive	Watch list
<i>Lotus argyraeus</i> var. <i>multicaulis</i>	scrub lotus	—	Sensitive	Watch list
<i>Penstemon albomarginatus</i>	white-margined beardtongue	—	Sensitive	Threatened
<i>Penstemon bicolor</i> ssp. <i>bicolor</i>	yellow twotone beardtongue	—	Sensitive	Watch list
<i>Penstemon bicolor</i> ssp. <i>roseus</i>	rosy twotone beardtongue	—	Sensitive	Watch list
<i>Phacelia anelsonii</i>	Aven Nelson phacelia	—	—	Marginal <sup>b</sup>

<sup>a</sup> The nine USGS topographic quadrangles included in this list are (E-W, N-S) State Line Pass, Roach, McCulloch Pass, Ivanpah Lake, Desert, McCullough Mountain, Mineral Hill, Nipton, and Crescent Peak; and portions of Goodsprings, Jean, Hidden Valley, Joshua, Ivanpah, and Castle Peak.

<sup>b</sup> Conservation concern in Nevada; may be more widespread elsewhere.

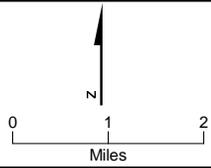
Source: Nevada Natural Heritage Database and Nevada Native Plant Society March 21, 2008 Status List

NextLight will hold discussions with the BLM Las Vegas Field Office staff to determine which sensitive species are likely to occur in the Project area and to determine protocols to follow in conducting field surveys for these species. If surveys determine that the species are present or likely to be present, then a mitigation program will be developed in consultation with the BLM.



Source:  
 California Natural Diversity Database (CNDDDB) 2008  
 Nevada Natural Heritage Database, 2008.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.



**FIGURE 5-1**  
**SENSITIVE SPECIES, NEVADA AND CALIFORNIA DATABASES**  
 SILVER STATE NORTH PHOTOVOLTAIC POWER PROJECT, CLARK COUNTY, NEVADA

### 5.1.1.1 Desert Tortoise (*Gopherus agassizii*)

The Project site is located in habitat for the desert tortoise (*Gopherus agassizii*), which is listed as a threatened under the ESA and is also a State of Nevada Protected Species and BLM Sensitive Species. The USFWS *Draft Revised Recovery Plan for the Mojave Population of the Desert Tortoise*, issued August 1, 2008 (Recovery Plan) defines critical habitat areas, Desert Wildlife Management Areas (DWMA), and Areas of Critical Environmental Concern (ACEC) for the desert tortoise. The Recovery Plan maps critical habitat for this species as occurring in the Ivanpah Unit, south and east of the Project in California, and in the Piute-Eldorado Unit, in Nevada east of the Project site. The nearest ACEC is the Piute Eldorado desert tortoise ACEC, 7 miles to the southeast.

Desert tortoises have been found in and near the Project area (Figure 5-1). Consultation with USFWS under Section 7 of the ESA and a Biological Opinion will be required for the Project because it is located in desert tortoise habitat. NextLight has conducted triangle transect sampling surveys to assess the relative density of desert tortoises over the project site. USFWS will prepare a Biological Opinion that addresses the potential effects of the project on the desert tortoise and its habitat and stipulates mitigation measures required for NextLight to obtain an Incidental Take Permit. An Incidental Take Permit issued by USFWS stipulates the conditions under which BLM can allow development that could adversely affect desert tortoise habitat or result in take of individual tortoises. It is likely that mitigation measures stipulated as part of the Incidental Take Permit will reduce potential impacts on this species to acceptable levels. These measures could include exclusionary fencing before construction, construction and operation worker environmental awareness training, pre-construction and clearance surveys, avoidance, mitigation, and habitat compensation. The mitigation program, if necessary, would be developed in consultation with BLM and USFWS staff.

### 5.1.1.2 Other Sensitive or Protected Species

Other than the desert tortoise, no other species listed under the ESA are likely to occur at the Project site and immediately surrounding areas. Table 5-1 lists sensitive species that have previously been found in the Project area (nine-quadrangle area). It is not possible to establish conclusively the absence of other sensitive species within the Project boundary without first conducting a field inventory, which will be performed after submitting this POD. Although more detailed biological resource literature searches and surveys have not yet been conducted for the Project, the following is a partial list of special-status or sensitive species that do occur within a broader area surrounding the Project and which, therefore, may occur within the Project boundary or in adjacent areas supporting different habitat types.

#### Mammals:

- Nelson's desert bighorn sheep (*Ovis canadensis nelsoni*)
- Townsend's western big-eared bat (*Corynorhinus townsendii*)

#### Birds:

- Western burrowing owl (*Athene cunicularia*)
- Golden eagle (*Aquila chrysaetos*)
- Loggerhead shrike (*Lanius ludovicianus*)

Le Conte's thrasher (*Toxostoma lecontei*)  
Crissal thrasher (*Toxostoma crissale*)  
Gray vireo (*Vireo vicinior*)

Reptiles:

Banded Gila monster (*Heloderma suspectum cinctum*)  
Chuckwalla (*Sauromalus ater*)

Plants:

Forked buckwheat (*Eriogonum bifurcatum*)  
Death Valley beardtongue (*Penstemon fruticiformis var. amargosae*)  
Parish's phacelia (*Phacelia parishii*)

Other sensitive or listed species may be present and may require protection or mitigation measures. The presence or absence of these species will be established in field surveys conducted during the project permitting phase according to protocols established by the applicable regulatory agencies (USFWS, NDEP) and the BLM. Final impact assessments and mitigation measures will be determined through this process, other federal, state, and local permitting processes, and the NEPA compliance process. In addition, preconstruction surveys for nesting birds will be necessary if grading begins during the breeding season, for compliance with the Migratory Bird Treaty Act.

### 5.1.1.3 Cacti and Yucca

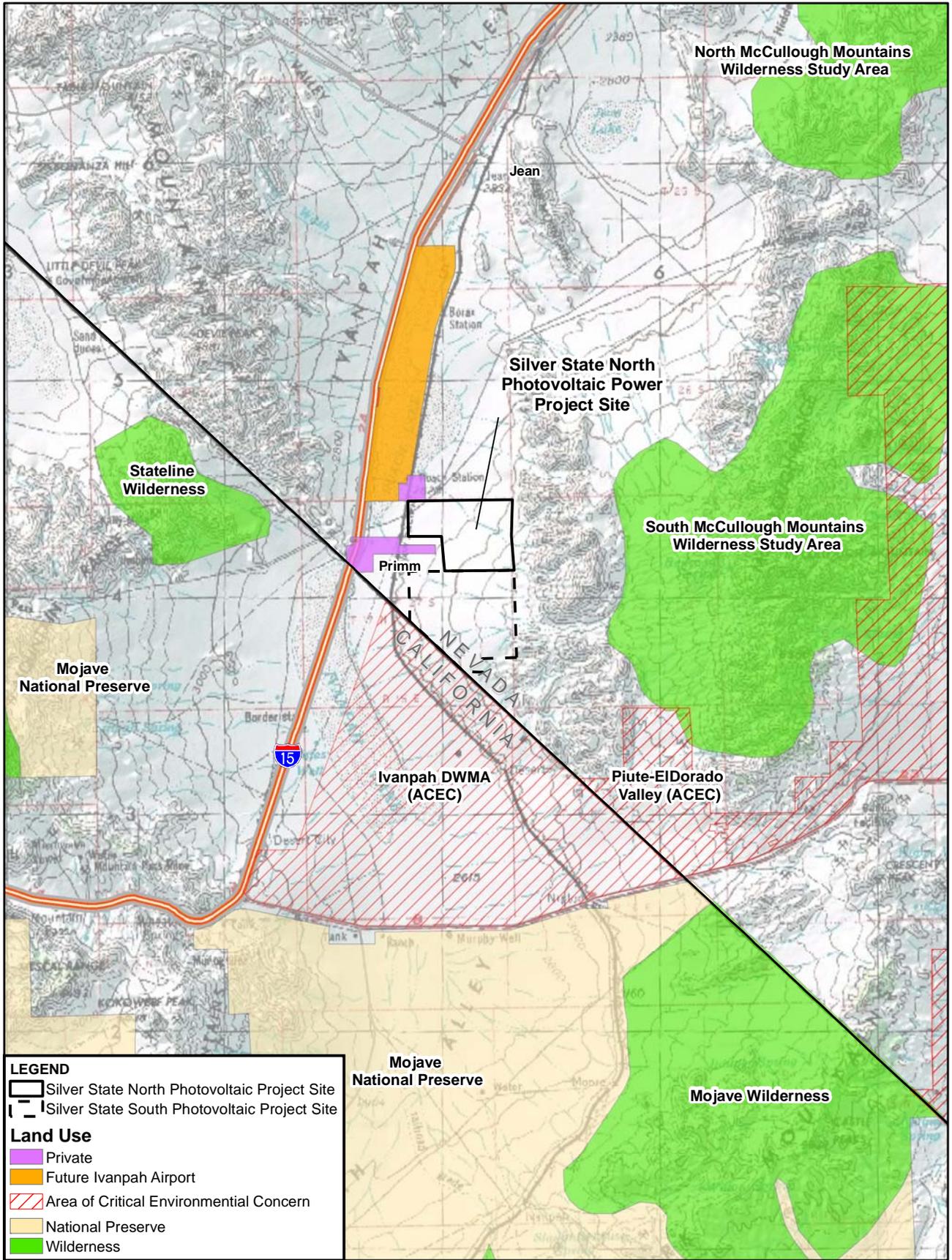
Nevada Revised Statute 527.060-120 and Nevada Administrative Code Chapter 527 regulate the removal or possession of native cacti and yucca in commercial quantities. The Nevada Department of Forestry issues a permit for the removal and transplantation of these species.

## 5.1.2 Special Land Use Designations

The Project is not located within natural areas or areas having special land use designations such as wilderness areas or ACECs (Figure 5-2). The nearest protected areas are the Stateline Wilderness approximately 5 miles to the northwest in California, and the South McCullough Wilderness 3.5 miles to the east. The Mojave National Preserve, administered by the National Park Service, is approximately 10 miles south of the project in California, at its nearest point. The nearest ACEC is the Piute Eldorado desert tortoise ACEC 7 miles to the southeast. A DWMA for the desert tortoise lies to the southeast of the project site, in California.

### 5.1.3 Cultural and Historic Resource Sites and Values

Cultural resources include historic resources; archaeological resources, which may belong to the historic era or the prehistoric era; and traditional cultural properties. Historic resources are buildings, structures, sites, or objects that embody national, state, or local history and that are relatively intact or well preserved. Archaeological resources include buildings structures, sites or objects that are essentially ruined or buried and from which scientists using archaeological techniques can recover information that can contribute to our scientific understanding of history or prehistory. Traditional cultural properties are buildings, structures, sites, or objects of special cultural significance to a population, ethnic, or cultural group.



**LEGEND**

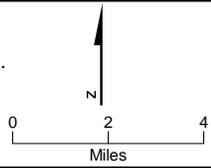
- Silver State North Photovoltaic Project Site
- Silver State South Photovoltaic Project Site

**Land Use**

- Private
- Future Ivanpah Airport
- Area of Critical Environmental Concern
- National Preserve
- Wilderness

Source:  
 USDOI Bureau of Land Management, NV and CA, 2007.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.



**FIGURE 5-2**  
**LAND USE**  
 SILVER STATE NORTH PHOTOVOLTAIC  
 POWER PROJECT, CLARK COUNTY, NEVADA

In considering the grant of an ROW to the Project, BLM is required under Section 106 of the National Historic Preservation Act and implementing regulations at 36 CFR part 800, to take into consideration the effects of its undertakings on historic properties. Historic properties are properties that meet the criteria for listing in the NRHP. In doing so, BLM is required to take the following steps:

- Define an Area of Potential Effects (APE) for the undertaking. An undertaking may be a federal construction project or the granting of a permit or lease (in this case, the lease).
- Consult with the Nevada SHPO regarding the APE and the agency's plans to inventory historic properties under its supervision. SHPO is a state agency whose primary function is to administer the federal historic preservation program.
- Inventory the APE for any potentially historic properties. This inventory would involve a literature search to identify previously recorded properties or sites likely to contain them, and also field reconnaissance to identify historic properties or intensive pedestrian survey to identify archaeological properties.
- Evaluate any properties identified and recorded as potential historic properties in terms of their eligibility for listing in the NRHP.
- If the inventory and evaluation identifies eligible properties, assess the potential effects of the undertaking on the properties
- If the undertaking would have an adverse effect on a historic property (would affect the aspects of the property that made it eligible for NRHP listing), develop a plan to take the adverse effect into account (mitigation plan) and execute a Memorandum of Agreement with SHPO (and possibly the Advisory Council on Historic Preservation, depending on circumstances) stipulating the measures to be taken.

NextLight will identify and evaluate the properties that may be affected by the Project under the direction of the BLM Las Vegas Field Office. Initially, NextLight will conduct a literature search covering a 1-mile radius from the Project site, access road, and transmission ROW and adjacent areas. Information sources will include the Nevada Cultural Resources Information System record of previously recorded sites and surveys maintained by the Nevada State Museum and Nevada SHPO. Additional sources to be consulted will include the NRHP, Nevada State Register of Historic Places, Historical Resources of Clark County, and various historical maps that might show locations of historic era settlement, mining, or other activity in the project area. These might include early versions of USGS's 15- and 7.5-minute topographic maps, early plat maps, and early prospector's guides and maps.

### **5.1.3.1 Historic Resources**

The Project site does not appear to have any buildings or structures, roads, railroads, or other infrastructure or potentially historic resources located within its boundaries. This cannot be determined conclusively, however, without conducting a literature search and pedestrian archaeological survey for the project. Existing infrastructure, such as transmission lines, may be considered potentially historic if it is older than 50 years.

### 5.1.3.2 Archaeological Resources

It is likely that some archaeological resources exist within the 1,800-acre project site area. These may include prehistoric campsites, food-processing sites, isolated stone tool finds, or archaeological deposits of the historic era related to mining, exploration, railroad construction, or other activities. NextLight will conduct a Class III Cultural Resource Inventory in accordance with BLM's Cultural Resources Inventory General Guidelines. The inventory will include a pedestrian archaeological inventory of the entire APE associated with the Project (solar collector field, transmission line, switchyard, access road). Sites that are identified as being located within the APE will be recorded on Intermountain Antiquities Computer System (IMACS) archaeological site forms.

Sites recorded will be evaluated to determine whether they meet the requirements for listing in the NRHP. For prehistoric archaeological sites, evaluation methods might include surface collection of artifacts and limited subsurface excavation to determine the contents and extent of the archaeological deposit and its potential to provide information important in prehistory. For historic archaeological sites, this might include limited excavation, as well as analysis of a sample of artifacts recovered from the site and initial interpretation of the site's age and function.

If archaeological properties are found to be eligible for NRHP listing, NextLight would assess the potential adverse impact of the Project and would prepare a plan to mitigate any potentially adverse impacts, in consultation with BLM and Nevada SHPO.

### 5.1.4 Native American Tribal Concerns

NextLight will also conduct a consultation program with Native American tribes or groups or traditional cultural practitioners having traditional ties to the Project area. The purpose of this program will be to determine whether traditional cultural properties exist in the Project APE. This consultation program will be conducted in coordination with the BLM and will be done by letter and telephone, or personal visit, if needed.

### 5.1.5 Recreation and Off-road Vehicle Conflicts

Areas in the vicinity of the Project site are used periodically by off-road vehicle (OHV) enthusiasts or other recreational users. Specifically, the Terrible's Primm 300 off-road vehicle race follows a course that runs along a wash channel to the southwest of the Project site in Section 11, between miles 60 and 65 of the raceway course. It may therefore be necessary to avoid placing solar modules in this portion of the project site to allow continued use by the OHV enthusiasts. This will be determined in discussions with the BLM.

### 5.1.6 Other Environmental Considerations

#### 5.1.6.1 Visual Resources

BLM classifies land under its management in terms of visual resources objectives. The Project area is classified as a Class III Visual Resource Management Area. According to Manual H-8410-1, Visual Resource Inventory:

The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape (Department of the Interior, Bureau of Land Management, Manual H-8410-1, Visual Resource Inventory).

The Project is located in the Ivanpah Valley, which is characterized by the expansive arid landscapes of broad valleys, the Ivanpah and Roach playa lakes, and rugged mountains. In the immediate vicinity of the Project, the landscape has been significantly altered by human use. Because of its strategic location between Los Angeles and Las Vegas, this portion of the Ivanpah Valley has historically been used as a major transportation thoroughfare and utility corridor. Modern and built-environment features of the landscape include an interstate highway; a mainline railroad track; the resort town of Primm with its three casinos, shopping center, and roller coaster; several high voltage transmission lines that converge in this area; and the NV Energy Higgins Power Plant, a large combined-cycle generating station that employs highly visible heat recovery steam generators, switchyard, stacks, and air-cooled condenser.

NextLight will work with BLM resources management staff to conduct a formal visual resources analysis of the Project in accordance with BLM protocols, including BLM Handbook 8431-1, Visual Resource Contrast Rating (BLM, 1986). The visual resources analysis will include an assessment of Project visibility from viewing areas such as Interstate 15, Primm Resort, and any nearby recreation areas and the development of simulated photographic views of the project from Key Observation Points.

#### **5.1.6.2 Air Quality**

EPA has established national ambient air quality standards (NAAQS) for the following criteria pollutants: ozone, nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), particulate matter 10 microns or less in diameter (PM<sub>10</sub>), PM<sub>2.5</sub>, and airborne lead. Areas with air pollution levels above these standards can be considered “nonattainment areas” subject to planning and pollution control requirements that are more stringent than standard requirements. Clark County Department of Air Quality and Environmental Management monitors air quality at 21 air quality monitoring stations throughout the Las Vegas Valley and outlying areas of the County. This program samples for the criteria pollutants, along with various other air contaminants. In the Las Vegas Valley, the pollutants of concern are carbon monoxide, ozone, and PM<sub>10</sub>. The project area is currently in attainment for all criteria pollutants.

The solar PV technology employed by the Project does not depend on the consumption of fuels to generate power, and so emits virtually no pollutants derived from the burning of fossil fuels during normal operation.

The construction phase of the Project will temporarily cause fugitive dust related to grading and other construction activities, which can be fully mitigated through BMP measures. Grading activity will occur throughout the construction period. To reduce fugitive dust emissions, the Clark County Department of Air Quality and Environmental Management

has established jobsite requirements and control measures that reduce fugitive dust from construction sites. These requirements include regular watering of jobsite roads and areas where grading is occurring and will be used to control fugitive dust during construction.

The Project will implement the following practices for fugitive dust and wind erosion control:

- Minimizing grading and vegetation removal, and limit surface disturbance during construction to the time just before PV module support structure installation.
- Apply water to disturbed soil areas of the Project site to control dust and maintain optimum moisture levels for compaction as needed. Apply the water using water trucks. Minimize water application rates as necessary to prevent runoff and ponding.
- Apply dust control palliatives such as synthetic polymers or organic non-petroleum (lignin) products, in accordance with BLM's Resource Management Plan.
- During windy conditions (forecast or actual wind conditions of approximately 25 miles per hour or greater), apply dust control to haul roads to adequately control wind erosion. Cover exposed stockpiled material areas.
- Suspend excavation and grading during periods of high winds.
- Cover all trucks hauling soil and other loose material or maintain at least 2 feet of freeboard.

### 5.1.6.3 Noise

Project noise will result from temporary construction activities. When the project is operating, it will generate very little noise. Nearest noise receptors to the Project are the residential apartments at the Primm Resort, approximately 1.25 miles from the Project site. In general, most construction activities will not contribute appreciably to ambient noise at this distance. Most construction activities will contribute between 42 and 53 A-weighted decibels (dBA) to ambient noise at 3,000 feet. At 6,000 feet (1.12 miles), the contribution would be between 34 and 47 dBA, and at 2 miles, the contribution of construction noise to ambient noise would be negligible and not noticeable. Table 5-2 shows typical noise levels for construction equipment.

**TABLE 5-2**  
Average Construction Noise Levels at Various Distances

Construction Phase	Sound Pressure Level (dBA)		
	375 feet	1,500 feet	6,000 feet
Demolition, Site Clearing, and Excavation	71	59	47
Concrete Pouring	60	48	34
Steel Erection	69	57	45
Mechanical	69	57	45
Clean-up	71	59	47

During operation, all components will be specified not to exceed near-field maximum noise levels of 90 dBA at 3 feet (or 85 dBA at 3 feet where available as a vendor standard). Because the facility will have no significant noise-generating equipment, no worker's time-weighted average exposure to noise should routinely approach the level allowable under OSHA guidelines. In addition, the Project will comply with Nevada Revised Statute 244.363 and Clark County Development Code 30.68.020, both of which regulate worker exposure to noise and exposure to sensitive receptors.

#### **5.1.6.4 Soil and Water Resources**

As indicated previously, the project will use a small amount of water for occasional PV panel washing. The water will be trucked to the site from a nearby area, such as Jean, Nevada.

Relative flood hazard risk classes for the Project site and surrounding area range from "Very High" to "None" based on local topography (House, 2006). A Federal Emergency Management Agency (FEMA) Special Flood Hazard Area (100-year flood zone) is present in Sections 11 and 2 of the Project site (FEMA, 2002). The Project footprint, however, will not be located within any Special Flood Hazard Area. As indicated in Section 1, stormwater will be distributed as sheet flow across the site, and will not be diverted from the before-project path. The Project will consult with USACE to determine if drainage features on the Project site are jurisdictional (i.e., "waters of the United States").

The project design and plans will include BMPs to mitigate potential soil erosion caused by construction and operation of the project. SWPPPs will be developed to assist with the management and protection of water resources throughout construction and the life of the project. Refer to Section 2.13 for additional detail on erosion control measures.

## **5.2 Mitigation Measures Proposed by the Applicant**

Prior to construction, NextLight will prepare an Environmental Compliance Plan that will stipulate measures NextLight is committed to take to protect the environment, as identified during the BLM's NEPA compliance process, as well as the other federal, state, and local permitting processes. The Environmental Compliance Plan will be the guidance document for ensuring that all mitigation measures identified during the NEPA and other permitting processes, are carried out.