

## 5.2 Biological Resources

### 5.2.1 Introduction

The Hidden Hills Solar Electric Generating System (HHSEGS) will be located on privately owned land in Inyo County, California, adjacent to the Nevada border. It will comprise two solar fields and associated facilities: the northern solar plant (Solar Plant 1) and the southern solar plant (Solar Plant 2). Each solar plant will generate 270 megawatts (MW) gross (250 MW net), for a total net output of 500 MW. Solar Plant 1 will occupy approximately 1,483 acres (or 2.3 square miles), and Solar Plant 2 will occupy approximately 1,510 acres (or 2.4 square miles). A 103-acre common area will be established on the southeastern corner of the site to accommodate an administration, warehouse, and maintenance complex, and an onsite switchyard. A temporary construction laydown and parking area on the west side of the site will occupy approximately 180 acres.

Each solar plant will use heliostats – elevated mirrors guided by a tracking system mounted on a pylon – to focus the sun’s rays on a solar receiver steam generator (SRSG) atop a tower near the center of each solar field. The solar power tower technology for the HHSEGS project design incorporates an important technology advancement, the 750-foot-tall solar power tower. One principle advantage of the HHSEGS solar power tower design is that it results in more efficient land use and greater power generation. The new, higher, 750-foot solar power tower allows the heliostat rows to be placed closer together, with the mirrors at a steeper angle. This substantially reduces mirror shading and allows more heliostats to be placed per acre. More megawatts can be generated per acre and the design is more efficient overall.

In each solar plant, one Rankine-cycle steam turbine will receive steam from the SRSG (or solar boiler) to generate electricity. The solar field and power generation equipment will start each morning after sunrise and, unless augmented, will shut down when insolation drops below the level required to keep the turbine online. Each solar plant will include a natural-gas-fired auxiliary boiler, used to augment the solar operation when solar energy diminishes or during transient cloudy conditions, as well as a startup boiler, used during the morning startup cycle, and a nighttime preservation boiler, used to maintain system temperatures overnight. On an annual basis heat input from natural gas will be limited by fuel use and other conditions to less than 10 percent of the heat input from the sun.

To save water in the site’s desert environment, each solar plant will use a dry-cooling condenser. Cooling will be provided by air-cooled condensers, supplemented by a partial dry-cooling system for auxiliary equipment cooling. Raw water will be drawn daily from onsite wells located in each power block and at the administration complex. Groundwater will be treated in an onsite treatment system for use as boiler make-up water and to wash the heliostats.

Two distinct transmission options are being considered because of a unique situation concerning Valley Electric Association (VEA). Under the first option, the project would interconnect via a 230-kilovolt (kV) transmission line to a new VEA-owned substation

(Tap Substation) at the intersection of Tecopa Road<sup>1</sup> and Nevada State Route (SR) 160 (the Tecopa/SR 160 Option). The other option is a 500-kV transmission line that interconnects to the electric grid at the Eldorado Substation (the Eldorado Option), in Boulder City, Nevada.

A 12- to 16-inch-diameter natural gas pipeline will be required for the project. It will exit the HHSEGS site at the California-Nevada border and travel on the Nevada side southeast along the state line, then northeast along Tecopa Road until it crosses under SR 160. From this location a 36-inch line will turn southeast and continue approximately 26 miles, following the proposed Eldorado Option transmission line corridor, to intersect with the Kern River Gas Transmission (KRGT) pipeline. A tap station will be constructed at that point to connect it to the KRGT line. The total length of the natural gas pipeline will be approximately 35.3 miles.

The transmission and natural gas pipeline alignments will be located in Nevada, primarily on federal land managed by the U.S. Bureau of Land Management (BLM), except for small segments of the transmission line (both options) in the vicinity of the Eldorado Substation, which is located within the city limits of Boulder City, Nevada. A detailed environmental impact analysis of the transmission and natural gas pipeline alignments will be prepared by BLM.

This section is organized as follows: Section 5.2.2 presents a summary of key findings. Section 5.2.3 describes the biological resources laws, ordinances, regulations, and standards (LORS) that may apply to the project. A discussion of existing biological resources in the project area (affected environment) is included in Section 5.2.4. Section 5.2.5 presents the biological survey methods and Section 5.2.6 presents the results of the biological surveys. The environmental analysis to determine potential impacts and potential cumulative impacts to biological resources due to construction and operation of the project are provided in Sections 5.2.7 and 5.2.8, respectively. Mitigation measures proposed for the project are provided in Section 5.2.9. Involved agencies and agency contacts are listed in Section 5.2.10 and applicable permits and permit schedules are listed in Section 5.2.11. The references cited in the preparation of this section are provided in Section 5.2.12.

## **5.2.2 Summary of Key Findings**

Surveys for special-status plant and wildlife species, noxious weeds, vegetation, and wetlands and waters were performed at the HHSEGS site between fall 2010 and spring 2011. The area included in these surveys and assessments included the site, discipline-specific site buffers, and a 1-mile buffer surrounding the site. Although the site is located in California, for the purposes of gathering information, resources from both California and Nevada were used to identify regional biological resources from the project area. Key findings from these surveys are described below.

### **5.2.2.1 Federal and State Listed Species (Threatened or Endangered Species)**

Desert tortoise (*Gopherus agassizii*) was the only federal Endangered Species Act (ESA) or California Endangered Species Act (CESA) listed species identified at the HHSEGS site. Two live tortoises were found as a result of the protocol-level surveys conducted on the project site. Offsite, tortoises were also surveyed within a 150-meter burrowing owl buffer area

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<sup>1</sup> The road is also called Tecopa Highway and Old Spanish Trail Highway. The names are generally used interchangeably.

(652 acres), and five Zone-of-Influence (ZOI) transects out to 1 mile from the project boundary. Tortoise sign and thirteen live tortoises were found off-site during these surveys (six within the buffer zone and seven within the ZOI).

### 5.2.2.2 Special-status Animals<sup>2</sup>

One burrowing owl (*Athene cunicularia*), a CDFG species of special concern, and eight active burrows with burrowing owl sign were observed at the site. Two other burrows were identified in the ZOI. Several other special-status avian species were observed foraging onsite. No live American badgers were observed during the surveys. Eleven American badger burrows (*Taxidea taxus*), a CDFG species of concern, were identified onsite, and one burrow was found in the ZOI.

### 5.2.2.3 Vegetation Types

Two natural vegetation types occur at the HHSEGS site: Mojave Desert scrub and shadscale scrub. These are common plant community types throughout the Mojave Desert. Plant communities recognized by CDFG as “sensitive natural communities” are not present at the HHSEGS site, in the 250-foot buffer, or in the 1-mile buffer surrounding the site.

### 5.2.2.4 Special-status Plants

Protocol-level special-status plant surveys were conducted at the HHSEGS site during fall 2010 and spring 2011. Eight plants were identified that are included in the CNDDDB “Special Plants” list (CDFG 2011a). More information on plant species identified during the surveys is included in Section 5.2.5.2 and Appendix 5.2G.

### 5.2.2.5 Offsite Surveys

Focused surveys for special-status plants were also conducted in 2011 offsite within portions of the southern Pahrump, Chicago, and Stewart valleys in California and Nevada, nearby the HHSEGS site. This large area was used to check for potentially occurring species in recognition of the fact that the distributions of many special-status plants in the Mojave Desert are poorly known, and new localities often are discovered many miles away from those that were previously known. Several special-status plant localities, including the species found onsite, were also identified offsite during these focused surveys. Prior to the offsite surveys, areas near the HHSEGS site had not been extensively botanized, and few records of special-status plants exist from these locations. Results of the offsite surveys substantially increases the number of special-status plant occurrences in the project region and expands the previously known distributions of many of these special-status plant species.

### 5.2.2.6 Noxious weeds

Eleven species of invasive, non-native plants (weeds) were documented with the site boundary and the 250-foot survey buffer. One of these weeds, halogeton, is a California

<sup>2</sup> As used in this AFC, the term “special-status” species does not mean listed as threatened, endangered or candidate species under the federal ESA or CESA. Instead, the term “special-status” species is a more expansive term, employed by many agencies for the purposes described herein. The term special-status has no relationship to the legal status of any particular species.

Department of Food and Agriculture A-ranked weed (eradication priority species) that is toxic to livestock, especially sheep.

### **5.2.3 Laws, Ordinances, Regulations, and Standards**

This section describes the LORS related to the protection of biological resources. The following sections and Table 5.2-1 (all tables are provided at the end of this section) describe the primary LORS and list the responsible governmental agencies. The primary federal and state regulatory agencies include the United States Fish and Wildlife Service (USFWS), United States Army Corps of Engineers (USACE), CEC, CDFG, and the Lahontan Regional Water Quality Control Board.

#### **5.2.3.1 Federal LORS**

##### **5.2.3.1.1 Federal Endangered Species Act, Section 7 (16 United States Code [USC] §§1531 et seq., and 50 Code of Federal Regulations [CFR] § 17.1 et seq.)**

The federal Endangered Species Act (ESA) provides for the designation and protection of threatened and endangered plant and animal species and habitat critical to their survival. The ESA authorizes USFWS to review a proposed federal action to assess potential impacts to listed species. Listed species are those that are endangered or threatened and have been listed in the *Federal Register*. The ESA prohibits the “take” of listed species. The ESA and implementing regulations define “take” to include mortality and other actions that may result in adverse impacts such as harassment, harm, or loss of critical habitat. Federal or private action that may result in a take of a listed species requires consultation with the USFWS pursuant to Section 7 or 10 of the ESA. USFWS may issue an incidental take permit after consultation and the issuance of a biological opinion.

##### **5.2.3.1.2 Clean Water Act, Section 404 (33 USC §1344)**

The Clean Water Act (CWA) requires the issuance of permits for the discharge of dredged or fill material into the navigable waters of the United States, including wetlands. Fill activities may be permitted by a Nationwide or Individual Permit. The Nationwide Permit (NWP) Program involves certain activities that have been preauthorized by USACE because USACE has determined that such activities would have minimal individual and cumulative adverse effects on the aquatic environment. The Individual Permit program applies to projects that exceed the significance thresholds or do not meet the general permit conditions of the NWP program. Under Section 404 (b)(1) guidelines, permittees are allowed to discharge dredged or fill material into the aquatic system if there is no practicable alternative, as defined further in the guidelines, that will have fewer adverse impacts. Typically, USACE requires mitigation in the form of restoration of areas of temporary impacts, and restoration, creation, or acquisition of acreage for permanent impacts, generally at a 1:1 mitigation ratio to achieve no net loss of functions and values. The ratio can vary depending on the comparative functional values of the area being impacted and those of the replacement wetlands. Alternatively, in some cases in lieu fees can be paid into a mitigation banking fund.

##### **5.2.3.1.3 CWA, Section 401 (33 USC § 1341 and 40 CFR § 121)**

Section 401 of the CWA, 33 USC § 1341, and the implementing regulations 40 CFR § 121, requires a Water Quality Certification from the applicable Regional Water Quality Control Board (RWQCB) when a project will: (1) require a federal license or permit, and (2) result in

a discharge to waters of the United States. Water Quality Certifications are required for projects that also require a CWA Section 404 permit; certifications typically include conditions.

#### **5.2.3.1.4 Migratory Bird Treaty Act (16 USC §§703–712; 50 CFR §10)**

The Migratory Bird Treaty Act (MBTA) prohibits the “take” of migratory birds and their active nests containing eggs or young unless permitted. This regulation can constrain construction activities that have the potential to affect nesting birds either through vegetation removal and land clearing, or through other construction- or operation-related disturbance.

#### **5.2.3.1.5 Bald and Golden Eagle Protection Act (16 USC §668; 50 CFR §22 et seq.)**

The Bald and Golden Eagle Protection Act (BGEPA) protects bald and golden eagles from harm and prohibits trade in parts of these species. It prohibits “take.” Take means “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb.” Disturb means “to agitate or bother a Bald Eagle or a Golden Eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.”

#### **5.2.3.1.6 California Desert Protection Act of 1994**

The California Desert Protection Act of 1994 (CDPA) established 69 wilderness areas and the Mojave National Preserve (MNP). It also expanded Joshua Tree and Death Valley national parks and redefined them as National Parks, which required some land transfers to the National Park Service (NPS). These were formerly administered by BLM and included significant portions of grazing allotments, wild horse and burro Herd Management Areas, and Herd Areas. The HHSEGS is located outside the CDPA, the MNP, Joshua Tree and Death Valley national parks.

#### **5.2.3.1.7 USFWS Desert Tortoise Recovery Plan and Critical Habitat Designation**

The project site is in the geographic area addressed by the *Desert Tortoise Recovery Plan* (USFWS, 1994b). The recovery plan describes a strategy for recovery and delisting of the desert tortoise. Key to the strategy is the establishment of at least one Desert Wildlife Management Area (DWMA) and implementation of reserve-level protection within each DWMA so as to maintain at least one viable population at a minimum density of 10 adult desert tortoises per square mile within each of the six recovery units. To ensure population persistence, the recovery plan proposes 14 DWMA's connected by protected functional habitat within recovery units wherever enough extant desert tortoise habitats exists. The project site is not within critical habitat for the desert tortoise.

On February 8, 1994, USFWS published a final rule in the *Federal Register* (59 FR 5820) designating 6.4 million acres of critical habitat for the Mojave population of the desert tortoise (USFWS, 1994a). The project site is located on private property and is not within this designated area. The nearest critical habitat unit is located more than 20 miles south of the site, in Shadow Valley.

### **5.2.3.1.8 Wild Horses and Burros: Protection, Management, and Control (16 USC §1331; 43 CFR §4700)**

The Wild Free-Roaming Horses and Burros Act of 1971 protects wild, free-roaming horses and burros from capture, branding, harassment, or death. Feral burros were observed in the HHSEGS area. Wild, free-roaming herds of horses or burros will not be allowed onsite following project construction; therefore, provisions of this Act are not applicable to this project.

### **5.2.3.2 State LORS**

#### **5.2.3.2.1 California Environmental Quality Act (Public Resources Code §15380)**

The statutory provisions of the California Environmental Quality Act (CEQA) sets forth criteria for consideration of the potential impacts of a proposed project on species listed as threatened or endangered. In addition, the CEQA Guidelines include consideration of a project's potentially significant effects on species classified as threatened, endangered or "rare," as defined in the Guidelines. CEC is the state lead agency for the HHSEGS project and is responsible for ensuring that the project complies with the substantive requirements of CEQA.

#### **5.2.3.2.2 Warren Alquist Act (Public Resources Code §25000, et seq.)**

The CEC reviews the facility pursuant to its certified regulatory program under CEQA. The CEC's certification process is commonly described as "CEQA-equivalent." Preparation of this application will result in an assessment prepared by the CEC staff to fulfill the substantive requirements of CEQA.

#### **5.2.3.2.3 Native Plant Protection Act**

The Native Plant Protection Act (NPPA) of the 1977 Fish and Game Code (Sections 1900-1913) directed the CDFG to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The NPPA gave the California Fish and Game Commission the power to designate native plants as "endangered," or "threatened".

#### **5.2.3.2.4 California Endangered Species Act**

The California Legislature passed the California Endangered Species Act (CESA) in 1984, declaring: "it is the policy of the state to conserve, protect, restore, and enhance any endangered species or any threatened species and its habitat." The CESA was modeled on the federal ESA. The CESA contains similar, but not identical, definitions of endangered species, threatened species, and take.

Under the CESA, a native species "endangered species means a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range, due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease," and threatened when it "is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by the CESA" (Fish and Game Code of California, §2062 and 2067).

The term "Take" is defined in the CESA as to "hunt, pursue, catch, capture, or kill, or attempt" to do any of these activities. Unlike the federal law, a "take" under CESA does not include harm or harassment.

Plants are listed as endangered, threatened, or rare pursuant to §1904 (Native Plant Protection Act of 1977) and §2074.2 and §2075.5 (California Endangered Species Act of 1984) of the Fish and Game Code.

Species that meet the definitions of “endangered” or “threatened” must be formally added to a list of endangered or threatened species to receive protection under CESA. Candidate species are those that are under review for addition to the list of endangered or threatened species, and receive the same protection as if they were already listed once they are formally noticed as being under review.

Projects that have the potential to take wildlife species listed by the state as threatened or endangered should obtain an Incidental Take Permit pursuant to the requirements of California Fish and Game Code section 2081. For species that are jointly listed under federal ESA and CESA, projects must obtain either a Consistency Determination or an Incidental Take Permit.

In the case of a thermal power plant within the Commission’s jurisdiction, the Commission “stands in the shoes” of CDFG and the Commission’s certified regulatory program addresses the substantive requirements of CESA and the Section 2081 permitting process (meaning the Commission’s license includes the conditions that would otherwise be a part of a 2081 permit).

#### **5.2.3.2.5 California Department of Fish and Game Code §1600, Lake and Streambed Alteration Agreement**

This code regulates the alteration of the bed, bank, or channel of a stream, river, or lake, including ephemeral washes. The requirement to secure a Lake and Streambed Alteration Agreement (LSAA) applies to any channel modifications that would be required to meet drainage, transportation, or flood control objectives of a project.

The LSAA is, as the name indicates, an “Agreement,” not a permit. The LSAA process includes, among other things, notification provisions and an arbitration process to facilitate the agreement process. The LSAA includes conditions and mitigation measures that will minimize impacts to aquatic and riparian resources from proposed actions. As noted above, in the case of a thermal powerplant within the Commission’s jurisdiction, the Commission “stands in the shoes” of CDFG and the Commission’s certified regulatory program subsumes the LSAA process.

#### **5.2.3.2.6 Fish and Game Code §3503**

This code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.

#### **5.2.3.2.7 Fish and Game Code §3503.5**

This code protects all birds of prey and their eggs and nests.

#### **5.2.3.2.8 Fish and Game Code §3511**

This code identifies bird species, primarily raptors that are “fully protected.” Fully protected birds may not be taken or possessed, except under specific permit requirements.

**5.2.3.2.9 Fish and Game Code Section 3513**

This code makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird.

**5.2.3.2.10 Fish and Game Code Sections 4700, 5050, and 5515**

These codes list mammal, amphibian, and reptile species that are fully protected in California.

**5.2.3.2.11 California Food and Agriculture Code 5400, et seq.**

The State of California regulates noxious weeds under Food and Agriculture Code (FAC §5400, Division 18, Chapter 2, California Seed Law, Sections 52251 through 52515). For projects that are not subject to a certified regulatory program like the CEC's certification process, the California Department of Food and Agriculture (CDFA) would be the lead agency in California for regulated noxious weed control and prevention. Noxious weeds can be declared a public nuisance (FAC Sects. 5401, 5402). Where not preempted by the CEC, County Departments of Agriculture, led by an Agricultural Commissioner, carry out much of the inspection and enforcement work. Coordination with state and local agencies regarding noxious weeds will be conducted as part of the CEC's certification project.

**5.2.3.2.12 Porter-Cologne Act**

Pursuant to California's Porter-Cologne Water Quality Control Act (Porter-Cologne), the state regional water quality control boards (RWQCB) regulate the "discharge of waste" to "waters of the state". All parties proposing to discharge waste that could affect waters of the state must file a waste discharge report with the appropriate regional board. The RWQCB will then respond to the report of waste discharge by issuing waste discharge requirements (WDRs) or by waiving WDRs (with conditions) for that proposed discharge. Both of the terms "discharge of waste" and "waters of the state" are broadly defined in Porter-Cologne, such that discharges of waste include fill, any material resulting from human activity, or any other "discharge" that may directly or indirectly impact "waters of the state." In the case of a thermal powerplant within the Commission's jurisdiction, the Commission "stands in the shoes" of RWQCB, as it does on all state law matters and as such the RWQCB process is subsumed within the Commission's certified regulatory program.

**5.2.3.3 Local LORS****5.2.3.3.1 Inyo County General Plan**

The Renewable Energy, Rural Protection and Natural Hazards designations of the County General Plan (County of Inyo, 2010) contains specific objectives to protect the environment and natural resources. The Conservation/Open Space Element of the Inyo County General Plan (County of Inyo, 2010) contains specific objectives to protect water quality and to ensure that groundwater is withdrawn at sustainable levels pursuant to Section 1810 of the Water Code and the Inyo County Groundwater Ordinance. Chapter 8.6 of the Conservation/Open Space Element of the Inyo County General Plan describes goals and policies that apply to the management and protection of biological resources. It describes specific goals and policies for protecting areas of natural communities, including diverse types of Joshua tree woodland, special status plants and wildlife species, and for assuring a balance of protection versus use of natural resources. The project is consistent with Inyo County General Plan and Solar and Wind Renewable Energy General Plan Amendment (REGPA) policies for this area because it is a permitted use in the applicable Renewable

Energy Land Use Designation Overlay. The project is consistent with the Inyo County General Plan and the Solar and Wind Renewable Energy General Plan Amendment (REGPA). The REGPA allows for solar and wind renewable energy facilities, including solar thermal power plants, within fifteen Renewable Energy Land Use Designation Overlay zones. HHSEGS is located within Charleston View, which is a designated Renewable Energy Land Use Overlay. As such, the project may be processed, based onsite-specific studies and appropriate environmental review, pursuant to Title 21, Renewable Energy Development, of the Inyo County Code.

#### **5.2.3.3.2 Inyo County Renewable Energy Ordinance**

The purposes of the Inyo County Renewable Energy Ordinance (Inyo County Code, Ord. 1158 § 3, 2010) are to: (1) support and encourage the responsible development of its solar and wind resources to generate and transmit clean, renewable electric energy while protecting the health, safety and welfare of its citizens and its environment, including its public trust resources, by requiring that the adverse impacts of such development are avoided or acceptably mitigated; (2) recover the county's costs of increased services resulting from such development; and (3) ensure that the citizens of Inyo County equitably share in the benefits resulting from the use of such resources.

It is the stated intent of Inyo County to support, encourage and facilitate the responsible utilization of its solar and wind resources for the generation and transmission of clean, renewable electric energy and, the county encourages potential developers of such resources to work with the county and to enter into a mutually agreeable renewable energy development agreement in lieu of applying for the issuance of a renewable energy impact determination or a renewable energy permit. Under the REGPA, renewable energy facilities such as HHSEGS are permitted uses in any zoning district, and processed pursuant to Title 21 of the Inyo County Code.

#### **5.2.4 Affected Environment**

This section describes the biological conditions of the HHSEGS site, and includes: a regional overview, the vegetation types and habitat present in the project area, invasive plant species that are known to or potentially could occur, a description of wildlife typical to the area, and a discussion of specific special-status species (defined in Section 5.2.5.5.1) known to occur in the general region.

HHSEGS is located in Inyo County, California, west of Las Vegas, Nevada, and approximately 19 miles south of the town of Pahrump, Nevada. It is located along the California-Nevada border on privately owned land. Once offsite, the transmission line and natural gas pipeline are both located wholly within the state of Nevada, primarily on federal land managed by BLM, except for small segments of the transmission line (both options) in the vicinity of the Eldorado Substation, which are located within the city limits of Boulder City, Nevada.

The California Energy Commission (CEC) has exclusive permitting jurisdiction for the siting of thermal power plants of 50 MW or more and related facilities in California. The CEC also has responsibility for ensuring compliance with CEQA through the administration of the CEC's certified regulatory program. The project site is located within California. As such,

the CEC has CEQA jurisdiction over the direct, indirect, and cumulative impacts for activities on the HHSEGS project site.

The CEC has no permitting or CEQA jurisdiction over activities or portions of projects occurring in Nevada. Public Resources Code Section 21080 provides that CEQA does not apply to any project or portion thereof located in another state that will be subject to environmental impact review pursuant to NEPA or a similar state law. (See also CEQA Guidelines Section 15277).

Although the site is located in California, for the purposes of gathering information, resources from both California and Nevada were used to identify regional biological resources from in the project area. Methods employed during the surveys are summarized in Section 5.2.5. Results of the surveys are described in Section 5.2.6. Lists of the special-status plants and wildlife that potentially could occur at the site are included in Tables 5.2-2 and 5.2-3. Special-status species are defined in Section 5.2.5.1.

### **5.2.1.1 Regional Overview**

The project area at the toe of the alluvial fan complex, or bajada, extending from the Spring Mountains about 13 miles to the northeast. It occupies the east side of a mid-valley basin that runs northwest-southeast, defining the axis of the Pahrump Valley. Figures showing the location of the project and site elements are provided in Section 2.0.

This valley system includes Sandy (Mesquite) Valley to the southeast and the Stewart Valley to the northwest of Pahrump Valley. In this portion of the basin, the drainage is generally to the west and northwest to Pahrump Playa that drains about 3 miles to the west-northwest. Elevation of the valley floor above mean sea level ranges from 2,515 feet at Pahrump Dry Lake to about 2,655 feet in the southwestern part of the basin along Tecopa Road. The HHSEGS site slopes gently with the highest point in the southeast corner and the lowest along the northwest boundary closest to the playa. Sandy alluvium extends onto the HHSEGS site from the northeast, and larger ephemeral washes enter the site from the east near state line.

The unincorporated area near the HHSEGS site is sparsely populated. The closest community is the town of Pahrump, approximately 19 miles north of the site on the Nevada side of the state line. The community of Sandy Valley, Nevada, lies 19 miles to the southeast and the community of Tecopa, California, is located 21 miles to the southwest. Greater Las Vegas lies about 45 miles east of the project area in the adjacent Las Vegas Valley.

Adjacent public lands on the California side of the state line are not identified as protected areas or as BLM areas of critical environmental concern (ACECs). Portions of three wilderness areas administered by the BLM lie in California within 10 miles of the HHSEGS site: 1) the Nopah Wilderness Area boundary is approximately 4 miles to the west, 2) the Pahrump Valley Wilderness Area boundary is approximately 3 miles south of the site, and 3) the South Nopah Wilderness Area boundary is approximately 8 miles to the southwest. Public lands administered by the BLM are present on the Nevada side of the state line adjacent to the HHSEGS but there are no BLM wilderness areas located in Nevada adjacent to the HHSEGS site.

Biogeographically and climatically, the project area lies within the Mojave Desert, and the Pahrump Valley climate is typical of the northeastern Mojave Desert. It is arid with extreme fluctuations in daily and seasonal temperatures. The Pahrump average monthly high and low temperature and average monthly precipitation are shown for the cool season (January to March) and the hot season (July to September) in the following summary (WRCC, 2011).

**Average Monthly Precipitation and Temperature in the Pahrump Area**

<b>Temperature and Precipitation</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Jul</b>	<b>Aug</b>	<b>Sep</b>	<b>Annual Average</b>
Average High (°F)	57.6	62.4	67.9	101.2	99.8	92.3	78.6
Average Low (°F)	27.3	32.2	37.2	67.2	65.7	56.7	45.6
Precipitation (in.)	0.65	0.88	0.58	0.33	0.35	0.3	4.83

Most rainfall occurs from November through March (WRCC, 2011). Snow is uncommon. Late summer rainfall is a regular occurrence, with the annual average for July through September approximately 0.3 inch each month (WRCC, 2011). Verified rainfall data for the 2010-2011 winter rainfall season are not yet available online; however, preliminary records for precipitation for the Las Vegas area show that 2.61 inches fell from July to December 2010, including 1.77 inches in December (NWS, 2011). Runoff from the December rainfall was enough to generate urban flooding. The degree of vegetation response to these rainfall events in fall 2010 and spring 2011 was observed to be above average in terms of germination and growth.

In terms of surface water hydrology, the Pahrump Valley has no surface outlet to the ocean, and it is a part of the southwestern hydrographic Great Basin. The white to pale brown, silty soils of Pahrump Playa are typical of the oxidized, carbonate- and salt-rich sediments of playas in the Mojave Desert. Basin soils that surround the area, including the project site, are carbonate-rich, fine-grained alluvial silts and sands (Lundstrom et al., 2002). Sandy and gravelly soils are more common on higher ground. On the eastern portion of the HHSEGS, alluvial sands eroded from stabilized sand dunes on the Nevada side of the border mantle the fine grained basin fill. These coppice sand dunes (vegetated sand mounds) lie along a single scarp associated with a low-angle normal fault that brings groundwater close to the surface (Lundstrom et al., 2002; Quade et al., 1995). This dune complex forms a discrete row of sand dunes east of the state line, with additional rows farther to the east following other, sub parallel fault scarps of the Stateline Fault System.

The vegetation of the Pahrump Valley is composed of natural vegetation types, except in developed areas, where ruderal “weedy” or landscaped vegetation is present. In the vicinity of Pahrump Playa the terrain is barren in the lowest areas, with alkali sink scrub on the lower shoreline of the dry lake. Two natural vegetation types, Mojave Desert scrub and shadscale scrub, are found on the project site and in the 1-mile buffer, and these include a number of associated shrub species. Shadscale scrub is common on the pale-colored, carbonate-rich silty soils of the basin fill. Mojave Desert scrub is common in areas with sandy to gravelly soils with better drainage. Plant communities recognized by CDFG as “sensitive natural communities” are not present onsite or within the 1-mile buffer (CDFG, 2011a). A list of special-status plants with the potential to occur within the project area is

provided in Table 5.2-2. A list of plant species that are characteristic of this arid region is presented in Table 5.2-3. Vegetation types present within the site are described in more detail in Section 5.2.6.3.

Wildlife species typical of eastern Mojave Desert valleys are expected to occur in the project area. The region is home to prairie falcons, burrowing owls, desert tortoises, various snake species, desert horned lizards, collared and leopard lizards, kangaroo rats, Mojave River and Amargosa voles, bobcats, kit foxes, mountain lions, and bighorn sheep. Smaller animals such as lizards and rodents comprise much of the prey base for predators such as raptors and larger mammals. The paucity of trees in the desert valleys limits the nesting opportunities for many bird species. Larger mammals, such as big horn sheep and mountain lions use the upper elevation in taller mountains of the region. Many species are restricted to small areas of habitats around springs or wetlands, and do not use the vast drier habitats around them. A list of common species expected or observed at the site is provided in Table 5.2-4.

The project is located within a valley bottom at the toe of large overlapping alluvial fans emanating from the Spring Mountains to the east and northeast, and lies within the Pahrump Hydrologic Unit, a 140,196-acre watershed in the Pahrump Valley (URS, 2011). The watershed is a closed basin, with surface runoff at the HHSEGS flowing to Pahrump Playa. The site contains substantial disturbed areas; dirt roads have been constructed on the perimeter of subdivided parcels within the project area and may interfere with the natural hydrology (URS, 2011).

Streams, washes and playas are dry most of the year, with surface water present only ephemerally in response to storm events. There are no wetlands mapped by the National Wetland Inventory (NWI) within the project boundaries (USFWS, 2011). The Pahrump Playa located downstream of the project site is mapped by NWI as a lake (URS, 2011).

## **5.2.5 Methods**

Methods employed during reconnaissance-level and species-specific protocol-level surveys for vegetation, invasive weeds, special-status plants, special-status wildlife species, and wetlands and water delineation are described in the following sections.

### **5.2.5.1 Definition of Terms**

Many agencies and non-governmental organizations maintain lists of species that provide information for land management planning and conservation efforts. As used in this AFC, the term “special-status” species does not mean species listed as threatened, endangered or candidate species under the federal ESA or CESA. Instead, the term “special-status” species is a more expansive term, employed by many agencies for the purposes described in this document. The term special-status has no relationship to the legal status of any particular species. The term “special-status” as applied to plants and wildlife, in this document, is described below.

### **5.2.5.2 Special-status Plants**

Protocol-level special-status plant surveys were conducted at the HHSEGS site during fall 2010 and spring 2011. Eight plants were identified that were included in the CNDDDB

“Special Plants” (CDFG 2011a) list. None of the “special-status” plant species identified onsite are federally or state (California) listed as threatened, endangered, or rare, or candidates for federal or state listing.

The California Natural Diversity Database (CNDDDB) (CDFG, 2011e) is a voluntary, positive reporting database, meaning that botanists and other professionals must pro-actively fill out forms and provide information for the data to be a candidate for inclusion in the database. Species are added to the CNDDDB by consultants, resource agency staff, non-governmental staff, and other volunteers. The CNDDDB’s subscription-based service is used by most environmental professionals, though the CNDDDB “Rarefind” database can be queried to identify species reported to occur, based on record submitted to the database and added to the inventory. The CNDDDB is a useful tool, but is not a legal authority.

The California Native Plant Society is involved in the database and the ranking system used in the document (CDFG 2011a). As that document explains:

In March, 2010, DFG changed the name of “CNPS List” or “CNPS Ranks” to “California Rare Plant Rank” (or CRPR). This was done to reduce confusion over the fact that CNPS and DFG jointly manage the Rare Plant Status Review groups (300+ botanical experts from government, academia, NGOs and the private sector) and that the rank assignments are the product of a collaborative effort and not solely a CNPS assignment. The old name gave the false impression that CNPS solely assigned the ranks and had excessive influence on the regulatory process. We did this in consultation and agreement with the CNPS Executive Director and the CNPS Board of Directors. Nothing about the actual process of rare plant review or rank assignment has changed and the same committee of experts from many organizations in addition to DFG and CNPS still review each change and ultimately assign the ranks. (CDFG 2011a; Footnote 1, p. ii and Footnote 2, p. vi.)

More information on plant species identified during the surveys is included in Section 5.2.6.6.2 and Appendix 5.2G.

### **5.2.5.3 Special-status Wildlife**

Similar to plants, professionals rely upon a database for “Special Animals” list (CDFG, 2011d). Animals included on this list are in the CNDDDB inventory. Species on the Special Animals list are referred to in this report as special-status species. Special-status wildlife is an informal term used by CDFG. Special-status species and species of special concern are not defined in the federal or state Endangered Species Acts. These terms commonly refer to species that are declining or appear to be in need of conservation.

### **5.2.5.4 Compilation of Lists of Potentially Occurring Species**

To guide the comprehensive field survey work, tables of special-status plant and animal species that potentially could occur onsite were compiled based on the following references: project-specific onsite field surveys; the California Natural Diversity Database (CDFG, 2011c); California Native Plant Society’s (CNPS) Electronic Inventory (CNPS, 2011); and informal consultations with agency personnel and local experts. The site is located in

California, but due to its' close proximity to Nevada, regional sources in Nevada were also consulted (Nevada Natural Heritage Program (NNHP) 2011).

The comprehensive lists of special status species used to evaluate species' presence and guide the surveys are provided in Tables 5.2-2 through 5.2-4. The known locations of special-status plant and wildlife species identified in the CNDDDB and NNHP records within a 10-mile range of the project site are shown on Figure 5.2-1, Special-status Plants, and Figure 5.2-2, Wildlife (all figures are provided at the end of this subsection).

### 5.2.5.5 Vegetation and Special-status Plants

#### 5.2.5.5.1 Assessment of Special-status Plant Species Occurrence

As defined in the CDFG *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG, 2009), a plant is considered to be of special status if it met one or more of the following criteria: Federally- or state-listed, proposed, or candidate for listing, as rare, threatened or endangered (USFWS, 1996, 2006; CDFG, 2011e) or

- Special Plant as defined by the CNDDDB (CDFG, 2011b) or
- Species considered by the CNPS to be "rare, threatened or endangered in California" (Lists 1A, 1B and 2) (CNPS, 2011)).

Although the HHSEGS site is located on private land in California, resources from Nevada regarding special-status plant species known to occur in the area were also consulted (BLM, 2011; Nevada Natural Heritage Program (NNHP) database (NNHP, 2010; 2011).

The potential for special-status species occurrence within the project area was assessed by researching the special-status plant species with potential to be found within the project site, compiling information on their conservation status, distributions, blooming times, habitat characteristics, and known presence in the project region, including nearest known locations.

A species was determined to have potential to occur within the project area if its known or expected geographic range includes the project area or the greater vicinity of the project area, and if its known or expected habitat is found within or near the project area.

Table 5.2-2 lists the special-status plants with potential to occur onsite.

#### 5.2.5.5.2 Vegetation Characterization Methods

The principle references used in naming and classifying vegetation include *Terrestrial Vegetation of California* (Barbour et al., 2007) and *A Manual of California Vegetation* (Sawyer et al., 2009). The method of vegetation classification presented in Sawyer et al. (2009) represents the vegetation classification standards for large-scale vegetation maps recently adopted by the state. These state standards meet the National Vegetation Classification System standards followed by federal agencies (CDFG, 2011a). *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986) and *Mojave Desert Ecosystem Program: Central Mojave Vegetation Database* (Thomas et al., 2004) were also consulted.

Site-specific information on species composition and habitat characteristics was used to determine which vegetation types were present within the project area. Dominant and subdominant plant species identified within each plant community were noted in the field during the spring 2011 protocol-level surveys. Vegetation types within the HHSEGS

boundary, the 250-foot survey buffer, and the 1-mile buffer were mapped in the field using aerial photographic base maps. Vegetation types identified during the surveys are described in Section 5.2.6.3. The location and extent of all plant communities identified during the surveys and mapped onsite is depicted in Figure 5.2-3. Photographs of the two vegetation types identified onsite are also provided at the end of this section in Figure 5.2-4.

#### **5.2.5.5.3 Invasive Weed Assessment and Survey Methods**

Invasive weeds are defined as species of non-native plants that are included on the weed lists of the California Department of Food and Agriculture (CDFA) (2010), and the California Invasive Plant Council (Cal-IPC, 2006). In addition to these sources, the Mojave Weed Management Area (MWMA) website was also consulted to assemble a list of target noxious weeds to include in surveys (MWMA, 2011). Several invasive weeds are known to occur in the project vicinity. A list of invasive species that potentially could occur in the project site is provided in Table 5.2-5. The locations of noxious weed species identified during the field surveys are shown on Figures 5.2-5a through 5.2-5g.

#### **5.2.5.5.4 Rare Plant Protocol Survey Methods**

Special-status plant species surveys were performed in fall 2010 for later-blooming plants and in spring 2011 for early-season species. Protocol-level surveys of the 250-foot buffer and reconnaissance-level surveys of the 1-mile buffer were performed in spring 2011. The botanical surveys for late-season special-status plants were conducted October 25 through 30, 2010. The spring 2011 special-status plant surveys of the HHSEGS site and the 250-foot buffer were performed on April 16-19, 21, 23, and 26-30, 2011. Surveys of the 1-mile buffer were completed in fall 2010, and during April and May, 2011.

Protocol-level surveys were floristic in nature and followed the protocols and recommendations of the California Department of Fish and Game (2009), USFWS (1996), and the California Native Plant Society (CNPS, 2001). The surveys for special-status plants followed procedures outlined for the Intuitive Controlled Approach, as described in Attachment 1 of the *Best Management Practices and Guidance Manual: Desert Renewable Energy Projects* (REAT Manual) (REAT, 2010). The REAT Manual incorporates guidance from the CEC, CDFG, BLM, and USFWS on special-status plant surveys of renewable energy projects. When considered together, results of the fall 2010 and spring 2011 surveys fully satisfy the protocols and guidelines.

Ann Howald, of GANDA, was the lead field supervisory botanist for the fall 2010 and spring 2011 special-status plant surveys. The resumes for the botanists that performed the surveys are provided in Appendix 5.2A, Botany Team Resumes. The HHSEGS site and 250-foot survey buffer and other project elements included in the special-status plant surveys are shown in Figures 5.2-6a through 5.2-6i. Reference site visits were conducted during fall 2010 and spring 2011. A summary of the reference site visits is provided in Table 5.2-6.

The key elements of the special-status plant survey methods are listed below:

- Surveys were floristic in nature, meaning that all species observed were identified to the degree necessary to determine if the species has special-status.
- Surveys were conducted by qualified botanists, with experience in the Mojave Desert.

- Reference sites were visited for species with local and accessible recorded localities to train all surveyors on the characteristics necessary for the sight identification of special-status plants.
- The field survey was conducted during the time all or most potentially occurring spring-blooming special-status plants were blooming or identifiable from other characteristics.
- In fall 2010, surveys for late-blooming special-status plant species were completed within the HHSEGS site boundary (excluding the 180-acre temporary construction area, and the 250-foot buffer).
- In spring 2011, the HHSEGS site (including the 180-acre temporary construction area and the 250-foot buffer) were surveyed for special-status plant species. The 1-mile buffer was assessed for special-status species potential at a reconnaissance-level and vegetation within the buffer was mapped.
- The existing site network of unpaved roads on section and half-section lines were used to help demark survey sub-areas and for general access to the site
- The survey effort was organized by quarter-sections, meaning that one crew worked within one quarter-section until surveys of this area were completed before moving to the next quarter-section.
- Botanists walked through all parts of their assigned sub-areas, carefully searching for suitable habitat and special-status plants.
- All habitat types were examined onsite and in the 250-foot buffer, but the most time was spent examining habitats with greater likelihood of supporting special-status plants.
- Location, abundance, and habitat information were collected for all special-status plants and non-native invasive plants (weeds). Data were recorded on Trimble GPS units with project-specific data dictionaries, and backup data were collected on paper data sheets.
- Vegetation types were characterized and mapped within all project components, including the 250-foot buffer and 1-mile buffer.

#### **5.2.5.5.5 Special-status Survey**

Surveys for special-status plants were conducted at the HHSEGS site in fall 2010 for late-season special-status plant species, and in spring 2011 for species that are in identifiable condition during the early-season.

Floristic surveys require that species be identifiable to the degree necessary to determine whether species have any conservation status. Based on vegetation response observed during both survey periods, rainfall during the fall 2010 and spring 2011 survey periods was determined to be adequate to support the growth of annual and perennial herbaceous plants. When viewed together, the fall 2010 and spring 2011 surveys satisfy special-status plant survey protocols and recommended guidelines.

#### **5.2.5.6 Wildlife**

Pre-field and in-field investigation methods were employed to assess the wildlife resources using the HHSEGS site. Pre-field methods collected information about the natural

communities in the area and records of sightings to identify wildlife species with potential to occur on the site or to use the site. In-field surveys of various protocols identified species present on the site, habitats and sign of various species.

#### **5.2.5.6.1 Pre-field Investigation and Occurrence Potential**

Information acquired from the CNDDDB, BLM, USFWS, CDFG, and other sources resulted in a list of special-status wildlife species whose occurrence was previously recorded or observed during biological surveys at, or adjacent to, the project site (Table 5.2-4). The potential for each of these species to occur onsite is dependent on available suitable habitat at, or adjacent to, the project site. The locations of special-status wildlife species identified during the database query are shown in Figure 5.2-2.

Except for the desert tortoise, there are no wildlife species federally listed or state-listed as threatened, endangered, or candidate species on the HHSEGS site. During the literature search and biological field surveys, 36 special-status wildlife species, including 5 insect, 3 fish, 2 reptile, 18 bird, and 8 mammal species were identified as known to be present or potentially occurring within or in the vicinity of the project area. Many of these species are restricted to habitats that do not occur on the HHSEGS Site and, therefore, they have no potential to occur on the site (see Section 5.2.6.7) The special-status species' legal status; natural history; threats; and evaluation for having a low, moderate, or high potential of occurrence at the project site are summarized in Table 5.2-7 and more information is presented in Appendix 5.2B.

#### **5.2.5.6.2 Protocol-Level Desert Tortoise Survey Method**

In accordance with USFWS presence/absence survey protocol for the desert tortoise (USFWS, 1990, 1992), Sundance Biology, Inc., wildlife biologists conducted pedestrian transect surveys of the project area between April 13, 2011, and May 18, 2011. The wildlife biologists' resumes are provided in Appendix 5.2C.

The project area is defined as any area that will be cleared or partially cleared, with vehicles on or adjacent to it, temporarily or permanently used for equipment or materials storage, loading or unloading, or sites where soils/vegetation is damaged, fragmented, or disturbed (for example, driving overland). The HHSEGS site covers approximately 3,277 acres, or approximately 5.12 square miles. According to the CDFG, and USFWS guidelines (CDFG, 1995; USFWS, 2010), the HHSEGS site, a 150-meter burrowing owl buffer zone (652 acres) described in section 5.2.5.6.3), and five ZOI transects out to 1-mile from the project boundary were surveyed for desert tortoises and tortoise sign (Figure 5.2-7.).

Surveys on the HHSEGS site were a set of walking transects that covered the 3,280 acres. Transect spacing was at 30 feet between transect centerlines (100 percent coverage), the standard width for desert tortoise presence/absence surveys according to the cited protocol (USFWS, 1990, 1992).

ZOI transect surveys around HHSEGS were conducted in suitable tortoise habitat along all sides of the main project site at 200 meters, 400 meters, 600 meters, 1,200 meters, and 1,600 meters from the survey area perimeter. No ZOI transects were conducted south of the site because of the presence of private residences and unoccupied private land.

Wildlife sign within the project boundary, the 150-meter burrowing owl buffer, and along the ZOI transects was recorded using Lowrance iFinder handheld global positioning system (GPS) units, which are accurate to within 3 meters.

During the desert tortoise surveys, incidental observation data for other wildlife species were also recorded. Observed species are listed in Table 5.2-4.

#### **5.2.5.6.3 Burrowing Owl Survey**

Survey for burrowing owl and burrowing owl sign was conducted as part of the desert tortoise survey. In addition to a survey of the project site, a 150-meter buffer (652 acres) outside the proposed project boundary was surveyed for burrowing owl. All occurrences of burrowing owl and burrowing owl sign identified on the project site, in the 150-meter burrowing owl buffer zone or in the desert tortoise ZOI survey transects were recorded and are shown in Figure 5.2-8.

#### **5.2.5.6.4 Avian Point Count Survey Methods**

The fixed-point bird use surveys estimate the use of the study area by birds. Fixed-point surveys (variable circular plots) were conducted using a BLM avian survey protocol based on methods described by Reynolds et al. (1980). The BLM protocol requires that eight point counts be conducted per square mile, that each point be surveyed weekly for 4 weeks between sunrise and four hours after sunrise, that each point count survey be 10 minutes in duration, and that each point count circle have a 100-meter radius and be at least 250 meters from the next circle. As necessary, the point count surveys can be extended into a fifth hour. All birds seen during each 10-minute fixed-point survey were recorded.

Two CH2M HILL biologists completed four rounds of avian point count surveys at 39 survey points on the HHSEGS project site between March 23 and April 14, 2011. These point counts were located on transect lines that run across the boundaries between sections within the HHSEGS project site (see Figure 5.2-9).

#### **5.2.5.6.5 Golden Eagle Nest Search Methods**

The golden eagle habitat within, and adjacent to, the project area may provide suitable foraging habitat for this species. Golden eagle nesting habitat is not available on the project site but may be available in the higher elevations within 10 miles of the site. Helicopter surveys of golden eagle and raptor nests are precluded because Nelson's bighorn sheep lambing grounds occur near the potential eagle nesting territories in the Nopah Range to the west and the Kingston Range to the south of the HHSEGS site.

Consequently, over a 2-day survey period, a wildlife biologist explored on foot and by vehicle the accessible portions of the 10-mile buffer that seemed to provide the most appropriate nesting habitat for golden eagles (see Figure 5.2-10). These areas included sections of the Nopah Range, small ranges in the California Valley, and parts of the Pahrump Valley Wilderness. The report is attached as Appendix 5.2D.

#### **5.2.5.7 Wetland and Other Waters Delineation**

Field work to delineate wetlands and other waters onsite was performed between January 31 and February 4, 2011 (URS, 2011). The wetland delineation report is provided as Appendix 5.2E. The locations of the features mapped during the wetland delineation are

shown on Figures 5.2-11 and 5.2-12. A summary of the methods used to identify and map wetlands and other waters within the project site is presented below.

To evaluate site conditions and identify potential USACE jurisdictional wetlands and other waters in the project area, the following were reviewed:

- Recent aerial photography with 1-foot topographic contours (VTN, 2010)
- The Caldera Springs, California; Mound Springs, California; and Stump Spring, Nevada, 7.5-minute quadrangles (USGS, 2011)
- Soil surveys of surrounding counties (NRCS, 2011; note soils within the project area have not been mapped by NRCS).

Field surveys were conducted and jurisdiction was evaluated using standard methods described in the following manuals or guidance:

- Field Guide for Wetland Delineation: 1987 Corps of Engineers Manual (USACE, 1987)
- Interim Regional Supplement to the USACE Wetland Delineation Manual: Arid West Region (USACE, 2006)
- Final Summary Report: Guidelines for Jurisdictional Determinations for Waters of the United States in the Arid Southwest (USACE, 2001)
- Coordination on Jurisdictional Determinations under Clean Water Action Section 404 in Light of the SWANCC and Rapanos Supreme Court Decisions (USACE, 2007)
- A Field Guide to the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States (USACE, 2008a)

USACE jurisdiction was evaluated based on practices consistent with the Supreme Court's decision in *Rapanos v. United States* (USACE, 1987; 2007; and 2008b). Delineated streams were considered to be regulated under the CWA if they exhibited presence of an ordinary high water mark and hydrologic connectivity to the Pahrump Playa.

Data recorded onsite included width and depth of the ordinary high water mark, substrate characteristics and vegetation. Photographs were taken upstream and downstream at survey points. Spatial data were recorded on Trimble GeoXH GPS units with sub-meter accuracy. GPS data collected in the field were exported to GIS and overlaid onto orthorectified aerial photographs (URS, 2011).

Subsequent to the delineation, the boundary of the project site was increased to include a temporary construction area on the west side of the site. Additional data will be collected within this temporary construction area and presented in a separate report.

## 5.2.6 Results

### 5.2.6.1 Overview of Survey Results

Surveys for special-status plant and wildlife species, noxious weeds, vegetation, wetlands and waters of the U.S. were performed at the HHSEGS site between fall 2010 and spring

2011. The area included in these surveys and assessments included the site, discipline-specific site buffers, and a 1-mile buffer surrounding the site.

The only federally or state-listed species identified on the site is the desert tortoise (*Gopherus agassizii*). Two live tortoises were observed onsite during protocol-level surveys and 13 more were identified offsite within the Zone of Influence (ZOI) transects.

One burrowing owl (*Athene cunicularia*), a CDFG species of special concern, and eight active burrows with burrowing owl sign were observed at the site. Two other burrows were identified in the ZOI. Several other special-status avian species were observed foraging onsite, including the golden eagle (Table 5.2-8). No live American badgers were observed during the surveys. Eleven American badger burrows (*Taxidea taxus*), a CDFG species of concern, were identified onsite, and one burrow was found in the ZOI (Figure 5.2-8).

Two natural vegetation types occur onsite: Mojave Desert scrub and shadscale scrub. These are common plant community types throughout the Mojave Desert. They are not CDFG “sensitive natural communities.”

Eight special-status plants were identified onsite, none of which are federally or state-listed (California) as threatened, endangered, or rare. In addition to special-status plant surveys onsite, focused offsite surveys were also conducted in 2011 within portions of Inyo County, and in the southern Pahrump, Chicago, and Stewart valleys in California and Nevada, nearby the HHSEGS site. Several special-status plant localities were identified during the offsite surveys. Prior to these surveys, areas near the HHSEGS site had not been extensively botanized, and few records of special-status plants exist from these locations. Results of the offsite surveys substantially increases the number of special-status plant occurrences in the project region and expands the previously known distributions of many of these special-status plant species.

Eleven species of invasive, non-native plants (weeds) were documented from with the site boundary and the 250-foot survey buffer.

Results of the field surveys and assessments for each biological resource category are described in the following subsections. Figures depicting the locations of vegetation, special-status species, noxious weeds, and wetlands and waters of the U.S. identified during the surveys, and supporting data tables, are provided at the end of the section.

### 5.2.6.2 Federally Listed Desert Tortoise Protocol Survey

Results for of the desert tortoise protocol survey are summarized below.

**Summary of Desert Tortoise Survey Results**

Survey Area	Live Tortoise	Burrows	Scat Sites	Sets of Tracks	Other
HHSEGS Site	2	58	12	6	1 skeletal remains
150-m Burrowing Owl Buffer Area	6*	15	1	3	
Offsite ZOI	7	21	5		

\*Includes two juveniles

The shell-skeletal remains found on the site were estimated to be between 2 to 4 years since the time of death. Locations of results appear in Figure 5.2-7. Recent sign was found throughout the site (Table 5.2-9) but was concentrated in the central and eastern portions, predominantly in creosote bush scrub. Evidence of tortoise activity diminished from east to west on the project site. Sign was scattered in a similar pattern in the ZOI with recent sign found mostly to the north and east of the site, predominantly in creosote bush scrub. There is currently a moderate to low density population of tortoises utilizing the project site. (Sundance, 2011)

Density estimates for tortoises using the site, were calculated from the Table 3 calculations from the USFWS *Desert Tortoise Pre-project Survey Protocol 2010 Field Season*. Calculations are summarized in the following table. (Sundance, 2011)

Estimated Density of Desert Tortoise on the Project Site			
	Abundance	Density	
N =	13.8	0.9 per km <sup>2</sup>	2.3 per mi <sup>2</sup>
Lower 95% CI =	5.75	0.4 per km <sup>2</sup>	1.0 per mi <sup>2</sup>
Upper 95% CI =	33.02	2.1 per km <sup>2</sup>	5.4 per mi <sup>2</sup>

CI =Confidence Interval

In general, the habitat on the site appeared to be low quality for desert tortoise (Sundance, 2011). The report is provided as Appendix 5.2F.

### 5.2.6.3 Habitat and Vegetation Communities

Two common natural vegetation types occur within the HHSEGS boundary: Mojave Desert scrub, which generally dominates the eastern half of the site, and shadscale scrub, which occurs throughout the western half of the site. The approximate limits of the vegetation onsite are depicted in Figure 5.2-3. Photographs of the natural vegetation types identified onsite during the surveys are provided in Figure 5.2-4. Numerous small washes occur scattered throughout the site and 250-foot survey buffer. No distinctive wash vegetation was observed on the site or within the buffer.

Disturbed (ruderal) vegetation was identified in two areas onsite and in the 250-foot buffer. The first is within the southern boundary of the site, near an abandoned orchard, and the second is along Tecopa Road in the southeastern corner of the site (Figure 5.2-3). This disturbed (or ruderal) vegetation is not a natural vegetation type. Tamarisk (*Tamarix ramosissima*), a noxious weed, was identified within the 250-foot buffer south of Tecopa Road, within this habitat. Peach trees (*Prunus persica*) and planted blue Arizona cypress (*Cupressus arizonica* var. *glabra*) occur within the abandoned orchard. These are the only trees observed onsite.

Mesquite thickets dominated by honey mesquite (*Prosopis glandulosa*) with a shrub-like growth form occur on the sandy dunes within the 1-mile buffer, east of and adjacent to the HHSEGS site (Figure 5.2-3).

A list of all plants observed during the surveys is provided in Table 5.2-3, at the end of this section. Representative photographs of the two natural vegetation types identified onsite are

provided in Figure 5.2-4, Special-status Plants and Vegetation Types. Additional photographs of the vegetation observed during the surveys will be provided in the detailed technical botanical survey report (in preparation).

#### **5.2.6.3.1 Mojave Desert Scrub**

Mojave Desert scrub is dominated by evergreen and drought-deciduous shrubs 1 to 4 feet in height and is common throughout much of the Mojave Desert from 2,000 to 3,500 feet in elevation. It is found on many different soil types, on level and sloping terrain. The most common dominant shrubs are creosote bush (*Larrea tridentata*) and burrobush (*Ambrosia dumosa*).

Mojave Desert scrub is the dominant vegetation in the eastern half of the site (Figure 5.2-3). Within the site and the 250-foot buffer, it occurs mainly in sandy-gravelly gray or brown soils. Along with creosote bush and burrobush, associates include four-wing saltbush (*Atriplex canescens*), and rabbit-thorn (*Lycium pallidum* var. *oligospermum*). In some areas, rabbit-thorn dominates and creosote bush is an associate. The understory consists of a large variety of mainly native annual forbs, a few species of native perennial grasses, and a few species of non-native grasses. Included within this type are large pebble flats that can be sparsely vegetated or densely invaded by the non-native invasive plant, halogeton (*Halogeton glomeratus*). Non-native invasive plants are locally common along roads, especially red brome (*Bromus madritensis* ssp. *rubens*), halogeton, and African mustard (*Malcolmia africana*).

#### **5.2.6.3.2 Shadscale Scrub**

Shadscale scrub is composed of low-growing, gray-green shrubs with some tolerance for alkaline conditions. It is widespread in the sinks and basins of the northern Mojave Desert. It typically grows in pale, silty soils, usually in valleys, sometimes on the higher margins of dry lakes.

As shown in Figure 5.2-3, the western half of the site and the 250-foot buffer is dominated by shadscale scrub consisting of densely spaced gray-green evergreen shrubs, mainly 2 feet or less in height. The dominant shrub is shadscale. Associated shrubs include: winterfat (*Kraschenninikovia lanata*), desert allysum (*Lepidium fremontii*), Anderson's boxthorn (*Lycium andersonii*), rabbit-thorn, Emory's globemallow (*Sphaeralcea emoryi*), and Prince's plume (*Stanleya pinnata*). The understory varies from sparse to dense, depending on local hydrology. Drier sites are often barren, except for scattered annuals such as Pahrump Valley buckwheat and showy gilia (*Gilia cana*). Low areas where water ponds during the rainy season are densely vegetated with hog potato (*Hoffmannseggia glauca*), freckled milk-vetch (*Astragalus lentiginosus* var. *fremontii*), African mustard, and red brome. Weeds are abundant in shadscale scrub in ponded water areas, and along roads.

#### **5.2.6.3.3 Mesquite Thicket**

The vegetation within the 1-mile buffer was mapped during the reconnaissance-level survey. Mesquite thickets dominated by honey mesquite (*Prosopis glandulosa*) occur on the sandy dunes within the 1-mile buffer, east of and adjacent to the HHSEGS site (Figure 5.2-3). These thickets do not support mesquite with a single main trunk or arborescent growth form. They are formed on large sandy dunes with unstable soils, and are not associated with washes. They do not qualify as mesquite bosque and are thus not a CDFG sensitive natural community type known from the project region.

#### 5.2.6.4 Cactus and Yucca Counts

Cacti were rarely observed and are uncommon at the HHSEGS site and within the 250-foot buffer. Fewer than 100 individuals of cacti were observed during the protocol-level surveys. All of these were of common and widespread species such as: beavertail (*Opuntia basilaris*), silver cholla (*Opuntia echinocarpa*), and pencil cholla (*Opuntia ramosissima*). No yucca occur on the site or within the 250-foot buffer.

#### 5.2.6.5 Invasive Weeds

Eleven species of invasive non-native plants (weeds) were documented at the HHSEGS site and within the 250-foot buffer during protocol-level special-status plant surveys (Table 5.2-10). These include: Russian knapweed (*Acroptilon repens*), red brome, cheatgrass (*Bromus tectorum*), purple mustard (*Chorispora tenella*), field bindweed (*Convolvulus arvensis*), halogeton, African mustard, Russian thistle (*Salsola* spp.), tumble mustard (*Sisymbrium altissimum*), London rocket (*Sisymbrium irio*), and tamarisk. Maps showing the location and abundance of noxious weeds are provided in Figures 5.2-5a through 5.2-5g.

Table 5-2-8 lists the number of weed locations recorded for each species, by abundance category. Most of the weed species encountered during surveys are annual plants, so their abundance and distribution within the site and 250-foot site buffer will vary from year-to-year, depending on local soil moisture and disturbance levels, and the dispersal ability of each weed.

Non-native invasive plants are locally common along roads, especially red brome, halogeton, and African mustard. Large pebble flats within the Mojave Desert scrub can be densely invaded by the non-native invasive plant, halogeton. Weeds are also abundant in the shadscale scrub in low-lying areas that retain rainwater for longer periods, and along roads.

A summary of each weed species identified during the 2011 protocol-level surveys is included in the following section.

##### 5.2.6.5.1 Russian Knapweed (*Acroptilon repens*)

Russian knapweed is more common in northern California and the Great Basin, but also occurs in the Mojave Desert and other parts of California. It invades agricultural lands and roadsides. Russian knapweed was found in two locations at the HHSEGS site. The first site is located in the abandoned orchard and the second is along one of the interior site roads (Table 5.2-10, Figure 5.2-5a). Russian knapweed was not observed within the 250-foot buffer.

##### 5.2.6.5.2 Red Brome (*Bromus madritensis* ssp. *rubens*)

Red brome is a widespread weed throughout most of California. The distribution of red brome in the Mojave Desert is limited by dry conditions, but in moister locations it can grow very densely and result in troublesome ecological effects, which include extreme reduction of the native flora, including annuals and shrubs (Brooks, 2000). Control methods are limited in effectiveness, and most are not practical for large-scale or wildland use (Brooks, 2000).

Within the HHSEGS site and the 250-foot buffer, red brome was abundant and widespread (see Figure 5.2-5b); it was found in 218 locations. It was most abundant in moist places and around the bases of shrubs. No specific disturbance factors were associated with red brome.

#### **5.2.6.5.3 Cheatgrass (*Bromus tectorum*)**

Cheatgrass is widespread, but uncommon, in the Mojave Desert, where adverse ecological effects from this species have not been documented. It is a serious weed in the Great Basin, where it changes the structure of sagebrush scrub and leads to increased frequency of range fires (Young, 2000).

Cheatgrass was found in 21 locations, scattered throughout the western half of the site (Figure 5.2-5c). Most of these locations had a low number of individuals. Cheatgrass was sometimes associated with roads.

#### **5.2.6.5.4 Purple Mustard (*Chorispora tenella*)**

Purple mustard is uncommon in California. It is usually associated with heavily disturbed agricultural areas. Within the site boundary, it was found in two locations, in low abundance (Figure 5.2-5a). These areas were low-lying and wetter than the surrounding habitat.

#### **5.2.6.5.5 Field Bindweed (*Convolvulus arvensis*)**

Field bindweed is a very deep-rooted perennial that invades agricultural fields and roadsides and is difficult to control. It was found in one location in low abundance within the 250-foot buffer (Figure 5.2-5a).

#### **5.2.6.5.6 Halogeton (*Halogeton glomeratus*)**

Halogeton is a CDFA "A-rated" weed, meaning that eradication is a priority (CDFA, 2010). Halogeton is toxic to livestock, especially to sheep. Many control methods have been tried to combat the enormous infestations in the Great Basin, but poor rangeland management over many years has allowed this species to become so widespread that some states consider it ineradicable. It infests many thousands of acres in Nevada, yet is not a rated weed in that state.

Halogeton is abundant and widespread in the western two-thirds of the HHSEGS site and the 250-foot buffer. It is more common in shadscale scrub than in Mojave Desert scrub. It is especially dense along roadsides, but also forms dense stands on gravel flats where no source of disturbance is apparent. Within the site, 109 locations were mapped (Figure 5.2-5d), and 69 of these were of the highest abundance category. In the 250-foot buffer, 27 locations were mapped. This species was observed to be very common on the southern boundary of the Site, along Tecopa Road. The halogeton infestations at the HHSEGS site and in the southern Pahrump Valley are likely the largest infestations of this species in California.

#### **5.2.6.5.7 African Mustard (*Malcolmia africana*)**

African mustard has been recorded in only a few locations in California. In Nevada, it has been observed to invade gypsum and alkaline soils and to compete with special-status plants in those areas.

African mustard is widespread and abundant within the northern two-thirds of the HHSEGS site and in the adjacent 250-foot buffer, and along Tecopa Road. Within the site, it is often associated with the interior roads, and forms dense stands in depressions that pond water during the rainy season. A total of 104 locations were mapped within the site, and 36 were mapped within the 250-foot buffer (Figure 5.2-5e). Many of these mapped locations contained thousands of plants.

#### 5.2.6.5.8 Russian Thistle (*Salsola* spp.)

Russian thistle infests rangelands and other agricultural lands throughout much of California. In the Central Valley and the deserts it can form very large infestations of large plants, which can be a serious hazard on freeways under windy conditions. Biological control agents have been introduced to California that appear to reduce the size of individual plants, but do not eliminate them. It has recently been recognized that several species of *Salsola* are present in California. Mature plants with seeds are required for identification. Russian thistle plants do not mature until late in the growing season, so the seedlings observed on the site and in the 250-foot buffer could not be identified to species.

Russian thistle was observed to be very common at the HHSEGS site during late-season surveys conducted in October 2010. The localities mapped during the spring 2011 surveys are likely an underestimate of the actual abundance of Russian thistle because the plants are present only as small seedlings in the spring. Within the site, Russian thistle is more common in the northern half, although large infestations occur along Tecopa Road. Forty-six localities were mapped within the site boundary, and 18 were mapped within the 250-foot buffer (Figure 5.2-5f), many of them large.

#### 5.2.6.5.9 Tumble Mustard (*Sisymbrium altissimum*)

Tumble mustard is more common in the Great Basin, but is sometimes seen in the Mojave Desert. It can create dense infestations along roadsides and in overgrazed rangelands. Within the site and 250-foot buffer, tumble mustard was mapped mainly in the eastern third of the site. It was more common in sandy soil areas. Within the site, 14 localities were mapped, and six were mapped in the 250-foot buffer (Figure 5.2-5a). Most of these were small.

#### 5.2.6.5.10 London Rocket (*Sisymbrium irio*)

Cal-IPC (2006) rates the ecological impacts of London rocket as moderate, and notes that these vary locally. In the Mojave Desert, it often infests roadsides and areas of natural disturbance such as canyons and washes.

London rocket was scattered widely within the site and the site 250-foot buffer. It was especially abundant along Tecopa Road, and in low areas with higher soil moisture. Within the site, 45 localities were mapped, and nine were mapped in the 250-foot buffer (Figure 5.2-5g). Many London rocket localities were in places where water flows during the rainy season, or along roadsides.

#### 5.2.6.5.11 Tamarisk (*Tamarix ramosissima*)

Tamarisk has been widely planted in the Mojave Desert, and has escaped from cultivation to invade canyons and floodplains (Lovich, 2000). It is a large, deep-rooted shrub that uses groundwater that would otherwise be available for native species, and brings salts to the surface that are deposited on the ground through leaf drop (Lovich, 2000).

Tamarisk was mapped only within the 250-foot survey buffer, not within the site. Within the buffer, the mapped localities are mainly on the south side of Tecopa Road, near rural residences where they appear to have been planted (Figure 5.2-5a).

### 5.2.6.6 Special-status Plants

Protocol-level special-status plant surveys were conducted on the site in fall 2010 for late-summer blooming plants. During spring 2011, protocol-level surveys were conducted within the site and the 250-foot buffer for spring-blooming species. Eight special-status plants were observed onsite during fall 2010 and spring 2011. As described previously, when considered together, results of the fall 2010 and spring 2011 surveys fully satisfy the special-status plant protocols and guidelines.

Results of the late-season surveys are summarized in the following section. More detailed information regarding the late-season surveys will be provided separately, in the *Late-Season Special-Status Plant Survey Report* (GANDA, 2011a). A summary of the results of the spring 2011 surveys is also provided in the following sections. The location of special-status plants identified during the fall 2010 and spring 2011 protocol-level surveys is depicted in Figures 5.2-6a through 5.2-6i. Table 5.2-3 lists the number of special-status plant individuals and localities observed. Photographs of the special-status plants identified onsite are provided in Figure 5.2-4, Special-status Plants and Vegetation Types.

Additional information about the spring 2011 surveys, offsite surveys, and other surveys conducted in support of this project will be provided in separate technical reports (GANDA, 2011a, 2011b, and 2011c in preparation).

#### 5.2.6.6.1 Late-season Surveys (Fall 2010)

Two species of special-status plants were observed onsite during the fall 2010 surveys: Pahrump Valley buckwheat (*Eriogonum bifurcatum*) and Goodding's phacelia (*Phacelia pulchella* var. *gooddingii*). The distribution of these special-status species is shown on Figures 5.2-6g and 5.2-6h. Results of the fall 2010 botanical surveys, including a list of all plants identified during the surveys, maps showing the location of special-status plants observed, and photographs of the species identified and site vegetation, is included in the *Late-Season Special-Status Plant Survey Report*, (GANDA, 2011a), that will be provided separately.

The late-season vegetation response in 2010 was deemed adequate to support a late-season survey. The vegetation response included a patchy but widespread growth response by many perennial and shrub species, and an extended blooming period for Pahrump Valley buckwheat, a deep-rooted special-status annual plant that was observed in bloom in several areas onsite. Annual species like Pahrump Valley buckwheat may be absent, or present only in very low numbers, in years of low rainfall, so detection of this species during the late-season survey provided information about its abundance and distribution that likely could not be collected in drier years.

#### 5.2.6.6.2 Spring Surveys (Spring 2011)

The following eight special-status plant species (including Pahrump Valley buckwheat and Goodding's phacelia identified during fall 2010 surveys) were documented at the HHSEGS site and within the 250-foot buffer during spring 2011:

- Pink-funnel lily (*Androstaphium breviflorum*)
- Preuss' milkvetch (*Astragalus preussii* var. *preussii*)
- Tidestrom's milkvetch (*Astragalus tidestromii*)
- Wheeler's skeletonweed (*Chaetadelpa wheeleri*)

- Purplenerve springparsley (*Cymopterus multinervatus*)
- Pahrump Valley buckwheat (*Eriogonum bifurcatum*)
- Goodding's phacelia (*Phacelia pulchella* var. *gooddingii*)
- Desert wing-fruit (*Selinocarpus nevadensis*)

None of the eight special-status plants identified during the fall 2010 or the spring 2011 surveys are federally or state-listed (California) as threatened, endangered, or rare, or are candidates for listing. Per the CNDDDB inventory, "Special Plants" is a broad term used to refer to all the plant taxa inventoried in the CNDDDB, regardless of their legal or protection status (CDFG, 2011c).

These eight special-status plants were also identified during surveys of offsite areas, as described in Section 5.2.6.6.4. Results of the offsite surveys substantially increases the number of special-status plant occurrences in the project region and expands the previously known distributions of many of these special-status plant species.

In addition to the eight special-status species, one plant – Nye milkvetch (*Astragalus nyensis*) – was observed onsite, in the 250-foot buffer, and in the surrounding area. It was not previously documented in California. Therefore, it does not have a conservation status. It is known to exist from Nye, Clark, and Lincoln counties, in Nevada. Nye milkvetch does not currently have conservation status in Nevada (NNHP, 2010). During offsite surveys in support of this project, Nye milkvetch was also identified in several locations in Inyo County, California. Results of the offsite surveys will be provided in a separate technical report.

Three of the eight special-status plants onsite are annuals: Pahrump Valley buckwheat, Goodding's phacelia, and desert wing-fruit. Annual species complete their lifecycle within a single year, and persist over the long-term as a seed bank. Seed may germinate in future years with favorable rainfall. They will not germinate in exactly the same location each year. The remaining five special-status plants are short-lived perennial herbaceous species, meaning the plants live more than a single year, but they die back seasonally to the ground. These species are: pink-funnel lily, Preuss' milkvetch, Tidestrom's milkvetch, Wheeler's skeletonweed, and purplenerve springparsley.

An overview of special-status plant occurrence at the site and in the 250-foot buffer is provided in the following section. The distribution of special-status plants at the site and in the 250-foot buffer is shown in Figures 5.2-6a through 5.2-6i. The number of special-status plants observed is presented in Table 5.2-11. A list of all plants observed during the 2011 rare plant surveys is provided in Table 5.2-3. Photographs of special-status plants documented during the 2011 spring protocol-level surveys are provided in Figure 5.2-4.

#### 5.2.6.6.3 Overview of Special-status Plant Occurrence Onsite and in the 250-foot Buffer

- Pink-funnel lily (*Androstephium breviflorum*). Onsite, 352 individuals of pink-funnel lily were identified in 66 localities (Table 5.2-11 and Figure 5.2-6a). Within the 250-foot buffer, 88 individuals were observed in 24 locations.
- Preuss' milkvetch (*Astragalus preussii* var. *preussii*). Onsite, four individuals of Preuss' milkvetch were observed in two localities (Table 5.2-11 and Figure 5.2-6c). Within the 250-foot buffer, three individuals were observed in one location.

- Tidestrom's milkvetch (*Astragalus tidestromii*). Onsite, 3,134 individuals of Tidestrom's milkvetch were observed in 74 localities (Table 5.2-11 and Figure 5.2-6d). Within the 250-foot buffer, 248 individuals were observed in 20 locations.
- Wheeler's skeletonweed (*Chaetadelpa wheeleri*). Onsite, 783 individuals of Wheeler's skeletonweed were identified in 56 localities (Table 5.2-11 and Figure 5.2-6e). Within the 250-foot buffer, 408 individuals were observed in 29 locations.
- Purplenerve springparsley (*Cymopterus multinervatus*). One individual of purplenerve springparsley was observed in the southeastern portion of the site (Table 5.2-11 and Figure 5.2-6f). This species was not observed within the 250-foot buffer.
- Pahrump Valley buckwheat (*Eriogonum bifurcatum*). Onsite, approximately 15,000 plants were observed in 57 localities (Table 5.2-11 and Figure 5.2-6g). In the 250-foot buffer, 346 plants were observed in 11 localities.
- Goodding's phacelia (*Phacelia pulchella* var. *gooddingii*). Onsite, 27,706 individuals were identified in 232 localities (Table 5.2-11 and Figure 5.2-6h). Within the 250-foot buffer, 6,227 individuals were observed in 65 locations.
- Desert wing-fruit (*Selinocarpus nevadensis*). Onsite, 63 individuals were observed in 13 locations (Table 5.2-11 and Figure 5.2-9i). This species was not observed in the 250-foot buffer.

A more detailed description of the special-status plants observed, their distribution in the project region, California and Nevada, ecological requirements, and conservation status are presented in Appendix 5.2G.

In addition to these plants on the CNDDDB, Nye milkvetch (*Astragalus nyensis*), was found onsite, 4,859 individuals of Nye milkvetch in 162 localities (Table 5.2-11 and Figure 5.2-6i). In the 250-foot buffer, 2,368 individuals were recorded in 34 localities.

#### 5.2.6.6.4 Offsite Surveys

In addition to surveys onsite, focused surveys for special-status plants were also conducted in 2011 nearby the HHSEGS site within portions of the southern Pahrump, Chicago, and Stewart valleys in California and Nevada. Results of the offsite surveys will be provided in a separate report. This large of an area was used to check for potentially occurring species in recognition of the fact that the distributions of many special-status plants in the Mojave Desert are poorly known, and new localities often are discovered many miles away from those that were previously known. Several special-status plant localities were identified during the offsite surveys. Prior to the offsite surveys, areas near the HHSEGS site had not been extensively botanized, and few records of special-status plants exist from these locations. Results of the offsite surveys **substantially increases** the number of special-status plant occurrences in the project region and expands the previously known distributions of many of these special-status plant species. A more detailed report of the offsite spring 2011 botanical surveys will be provided in a separate technical report. This report will include maps depicting the areas surveyed and the location of species identified a description of the survey method and results, CNDDDB data forms, and photographs of the species observed.

### 5.2.6.7 Special-status Wildlife

The following species were reported in the CNDDDB or NNHDB queries but have no potential to occur on the site or near the site:

Spring Mountains pyrg	<i>Pyrgulopsis deacon</i>
Death Valley Agabus diving beetle	<i>Agabus rumppi</i>
Death Valley June beetle	<i>Polyphylla erratica</i>
Amargosa naucorid bug	<i>Pelocoris Shoshone</i>
Carole's silverspot	<i>Speyeria zerene carolae</i>
Amargosa Canyon speckled dace	<i>Rhinichthys osculus ssp.</i>
Amargosa pupfish	<i>Cyprinodon nevadensis amargosae</i>
Pahrump poolfish	<i>Empetrichthys latos latos</i>
Least Bell's vireo	<i>Vireo bellii pusillus</i>
Kingston Mountain chipmunk	<i>Neotamias panamintinus acrus</i>
Amargosa vole	<i>Microtus californicus scirpensis</i>

The species discussed in the following subsections were observed in the project area or have potential to occur in the area. Additional informal wildlife surveys were conducted during all subsequent surveys by project biologists (e.g., botanists) in the project area.

Presence of several common wildlife species and their sign were further documented via photographs taken within, and adjacent to, the project area during the survey. A complete list of wildlife species observed during the biological surveys is provided in Table 5.2-8.

#### 5.2.6.7.1 Reptiles

##### ***Banded Gila Monster***

CNDDDB records occur for this species in the Kingston Mountains south of the project area and they are known from the Spring Mountains approximately 20 miles to the east in Nevada. No observations were reported in field crew reports.

#### 5.2.6.7.2 Birds

##### ***Avian Point Count Survey Results***

No federally listed threatened or endangered bird species were observed during the point count surveys. The counts included 498 individual birds of 23 species. An additional 136 individuals and 6 species were observed outside of the point count circles, in transit between the point count locations, and flying over the site (CH2M HILL, 2011a). Although nest searches were not conducted, nests and/or fledglings of two common species, horned lark and black-throated sparrow, were observed within the point count circles. Three special status species were observed during the surveys: These were northern harrier (CSC), golden eagle (CSC, FP, BLM SS), and loggerhead shrike (CSC, MB, MNMBC), but only the northern harrier and loggerhead shrike were observed onsite. Survey results are presented in Tables 5.2-12 and 5.2-13. The full report is attached in Appendix 5.2H.

##### ***Western Burrowing Owl***

No CNDDDB records occurrences for this species within the 10-mile radius. Burrowing owls were observed in the HHSEGS site boundary, in the northwestern quarter of section 16, and immediately west of the site. These birds occupied old kit fox natal dens. Burrowing owl pellets and scat were observed at the den openings during the desert tortoise protocol surveys of the project area (GANDA, 2010). Sign of burrowing owl was recorded during

protocol-level desert tortoise surveys in spring 2011 (Sundance Biology, 2011). Burrowing owl sign, whitewash and/or pellets and feathers, was found at eight canid burrows on the project site. In the ZOI, burrowing owl sign was found at two badger burrows ZOI (Figure 5.2-12).

### **Golden Eagle**

One adult bird was observed over the project site near the southwestern corner of the HHSEGS site, near Tecopa Road (GANDA, 2010). Golden eagle was observed near the site in the point-count survey (CH2M HILL, 2011a). No CNDDDB records occur for this species in the project area. The habitat within, and adjacent to, the project area may provide suitable foraging habitat for this species but suitable nesting habitat is not present. A late-season, ground-based survey located a possible raptor nest in Emigrant Pass at the edge of the 10-mile search area (Figure 5.2-10) (CH2M HILL, 2011b).

### **Loggerhead Shrike**

No CNDDDB records occur for this species in the project area. Loggerhead shrikes were observed in several locations at the HHSEGS site, in the southwest quarter of section 27 and at other sites near Tecopa Road. The loggerhead shrikes of the mainland deserts are a different subspecies from the San Clemente Island loggerhead shrike (*Lanius ludovicianus mearnsi*), which is federally listed as Endangered (GANDA, 2010).

### **Prairie Falcon**

CNDDDB suppresses the locations of occurrences of nests recorded near the site. One prairie falcon (*Falco mexicanus*) was observed over the site during avian point-count surveys (CH2M HILL, 2011a) and one immediately west of the project site during late-season plant surveys (GANDA, 2010). The habitat within, and adjacent to, the project site may provide suitable foraging habitat for this species but nesting habitat is not present.

### **Le Conte's Thrasher**

No CNDDDB records occur for this species within the near the site. Le Conte's thrasher was observed onsite during desert tortoise surveys in May 2011 (Sundance, 2011) and within a 10-mile radius of the site during the eagle surveys (CH2M HILL, 2011b). The habitat within, and adjacent to, the project area may provide suitable foraging habitat for the Le Conte's thrasher and provides suitable cover for nesting sites.

### **Crissal Thrasher**

No CNDDDB records occur for this species on the project site or within the 10-mile radius. No observations during surveys were reported. The nearest CNDDDB reported occurrence is near Tecopa, approximately 21 miles from the site. The habitat within and adjacent to the project area may provide suitable foraging and nesting habitat for this species.

### **Bendire's Thrasher**

Bendire's thrasher was reported in creosote bush scrub within the site boundary, in section 16, in the northwestern quarter-section (GANDA, 2010). No CNDDDB records occur for this species outside of the project area in the adjacent 7.5-minute map quadrangles. This species is considered a Species of Special Concern by the CDFG. The habitat within and adjacent to the project area has very low potential to provide suitable foraging and nesting habitat for this species. Subsequent surveys in May 2011 found no suitable habitat and made no observations of this species. The original survey observers (botanists) may have confused

this species with a common species. Therefore, the probability of this species occurring within the project area is very low.

### ***Gray Vireo***

No individual or sign of gray vireos was observed during the course of the field surveys. A CNDDDB record occurs for this species outside of the 10-mile radius, in the Kingston Mountains to the south. The habitat within, and adjacent to, the project area does not provide suitable foraging and nesting habitat for this species, though it may pass through during the course of migration. Therefore, the probability of this species occurring within the project area is expected to be low.

### ***Hepatic Tanager***

No individual or sign of hepatic tanagers was observed during the course of the field surveys. A CNDDDB record exists for this species at Horsetheif Springs, in the Kingston Mountains, 14 miles the south of the site. Although this species may pass over the project during the course of migration, the habitat within and adjacent to the project area, does not provide suitable foraging and nesting habitat for hepatic tanager. Therefore, the probability of this species occurring within the project area is low.

### ***Brewer's Sparrow***

No CNDDDB records occur for this species within the 10-mile radius. Brewer's sparrow was observed during the course of the avian point count surveys and desert tortoise surveys (CH2M HILL, 2011a; Sundance, 2011). The habitat within, and adjacent to, the project area may provide suitable foraging and nesting habitat for this species.

### ***Summer Tanager***

No individual or sign of summer tanagers was observed during the course of the field surveys. No CNDDDB record occurs for this species within the 10-mile radius. An occurrence is recorded near China Ranch, 21 miles from the site. The habitat within, and adjacent to, the project area does not provide suitable foraging and nesting habitat for this species may pass through the project area during the course of migration.

### ***Western yellow-billed cuckoo***

No individual or sign of western yellow billed cuckoo was observed during the course of the field surveys. No CNDDDB record occurs for this species within the 10-mile radius. Four occurrences are reported. Two are near China Ranch and two are near Tacopa, both approximately 21 miles from the site. The habitat within, and adjacent to, the project area does not provide suitable foraging and nesting habitat for this species, though it may pass through during the course of migration.

### ***Vermilion flycatcher***

No individual or sign of vermilion flycatcher was observed during the course of the field surveys. No CNDDDB record occurs for this species within the 10-mile radius. One occurrence was reported 18 miles west of the site. The habitat within, and adjacent to, the project area does not provide suitable foraging and nesting habitat for summer tanager.

### ***Brown-crested flycatcher***

This species was not observed in surveys on or near the site. CNDDDB reports and occurrence at China ranch, approximately 21 miles southwest of the site. Suitable nesting habitat does not exist on the site. It has very low probability of occurrence on the site.

***Phainopepla***

This species was observed on site during wildlife surveys in May 2011. The site has potential for foraging, but no potential for nesting on site. Nests and forages mistletoe fruit in mesquite stands. Small stands of mesquite are within 10 miles of the site. NNHP has records of occurrence approximately 2 miles east of the site. It may overfly the site in migrations or foraging.

**5.2.6.7.3 Mammals*****American Badger***

During protocol-level desert tortoise surveys in spring 2011, no American badgers were observed onsite (Sundance Biology, 2011). Eleven badger burrows in fair to good condition were found on the project site. Another was found in the zone of influence. The habitat within, and adjacent to, the project area provides suitable foraging and denning habitat for the American badger.

***Nelson's Bighorn Sheep***

Bighorn sheep pellets and a horn fragment were found on the site during late-season plant surveys (GANDA, 2010). CDFG confirmed that herds of this species are present in the Nopah Range to the west and the Kingston Range to the south (Villepique, 2011). However, escape cover and foraging habitat for this species does not exist in the project area; therefore, it is anticipated that this species has a low level of utilization of the project site.

***Townsend's Big-eared Bat***

No individual or sign of Townsend's big-eared bats was observed during the course of the field surveys. Two CNDDDB records occur for this species outside of the 10-mile radius in the Kingston Mountains at Horsetheif Springs, about 14 miles south of the site in California. Crevices within the Spring Mountains, approximately 20 miles across the Pahrump Valley in Nevada may provide suitable roosting habitat for bats. The habitat within, and adjacent to, the project area may potentially provide suitable nighttime foraging habitat for the Townsend's big-eared bat, but is unlikely to forage this far from its roosts. The longest reported distance traveled between foraging and roosting areas is 15 miles (Dobkin et al., 1993). Therefore, the probability of this species occurring within the project area is low.

***Pallid Bat***

No individual or sign of pallid bat was observed during the course of the field surveys. Two CNDDDB record occur for this species outside of the 10-mile radius. One is to the southwest at Willow Spring, about 18 miles from the site. The other is at Beck Spring, in the Kingston Range, approximately 14 miles south of the site. The habitat within, and adjacent to, the project area may potentially provide suitable nighttime foraging habitat for the pallid bat. However, potential to occur on the site is low because pallid bats forage over areas 1 to 3 miles from their day roost. They are capable of homing from distances of a few miles, but not further (Harris, 1988-1990).

***Long-legged Myotis***

No individuals of this species were observed on or near the project site. CNDDDB reports two occurrences outside the 10-mile radius at Horsetheif Springs, in the Kingston Range, approximately 14 miles south of the site. This species generally uses forested areas. Potential for this species to occur on the site is very low.

**Brazilian Free-Tailed Bat**

No individuals of this species were observed on or near the project site. A single occurrence report exists within the 10-mile radius, near Emigrant Pass, approximately 7 miles southwest of the site. Roosting habitat does not occur on the site. The site may provide nighttime foraging habitat since they forage over areas up to 25 miles from the roost. However, the site may not provide adequate amounts of insect prey.

**Kingston Mountain Chipmunk**

This species (*Neotamias panamintinus acrus*) was not seen on or near the site during surveys. CNDDDB reports 5 occurrences of it at Horsetheif Springs, in the Kingston Range, approximately 14 miles south of the site. Habitat for this species does not exist on the site and the probability of occurrence on the site is very low.

**5.2.6.8 Wetlands and Waters**

Sixty-nine desert ephemeral streams, occupying approximately 13.9 acres of the HHSEGS site, were delineated within the project boundary (Figures 5.2-10 and 5.2-11). Nine of the 69 ephemeral streams are shown on USGS topographic maps as blue-line streams and they enter the Project site from the upslope area to the east. Of these nine USGS blue-line streams, six were identified during field mapping and represent current conditions. The channel alignment of these six mapped blue-line streams did not necessarily follow mapped flow paths (Appendix 5.2E).

The site contains substantial disturbed areas; dirt roads have been constructed on the perimeter of subdivided parcels within the project area and may interfere with the natural hydrology (Appendix 5.2E). The washes are dry most of the year in this region, with surface water present only ephemerally in response to storm events.

Channel substrate ranged from silts to sands, and occasionally gravels or cobbles were present. Channel widths ranged from less than 1 foot wide to approximately 100 feet wide; drainages consisted of single channels to wide, braided washes. Stream depths were generally less than 1 foot. Indicators of ordinary high water mark (OHWM) included shelving or cut banks, sediment deposition, presence of litter or debris, sediment sorting, minor scour, absence of vegetation, and/or change in character of soil.

There are no wetlands mapped by the National Wetland Inventory (NWI) within the project boundaries (USFWS, 2011). Water accumulated in pools in some areas (Figure 5.2-12), and surficial cracking was observed; however, wetland vegetation was not present in these areas. The same plant species identified in uplands also occurred along the drainages; however, within drainages a higher density of vegetation was present. No jurisdictional wetlands were observed onsite, as wetland criteria for soils, hydrology, and vegetation were not met.

A jurisdictional determination report has been submitted to the USACE (URS, 2011) and it is currently undergoing agency review. None of the 69 desert washes were found to have any connectivity to relatively permanent waterways or traditional navigable waterways, including Pahrump Playa, located approximately 2 miles from the terminus of the closest desert wash.

Subsequent to the wetland delineation field work performed in January and February of 2011, the boundary of the project site was increased by 180 acres to include a temporary construction area on the west side of the site. A 250-foot buffer area around the site was also added. The vegetation and other ecological characteristics of the temporary construction area are similar to the rest of the site. Therefore, it is anticipated that any ephemeral washes present within the temporary construction area and 250-foot buffer area, should any be identified, will be similar to those found on the rest of the site. Additional data on ephemeral drainages will be collected within this temporary construction area and buffer, and submitted to the ACOE.

It is anticipated that the USACE will not assert jurisdiction over the ephemeral washes and a CWA Section 404 Permit and Section 401 Water Quality Certification will not be needed. For discharges of fill material into non-federal waters of the State and other alteration of the bed and bank of onsite desert washes, the Commission will coordinate with the RWQCB and CDFG to ensure that State recommendations are considered in the Commission's process.

### 5.2.7 Environmental Analysis

This section identifies biological resources that may be affected either directly or indirectly by the project. Direct and indirect impacts may be either permanent or temporary. These impact categories are defined below and are applied as part of the environmental analysis.

- **Direct:** CEQA defines direct impacts as those impacts that result from the project and occur at the same time and place. Any alteration, disturbance, or destruction of biological resources that would result from project-related activities is considered a direct impact. Examples include loss of habitat resulting from clearing vegetation, encroaching into wetlands, diverting natural surface water flows, and the loss of individual species.
- **Indirect:** CEQA defines indirect impacts as those caused by the project but that occur later in time or farther removed in distance, though still reasonably foreseeable and related to the project. As a result of project-related activities, biological resources may also be affected in a manner that is not direct. Examples include elevated noise and dust levels, increased human activity, decreased water quality, and the introduction of invasive wildlife (e.g., feral cats, dogs, and burros) and plants.
- **Permanent:** All impacts that result in the irreversible removal of biological resources are considered permanent. Examples include constructing a building or permanent road on an area containing biological resources.
- **Temporary:** Any impacts considered to have reversible effects on biological resources can be viewed as temporary. Examples include increased vehicle movement and noise from construction activities and habitat loss during underground pipeline trenching activities (assuming re-vegetation).

Potential direct and indirect impacts on biological resources were evaluated to determine the permanent and temporary effects of project construction, operation, maintenance, and decommissioning of the project and supporting facilities.

### 5.2.7.1 Standards of Significance

Standards of Significance are based on Appendix G of the CEQA Guidelines. The project may result in a significant impact on the environment if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as endangered, threatened, candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFG or USFWS
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFG or USFWS
- Have a substantial adverse effect on federal or state protected waters of the U.S. (including wetlands) as defined by Sections 404 and 401 of the Clean Water Act; and/or a substantial effect on non-federal waters of the State (including wetlands) as defined by the Porter-Cologne Act, either through direct removal, filling, hydrological alteration, or other means
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory native wildlife corridors, or impede the use of wildlife nursery sites
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan

Under CEQA, a species not listed as endangered, threatened or a candidate species may be considered rare if the species can be shown to meet the criteria in subdivision (b) of Section 15380 of the CEQA Guidelines.

### 5.2.7.2 Potential Impacts of Project Construction, Operation, and Maintenance

#### 5.2.7.2.1 Construction

The HHSEGS project will be constructed over the course of 29 months beginning with the construction of Solar Plant 1 and the common area, with the start of construction at Solar Plant 2 staggered by 3 months. Initial site clearing, grubbing and/or mowing would take place over a 6-month period, commencing with the access roads, common area, temporary construction area, and Solar Plant 1. The total area that will be disturbed during by construction activities consists of approximately 3,277 acres, or about 5.12 square miles.

All of the areas to be used for construction laydown, staging, and parking are located within the solar fields of the project area, the common area and the temporary construction area. Two construction equipment noxious weed wash stations will be constructed on the project site: one on the west side at the entrance to the temporary construction area and one on the east side at the entrance to the common area. No offsite areas will be affected by project construction activities.

### 5.2.7.2.2 Operation and Maintenance

The heliostat field and solar power generation equipment will be started daily and generated electricity will be interconnected to the CAISO grid.

Groundwater will go through a treatment system for use as boiler make-up water and to wash the heliostats, and water consumption will be minimal (estimated at a total of 140 acre-feet/year). The onsite groundwater production wells will supply both solar plants and the administration complex with make-up water, mirror-wash water, and domestic water. Each solar plant will include a water treatment and deionizing facility in the power block area. No reject streams from water treatment are planned to be generated onsite under the treatment scheme. A thermal evaporator system will be used to reduce the volume of the process wastewater stream or storm water streams that cannot be recycled back to the service water tank. The reject from the thermal evaporator will be trucked offsite for disposal at an approved facility.

Each solar plant and the administration complex will include a septic tank and leach field system for sanitary streams, including showers and toilets. When needed, septic tank contents will be removed from the site by a sanitary service.

Operation and maintenance requirements necessitate the washing of the solar heliostats on a nightly basis (all heliostats are washed once every 2 weeks). Best Management Practices (BMPs) for the use of wash water are outlined in the Storm water Pollution Prevention Plan (SWPPP). The water used for this process will be of relatively high quality but will contain trace amounts of chemicals such as oxygen scavengers that are not expected to result in substantial changes in water quality. A pressure washer or other method will be used to wash the heliostats to minimize the amount of water used, and no water is anticipated to run offsite as a result of these washing activities. Due to the high evaporation rates in the area, and the minimal amount of water used, it is likely that wash water will evaporate at or just below the ground surface. By implementing good engineering practices and BMPs in the project design and operation, and because storm water discharge during construction will adhere to a SWPPP and to state water quality standards, no significant impacts to surface or subsurface water quality are expected during construction or operation of the project.

Weeds such as tamarisk rapidly germinate and grow in areas of moist soil such as those expected to occur in the solar fields after wash water is used to clean the mirrors. Aggressive weed control will be needed during construction, operations, and maintenance activities to minimize the germination, introduction, and spread of noxious weeds.

Solar field development will maintain sheet flow where possible, with water exiting the site in existing natural contours and flows. The majority of the project site will maintain the original grades and natural drainage features and, therefore, will require no added storm drainage control. In limited areas, such as the power blocks, switchyard, heliostat assembly buildings, and administrative areas, the storm water management system will include diversion channels, bypass channels, or swales to direct run-on flow from up-slope areas and run-off flow through and around each facility. Diversion channels will be designed so that a minimum ground surface slope of 0.5 percent will be provided to allow positive, puddle-free drainage. To reduce erosion, storm drainage channels may be lined with a non-erodible material such as compacted rip-rap, geo-synthetic matting, or engineered

vegetation. The design will be developed for sheet flow for all storm events less than or equal to a 100-year, 24-hour storm event.

As discussed in detail below, impacts to biological resources due to construction of the solar fields and project facilities, as well as operation and maintenance, are considered less than significant with the incorporation of the mitigation measures provided in Section 5.2.9, Mitigation Measures.

### **5.2.7.3 Impacts to Desert Tortoise**

Desert tortoise is the only federally listed species that would be affected by the project. HHSEGS construction will permanently affect approximately 3,277 acres of desert tortoise habitat through the clearing, grubbing, and mowing of vegetation for the installation of project facilities and structures. Without the implementation of appropriate mitigation measures, these actions could result in take of individuals. Several impacts have the potential for occurring in the HHSEGS project area, which have the potential to result in take. In accordance with the ESA, a formal consultation with USFWS will be required through a federal nexus. HHSEGS proposes mitigation measures in section 5.2.9 that will reduce these impacts to less-than-significant levels.

Without implementation of the mitigation measures, impact could occur as a result of encounters with vehicles or heavy equipment. Traffic control and low speed limits will reduce the potential for these impacts. Also, tortoises may take shelter under parked vehicles, which could result in take when the vehicle is moved. Routine inspections under parked vehicles will reduce the potential for this impact.

Human activities in the HHSEGS project area potentially provide food in the form of garbage and litter, or water, which may attract tortoise predators such as the common raven, kit fox, and coyote (Berry, 1985). Trash control and removal will reduce the potential for this impact.

### **5.2.7.4 Impacts to Vegetation**

Potential for impacts to vegetation has been reduced to less-than-significant with the mitigation measures provided in Section 5.2.9

#### **5.2.7.4.1 Impacts from Noxious Weeds**

Noxious weeds have the potential to propagate in disturbed areas. The removal of existing vegetation and soil disturbance due to construction could create conditions suitable for the germination, establishment, and spread of noxious weeds. Without proper mitigation, construction equipment can transport weeds from other areas into previously weed-free areas, or cause the increase of already established noxious weeds.

### **5.2.7.5 Impacts to Wetlands and Other Waters**

Solar field development will maintain natural sheet flow where feasible, with water flowing across the site and exiting the site in existing natural contours and flows. Without mitigation, construction activities, including vegetation clearing and grading (e.g., within the power blocks), could result in alteration, fill, and loss of the existing ephemeral washes in the project footprint. Construction, operation, and maintenance of the project would

result in the temporary alteration of, and potentially the permanent loss of, up to approximately 13.92 acres of ephemeral washes (URS, 2011).

Without mitigation, the affected drainages would be expected to reform naturally in this landscape where flow patterns are highly variable both temporally and spatially. The temporary and permanent loss of ephemeral drainages is, therefore, not considered to be a significant biological resource impact.

### **5.2.7.6 Impacts to Special-status Wildlife Species**

Temporary and permanent impacts to special-status wildlife could occur from project construction and operations. With the implementation of worker environmental awareness training; preconstruction and clearance surveys; and avoidance, mitigation measures proposed by the Applicant and required by the CEC and the BLM, USFWS, and CDFG, there will be no significant, unmitigated environmental impacts associated with the construction and operation of the HHSEGS. Species-specific impacts are discussed in the following sections.

#### **5.2.7.6.1 Burrowing Owl**

CNDDDB records for this species occur in the vicinity of the project area, and burrowing owl sign was observed during biological field surveys (Sundance, 2011). Occupied burrows, other burrowing owl sign, and suitable habitat characteristics are present within the project site.

During the non-nesting season (September 1 through January 31), noise and activity associated with HHSEGS construction could disturb burrowing owls and cause them to temporarily avoid the construction area. This will be a less-than-significant impact, as construction activities are temporary in nature. During the nesting season (February 1 through August 31), impacts to burrowing owls resulting from the project could occur if burrowing owls take occupancy of burrows in the construction zone, prior to the start of construction, or during construction. There is the potential for individual owls, their young, and their eggs to be destroyed or their nests abandoned.

It is anticipated that the project will result in some loss of foraging habitat for burrowing owls. However, the loss is a less-than-significant impact because of the vast amount of similar habitat offsite that would remain available to owls during and after construction. Implementation of the mitigation measures detailed in Section 5.2.9 will reduce potentially significant impacts to burrowing owls to less-than-significant levels.

#### **5.2.7.6.2 Raptors**

In addition to peach trees and planted blue Arizona cypress trees that grow within the abandoned orchard, nearby hills and existing power poles may provide nesting and roosting structure for raptors. Raptors are protected under various federal and state codes, including the MBTA, and Fish & Game codes 3503, 3503.5, and 3513. Golden eagles are afforded additional protection under the BGEPA and Fish & Game code 3511.

It is anticipated that the project will result in the loss of potential foraging habitat for raptors. However, the loss of foraging habitat is expected to be a less-than-significant impact because of the vast amount of similar habitat throughout the project area and in the surrounding vicinity. Because there is always potential for take, mitigation measures to

reduce potentially significant impacts to raptors to less than significant levels are included in Section 5.2.9.

#### **5.2.7.6.3 Nesting Migratory and Resident Birds**

Potential impacts from construction and demolition activities on resident nesting birds could occur from temporary construction noise and clearing and grubbing of the site. It is anticipated that the project will result in the permanent loss of potential foraging and nesting habitat for some migratory and resident birds. However, this loss is expected to be a less-than-significant impact because of the vast amount of similar habitat in the surrounding vicinity. All ground-disturbing activities occurring in the spring will be pre-surveyed for nesting birds. The impacts of construction activities and the potential for loss of bird species as a result of collisions with vehicles and equipment could be significant in the absence of mitigation. However, mitigation measures designed to minimize these potential impacts to less-than-significant levels are detailed in Section 5.2.9.

#### **5.2.7.6.4 American Badger**

Although no live badgers were observed onsite, American badger sign was observed during the biological field surveys in spring 2011 (Sundance, 2011). The project area contains both foraging and denning habitat for this species. Construction of HHSEGS could potentially result in impacts to the American badger, as loss of habitat, absent of the recommended mitigation measures. Concurrent with the desert tortoise clearance survey, a qualified biologist will perform a preconstruction survey for badger dens in the project area, including areas within 250 feet of all project facilities, utility corridors, and access roads. With the implementation of the mitigation measures detailed in Section 5.2.9, potential impacts to the American badger will be less than significant.

#### **5.2.7.6.5 Townsend's Big-eared Bat**

No individual or sign of Townsend's big-eared bats was observed during the course of the field surveys. A CNDDDB record occurs for this species outside of the 10-mile radius to the south in the Kingston Mountains. Crevices within the Spring Mountains, approximately 20 miles across the valley may provide suitable roosting habitat for bats.

Although the clearing of vegetation could potentially affect nighttime foraging habitat for this species, the majority of foraging would likely be concentrated over riparian areas, which are not found within the project area. The longest reported distance traveled between foraging and roosting areas is 15 miles (Dobkin et al., 1993). The habitat within, and adjacent to, the project area may potentially provide suitable nighttime foraging habitat for the Townsend's big-eared bat, but the project would not be operating at night. Therefore, the bat species is not expected to be significantly affected.

#### **5.2.7.6.6 Pallid Bat**

The Pallid Bat was not observed on the site. CNDDDB reports two records outside the 10-mile radius. One is at Willow Springs, approximately 21 miles away, and the other at Beck Springs, approximately 18 miles south of the site. The habitat within, and adjacent to, the project area may potentially provide suitable nighttime foraging habitat for the pallid bat, but the project would not be operating at night with the exception of mirror cleaning and other maintenance activities. Additionally, potential to occur on the site is low because pallid bats forage over areas 1 to 3 miles from their day roost. They are capable of homing from distances of a few miles, but not further (Harris, 1988-1990). Suitable roosting sites are

not known to occur within 3 miles of HHSEGS. The probability of this species foraging over the project site is very low.

#### **5.2.7.6.7 Long-legged Myotis**

No individuals of this species were observed on or near the project site. CNDDDB reports 2 occurrences outside the 10-mile radius at Horsetheif Springs, in the Kingston Range, approximately 14 miles south of the site. This species generally uses forested areas. Therefore, impacts are expected to be less than significant and no further mitigation measures for this species are considered necessary.

#### **5.2.7.6.8 Brazilian Free-Tailed Bat**

No individuals of this species were observed on or near the project site. The site may provide nighttime foraging habitat since they forage over areas up to 25 miles from the roost. However, the site may not provide adequate amounts of insect prey and the project would not operate on solar power at night. Therefore, impacts are expected to be less than significant and no further mitigation measures for this species are considered necessary.

#### **5.2.7.6.9 Nelson's Bighorn Sheep**

Pellets and a horn fragment of bighorn sheep were found on the site during surveys. Based on CDFG communication, Nelson's bighorn sheep occur in the Nopah Range and the Kingston Range, portions of which lie within 10 miles of the project site. Because escape cover and foraging habitat for this species does not exist on the project site, it is anticipated that utilization by this species is very low and that this project will not impact this species. Therefore, no additional mitigation measures for Nelson's bighorn sheep are necessary.

#### **5.2.7.7 Noise and Lights**

Noise from construction and operation activities could temporarily discourage wildlife from foraging and nesting immediately adjacent to the project area. Many bird species rely on vocalization during the breeding season to attract a mate within their territory. Noise levels from certain construction and operations activities could reduce the reproductive success of nesting birds. Construction activity noise levels are provided in Section 5.7. Operational noise from the HHSEGS is predicted not to exceed 54 dBA at the closest residence or 52 dBA at the St. Therese Mission (see section 5.7).

Noise impacts to wildlife are difficult to measure; however, results of several studies summarized by Golden, et al. (1980; *Environmental Impact Data Book*, Table 8-9, page 517) indicate no impacts from aircraft noise at 75 dBA for several wildlife species (caribou, waterfowl, moose, bison). Burrowing owl, for example, have been noted to reside within 100 to 200 feet of an active railway with measured noise levels of approximately 90 dBA at a distance of 50 feet from the railway (see Rio Linda/Elverta Power Project, 01-AFC-01, Appendix J-1, Map Sheet A).

The construction period is temporary and relatively short term, and wildlife usually becomes habituated to ongoing general construction noise. Weisenberger et al. (1996) found that bighorn sheep responded to aircraft over-flights with increased heart rates and altered behavior; however, animal response decreased with increased exposure. In general, nearly all equipment will be specified to have near-field maximum noise levels that do not exceed 90 dBA at 3 feet from the activity (or 85 dBA at 3 feet where available as a vendor standard) to limit the noise exposure of plant personnel to acceptable levels (see Section 5.7, Noise). As

a result of these design features, the temporary nature of these activities, and the adherence to noise reducing mitigation measures, the noise levels at the project fence line are not expected to have any significant impact on nearby wildlife resources.

Operational noise, anticipated to be less than 54 dBA at the closest residence, will be more consistent and at a much lower level than for construction. The solar boilers will operate an average of about 10 hours a day, 7 days a week throughout the year, with the exception of a scheduled shutdown in late December for maintenance. The solar field and power generation equipment will be started up each morning after sunrise and insolation build-up, and shut down in the evening. Therefore, with the implementation of noise-reducing mitigation measures, the impact on surrounding wildlife is expected to be less than significant.

Night lighting could disturb wildlife that occurs adjacent to the project site (e.g., nesting birds, foraging mammals, and flying insects). Night lighting is also suspected to attract migratory birds to areas and, if the lights are on tall towers or structures, collisions could occur. Additionally, certain lighting may attract insects which in turn may attract birds such as nighthawks and bats to forage.

Lighting that is shielded and pointed downward and away from the habitat outside of the project area minimizes impacts to nesting birds and other nearby wildlife, and reduces the potential for avian and bat attraction and contact. Also, night lighting in high illumination areas not occupied on a continuous basis will have switches to allow them to be turned off when not in use. Federal Aviation Administration (FAA)-required lights will be the only permanently-on lighting for the taller facility structures. However, FAA requirements allow tower lights to be strobed (lighted intermittently and simultaneously), which should reduce the attraction to insects and birds.

#### **5.2.7.8 Wildlife Corridors**

A wildlife corridor can be defined as a linear landscape feature of sufficient width and buffer to allow animal movement between two patches of comparatively undisturbed habitat or between a patch of habitat and vital resources. For example, desert washes may function as wildlife corridors. However, the project site is located in an area of abundant, contiguous open space with few well defined washes and is not considered a wildlife corridor and wildlife corridors will not be discussed further.

#### **5.2.7.9 Biological Resources of Recreational or Commercial Value**

The nearest recreational land use areas are wilderness areas. The Nopah Wilderness Area is 4 miles west, the South Nopah Wilderness Area is 8 miles southwest, and the Pahrump Valley Wilderness Area is less than 2.25 miles south of the HHSEGS.

Although recreational activities occur in the general vicinity, there are no known recreational activities that occur on a regular basis within the project area. Therefore, there are no biological resources of recreational or commercial value (such as hunting, fishing, or bird watching) that would be affected by the project.

## 5.2.8 Cumulative Effects

This section addresses potential cumulative effects to the environment that could be associated with implementation of the HHSEGS in concert with one or more other past, present, and reasonably foreseeable probable future projects.

Section 15130 of the CEQA Guidelines requires that a project's cumulative effects be discussed when "[t]he incremental effect is cumulatively considerable..." According to CEQA Guidelines §15065(c), the term cumulatively considerable means "[t]hat the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects..."

Specifically, CEQA Guidelines §15355 defines cumulative effects as:

"[t]wo or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

(a) The individual effects may be changes resulting from a single project or a number of separate projects.

(b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present and reasonably foreseeable probable future projects. Cumulative effects can result from individually minor but collectively significant projects taking place over a period of time."

Consideration of the cumulative effects that would be associated with the HHSEGS is focused on activities located within the Pahrump Valley. Those activities include past, present, and reasonably foreseeable future developments within the valley.

### 5.2.8.1 Current Setting

The Pahrump Valley has been previously affected by a variety of activities ranging from the construction and continued use of a major highway and secondary roads, unimproved roads and trails, casinos and retail businesses, recreational opportunities, transmission lines and substations, and other facilities developed around the Nevada community of Pahrump. Development within the area has resulted in the loss of natural resources and the transition of the valley from its original undisturbed natural setting to one that, in many locations, represents an industrial or commercial setting. Three reasonably foreseeable future projects occur in the vicinity of HHSEGS: Pahrump Valley General Aviation Airport, Element Power Solar Project, and St. Therese Mission, a commercial facility.

Descriptions of these projects are provided in Section 5.6.7, Land Use. In addition, seven other future projects are located in the vicinity of the HHSEGS. These other seven projects are not considered reasonably foreseeable because they have not moved forward in the development process to the point where sufficient information is publicly available to determine if their impacts, when combined with the proposed project's impacts, would result in significant adverse cumulative impacts. Therefore, this cumulative effects discussion will focus on the reasonably foreseeable future projects and their impacts when combined with those of the proposed project.

### 5.2.8.2 Cumulative Effects to Biological Resources

Development within the Pahrump Valley has resulted in the loss of special-status plant and wildlife species and general wildlife habitat as a result of construction, increased human presence, and recreational activities. Grazing, off-road recreational activities, and construction of transmission lines, facilities, and roads east of Calvada Springs have contributed to the cumulative degradation of biological resources in the area. Project area lands west of Calvada Springs which comprises mostly wilderness areas. Planned future actions, such as those that may occur as a result of the development of the Pahrump Valley Airport, development of the town of Pahrump, and other activities will possibly continue this trend.

The HHSEGS site is located entirely on private land in California. The associated linear features are located in Nevada, primarily on federal land under BLM's jurisdiction, and are therefore not subject to the provisions of BLM's CDCA Plan (BLM, 1980). Therefore, the actions of the HHSEGS are consistent with both the CDCA Plan and the NEMO Coordinated Management Plan. Likewise, because the HHSEGS site is located outside of USFWS-designated critical habitat and the DWMA's, this project does not conflict with the Desert Tortoise Recovery Plan, a recovery plan which describes a strategy for the recovery and delisting of the desert tortoise. Nevertheless, implementation of the outlined mitigation measures for the HHSEGS project will reduce any potential impacts to insignificant levels, and will comply with all applicable LORS. Loss of individual species of plants and animals is expected to be less than significant from the development of this project because special-status species considerations were integrated into all parts of the planning process, and avoidance and minimization measures have been identified to help reduce the risk and potential losses.

Because of the scope of both the NEMO and CDCA Management Plans, as well as the designation of the DWMA's (as outlined in the USFWS Desert Tortoise Recovery Plan), each of the projects mentioned in this section are required to mitigate for any potential impacts that may result from their project actions to levels that are less than significant, both individually and in consideration of all other projects in the Pahrump Valley area. As a result, the cumulative effects are less than significant.

### 5.2.9 Mitigation Measures

The following section describes the proposed measures that are intended to avoid, minimize, and mitigate for potential adverse effects of the project to biological resources, and monitor and document the effectiveness of the measures. A BRMIMP will be prepared prior to construction that outlines how the Applicant will implement the mitigation measures in order to maintain any action authorized, funded, or carried out by state or federal lead agencies that is not likely to jeopardize the continued existence of listed species. A proposed BRMIMP outline is presented in Appendix 5.2I.

#### 5.2.9.1 Mitigation Measure 1 – Worker Environmental Awareness Program

Additionally, a site-specific WEAP (Worker Environmental Awareness Program) will be administered by the project biologists and botanists as part of the mitigation plan, and it is intended to educate all site workers on the identified resources in the area and the measures that will be undertaken to avoid or minimize impacts to these resources.

### 5.2.9.2 Federally and State-Protected Wildlife Species

The desert tortoise is the only species identified on the HHSEGS site that is listed under the ESA. Project construction and operation appears to be likely to affect this species. Mitigation measures in the Biological Opinion that will be issued by the USFWS may modify the mitigation measures described below.

#### 5.2.9.2.1 Mitigation Measure 2 – Desert Tortoise

Authorized Biologists (aka Designated Biologist) (AB) and Biological Monitor(s) (BM) will be appointed to oversee compliance with the protection measures for the desert tortoise and other species. The AB or BM will be onsite during all ground-disturbing project activities. The AB or BM will have the right to halt all activities that are in violation of the measures. Work will proceed only after hazards to the desert tortoise are removed, the species is no longer at risk, or the individual has been moved from harm's way by the AB. The AB and BM will have a copy of all the compliance measures when work is being conducted onsite.

1. The project owner will submit the names and statement of qualifications of all proposed ABs and BMs to CPM for review and approval and to the USFWS for review and comment at least 30 days prior to initiation of any tortoise handling, clearance, and preactivity surveys. Project activities will not begin until the ABs and BMs are approved by the CPM, in consultation with CDFG and USFWS. Biological monitors will ensure compliance with the protection measures, but will not be allowed to survey for or handle desert tortoises. Workers will notify the AB or BM of all desert tortoise observations.
2. The AB and BM will be responsible for awareness training, surveys, compliance monitoring and reporting. A desert tortoise clearance survey per USFWS protocol (USFWS, 2010) will be performed at the HHSEGS site. The site boundary will be enclosed with chain-link fencing for security purposes and desert tortoise exclusionary fencing will be attached to the bottom of the chain link fencing. Prior to fencing and grubbing of the fencing corridor, the AB will direct clearance surveys for tortoise within the fence corridor. This will include the clearance of any tortoise burrows within this corridor to ensure that any tortoise present are moved out of harm's way prior to grubbing and fence construction. The bottom 20 to 24 inches of the exclusionary fencing will be constructed of 1- to 2-inch galvanized vertical mesh fence material. The fence will be buried between 6 to 12 inches below ground or bent at a right angle toward the outside of the fence and covered with dirt, rocks or gravel to prevent the tortoise from digging under the fence. Gates will provide minimal ground clearance to deter ingress by tortoises. Once the site is fully enclosed with fencing, the ABs will relocate tortoises outside the fenced areas to sites designated by the CEC and USFWS. Once the areas are deemed free of desert tortoises after two consecutive surveys, then heavy equipment will be allowed to enter the site to perform earth work such as clearing, grubbing, leveling, and trenching. Following installation, the fencing will be inspected quarterly and after major rainfall events. Any damage to the fencing will be repaired immediately. Any preactivity surveys for other construction areas will be performed within 72 hours of work activities.

3. Unavoidable burrows inhabited by tortoises will be excavated by ABs using hand tools. To prevent reentry by a tortoise, all burrows that do not contain tortoises will be collapsed. Tortoises excavated from burrows will be relocated to unoccupied natural or artificial burrows immediately following excavation. The new burrow will be located at least 300 feet from the outside of the fenced project areas and will be of similar size, shape and orientation to the original burrow. Relocated tortoises will not be placed in existing occupied burrows. The ABs will wear disposable surgical gloves when handling tortoises. A new pair will be donned for each tortoise handled to avoid the transmission of upper respiratory tract disease. Equipment will be sterilized between each use. Tortoise handling, burrow construction, egg handling, and other procedures will follow those described in the Guidelines for Handling Desert Tortoise During Construction Projects (Desert Tortoise Council, 1994).
4. Existing routes of travel to and from the project site will be used. Cross-country vehicle and equipment use outside designated work areas will be prohibited. Personnel will exercise caution when traveling to and from the site.
5. A trash abatement program will be established. Trash and food items will be contained in closed containers and removed periodically to reduce the attractiveness to opportunistic predators such as common ravens, coyotes, and feral dogs.
6. Workers will be prohibited from bringing pets and firearms to the project site.
7. Any time a vehicle or construction equipment is parked for longer than 2 minutes in desert tortoise habitat, the ground under the vehicle will be inspected for the presence of desert tortoise before it is moved. If a desert tortoise is observed, the AB will immediately be contacted and the tortoise will be left to move on its own. If it does not move within 15 minutes, the AB will remove and relocate the animal to a safe location. In any event, the AB will ensure that the tortoise is relocated to a safe area and out of harm's way.
8. Activities will be restricted to pre-determined boundaries. If unforeseen circumstances require project expansion, the potential expanded work areas will be approved by the CPM. The new area will be surveyed for desert tortoises prior to use of the area. All appropriate protection measures will be implemented within the expanded work areas based on the judgment of the CPM and AB.
9. Trenches, bores and other excavations that constitute wildlife pitfalls will be immediately backfilled, sloped at a 3:1 ratio at the ends, covered, or fully enclosed with fencing to prevent any entrapment by the end of each work day. All excavations in tortoise habitat will be inspected periodically throughout and at the end of each workday by the AB or BM. If a tortoise becomes entrapped, the AB will remove and relocate the tortoise to a safe location.
10. Within desert tortoise habitat, any construction pipe, culvert, or similar structure with a diameter greater than 3 inches stored less than 8 inches aboveground on the construction site for one or more nights will be inspected for tortoises before the material is moved, buried, or capped. As an alternative, all such structures may be capped before being stored on the construction site or placed on pipe racks. These materials will not

need to be inspected or capped if they are stored within the fenced project areas after the clearance surveys have been completed.

11. All vehicles and equipment will be in proper working condition to ensure that there is no potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The AB, BM, and CPM will be informed of any hazardous spills within 24 hours. Hazardous spills will be immediately cleaned up and the contaminated soil will be properly disposed of at a licensed facility.
12. Intentional killing or collection of either plant or wildlife species including listed species such as the desert tortoise at the project site and surrounding areas will be prohibited. The AB, BM and CPM will be notified of any such occurrences within 24 hours
13. Water will be applied to the construction right-of-way, dirt roads, trenches, spoil piles and other areas where ground disturbance has taken place to minimize dust emissions and topsoil erosion. During the desert tortoise active season, a BM will patrol these areas to ensure water does not puddle for long periods of time and attract desert tortoises, common ravens, and other wildlife to the site.
14. To mitigate impacts on the desert tortoise resulting from construction and operation of the project, project owner will offset these effects through acquisition, an in lieu fee based on the final construction footprint and/or other mitigation measures. The ratio proposed is 1:1 for land of equal habitat quality but the ratio may be reduced if acquired or managed lands are of higher quality habitat.
15. Upon locating a dead or injured desert tortoise, the AB will make initial notification to the CPM within 24 hours of its finding. The notification must be made by telephone and writing to CPM). The report will include the date and time of the finding or incident (if known), location of the carcass, a photograph, cause of death (if known), and other pertinent information.
16. On an annual basis until construction is completed, the AB will prepare a report for the BLM, USFWS, CDFG, and the CPM documenting the effectiveness and practicality of the protection measure and making recommendations for modifying the measures to enhance species protection. The report will also provide information on the biological support including the awareness training, clearance/pre-activity surveys, monitoring activities and any observed desert tortoises including injuries and fatalities.

### **5.2.9.3 Mitigation Measure 3 – Noxious Weeds**

Without proper mitigation, noxious weeds have the potential to propagate in disturbed areas. Noxious weed control will be implemented during construction and operation of the HHSEGS project to reduce the potential impact of noxious weed spread or introduction. A Noxious Weed Control Plan will be prepared and submitted for review and approval prior to construction.

### **5.2.9.4 Non-listed Wildlife Species**

Other non-listed wildlife species are known to occur within the project area. Specific mitigation and protection measures were developed to address these special status wildlife

species. The following mitigation and protection measures will be implemented during preconstruction, construction and operation.

#### **5.2.9.4.1 Mitigation Measure 4 – Burrowing Owl**

The following measures are proposed for burrowing owl. These measures are outlined in the CDFG memorandum entitled *Staff Report on Burrowing Owl Mitigation* (CDFG, 1995). The objective of the measures is to avoid and minimize impacts to burrowing owls at the project site and preserve habitat that will support viable populations.

- a. To the degree possible, ground-disturbing actions should be carried out from September 1 to January 31, which is prior to the nesting season. Because the timing of nesting activity may vary with latitude and climatic conditions, this timeframe should be adjusted accordingly.
- b. A preconstruction survey of suitable habitat at the project site and a 150-meter (approximately 500-foot) buffer (where possible and appropriate based on habitat) will be surveyed within 30 days prior to construction to verify that no additional burrowing owls have established territories since the most recent survey.
- c. Occupied burrows will not be disturbed during the nesting season (February 1 through August 31). This will be accomplished by establishing a 500-foot set back from any active burrow and constructing additional noise/visual barriers (e.g., haystacks or plywood fencing) to shield the active burrow from construction activities. Posting signs designating a sensitive area will reduce disturbance. These methods will apply until the AB verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.
- d. If owls must be moved away from the disturbance area, passive relocation techniques will be used rather than trapping. At least one or more weeks will be necessary to allow the owls to acclimate to the alternate burrows.

#### **5.2.9.4.2 Mitigation Measure 5 – Nesting Migratory and Resident Birds**

- a. The ABs and BMs will perform a preconstruction survey, concurrent with the desert tortoise clearance survey, for nesting birds in the project area, including areas within 250 feet of all project facilities and access roads. If construction is to occur during the nesting season between February 1 and August 31, all sites to be disturbed will be surveyed for ground-nesting and shrub-nesting birds prior to construction. If an active nest of a species protected under the MBTA or BGEPA is found, construction activity will be limited within 250 feet of the nest, or lesser distance if approved by the appropriate agencies, which will be monitored by the BM to ensure the nest is not impacted. Construction activities and timing may be modified to avoid impacts to nesting birds.
- b. Facilities that may attract avian species such as common ravens to perch or nest will be fitted with anti-perching devices such as Bird-Be-Gone or similar material.
- c. Frequent disturbance (every few days) may be initiated in the project areas just prior to the nesting season to discourage nesting in the construction right-of-way.

#### **5.2.9.4.3 Mitigation Measure 6 – Raptors**

Through an Avian Protection Plan, a threshold of significance for raptor/migratory bird (species protected under the MBTA and the BGEPA) mortality will be established. Monthly post-mortality surveys for such species will be conducted by the AB or BM during the first year of project operation. If this threshold of significance is met or exceeded, adaptive management practices will be implemented to reduce such impact. Based on the results of these monthly post-mortality surveys, it will be determined if these surveys are to continue after the initial year.

#### **5.2.9.4.4 Mitigation Measure 7 – American Badger**

The ABs and BMs will perform a preconstruction survey, concurrent with the desert tortoise clearance survey, for badger dens in the project area, including areas within 250 feet of all project facilities, utility corridors, and access roads. If badger dens are found, each den will be classified as inactive, potentially active, or definitely active.

Inactive dens will be excavated by hand and backfilled to prevent reuse by badgers. Potentially and definitely active dens will be monitored for 3 consecutive nights using a tracking medium (such as diatomaceous earth or fire clay) at the entrance. If no tracks are observed in the tracking medium after 3 nights, the den will be excavated and backfilled by hand. If tracks are observed, the den will be progressively blocked with natural materials (rocks, dirt, sticks, and vegetation piled in front of the entrance) for the next 3 to 5 nights to discourage the badger from continued use. The den will then be excavated and backfilled by hand to ensure that no badgers are trapped in the den.

### **5.2.10 Involved Agencies and Agency Contacts**

Involved agencies and agency contacts are listed in Tables 5.2-13. Summaries of agency communications that have occurred regarding the project are provided in Table 5.2-14.

### **5.2.11 Permits Required and Permit Schedule**

Required permits and permit schedule are listed in Table 5.2-15.

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**TABLE 5.2-1**  
Laws, Ordinances, Regulations, and Standards for Biological Resources

<b>LORS</b>	<b>Requirements/ Applicability</b>	<b>Administering Agency</b>	<b>AFC Section Explaining Conformance</b>
<b>Federal</b>			
Endangered Species Act of 1973 Title 16 United States Code (USC) §1531 et seq. (16 USC 1531 et seq.), Title 50 Code of Federal Regulations (CFR) §17.1 et seq. (50 CFR 17.1 et seq.)	Designates and protects federally threatened and endangered plants and animals and their critical habitat.	USFWS	A biological assessment will be prepared based on the desert tortoise protocol survey results. No critical habitat has been designated in the project area. Formal Section 7 consultation with USFWS will be required.
Section 404 of Clean Water Act of 1977 (33 USC §1344).	Requires permit to dredge or fill jurisdictional wetlands or waters of the U.S.	USACE	It is anticipated that USACE will not take jurisdiction of the ephemeral washes and a permit will not be needed.
Section 401 of Clean Water Act of 1977	Requires water quality impact analysis for the project when using 404 permits and for discharges to waterways.	RWQCB	It is anticipated that the RWQCB will not require a 401 Certification for discharges into the ephemeral washes.
Migratory Bird Treaty Act of 1918 (16 USC §§703-711)	Prohibits the non-permitted take of migratory birds.	USFWS	Project owner will avoid take of migratory birds by implementing avoidance and protection measures.
Bald and Golden Eagle Protection Act of 1940 as amended (16 USC 668).	Prohibits the non-permitted take of bald and golden eagles.	USFWS	Project owner will avoid take of eagles by implementing avoidance and protection measures.
California Desert Protection Act of 1994 (CDPA)	Established 69 wilderness areas and the Mojave National Preserve. CDPA lands were transferred to the National Park Service.	BLM	The HHSEGS site does not contain any CDPA lands.
Wild Horses and Burros: Protection, Management, and Control (16 USC §1331; 43 CFR §4700)	The Wild Free-Roaming Horses and Burros Act of 1971 protects wild, free-roaming horses and burros from capture, branding, harassment, or death.	BLM, USFS	Feral burros were observed in the HHSEGS area. Wild, free-roaming herds of horses or burros will not be allowed onsite following project construction; therefore, provisions of this Act are not applicable to this project.
Federal Noxious Weed Act  (7 U.S.C. §§ 2801 et seq. (1974))	Manages invasive plants and the listing of noxious weeds.	USDA	Noxious weed occur on and near the site.

**TABLE 5.2-1**  
Laws, Ordinances, Regulations, and Standards for Biological Resources

<b>LORS</b>	<b>Requirements/ Applicability</b>	<b>Administering Agency</b>	<b>AFC Section Explaining Conformance</b>
<b>State</b>			
California Environmental Quality Act of 1970 (Public Resources Code §§21000 et seq.).	Sets goals to assist California public agencies in identifying potential significant environmental effects of their actions and either avoiding or mitigating those effects when feasible.	CEC	CEC is the state lead agency and will prepare the necessary CEQA documentation.
Warren Alquist Act of 2005 (Public Resources Code §§25000 et seq.).	A CEQA-equivalent process implemented by the CEC.	CEC	Preparation of this application will result in an assessment prepared by the CEC staff to fulfill the requirements of CEQA.
California Endangered Species Act of 1984 (Fish and Game Code, §2050 through §2098)	Protects California's endangered and threatened species.	CDFG	It is anticipated that the CDFG will issue a 2081 permit for the desert tortoise.
Fish and Game Code Fully Protected Species (§3511: Fully Protected birds, §4700: Fully Protected mammals, §5050: Fully Protected reptiles and amphibians, §5515: Fully Protected fishes)	Prohibits the taking of plants and animals that are Fully Protected in California.	CDFG	Project owner will avoid take of fully protected species by implementing avoidance and protection measures
Fish and Game Code §1930, Significant Natural Areas (SNAs)	Designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitats. Listed in the CNDDDB.	CDFG	There are no SNAs in the project area.
Fish and Game Code §1580, Designated Ecological Reserves (DERs)	The CDFG commission designates land and water areas as significant wildlife habitats to be preserved in natural condition for the general public to observe and study.	CDFG	There are no DERs in the project area.
Fish and Game Code §1600, Streambed Alteration Agreement (SAA)	Reviews projects for impacts to waterways, including impacts to vegetation and wildlife from sediment, diversions, and other disturbances.	CDFG	It is possible that CDFG will take jurisdiction of the ephemeral washes onsite. An LSAA may be needed prior to any alteration of the drainages.

**TABLE 5.2-1**  
Laws, Ordinances, Regulations, and Standards for Biological Resources

<b>LORS</b>	<b>Requirements/ Applicability</b>	<b>Administering Agency</b>	<b>AFC Section Explaining Conformance</b>
California Food and Agriculture Code 5400, et seq.	The California Department of Food and Agriculture (CDFA) is the lead agency in California for regulated noxious weed control and prevention. County Departments of Agriculture, led by an Agricultural Commissioner, carry out much of the inspection and enforcement work.	CDFA	Noxious weeds are present in the project area; CEC coordination with the county and/or CDFA is anticipated to determine if a permit or other actions are required.
Native Plant Protection Act of 1977, Fish and Game Code, §1900 et seq.	Designates rare and endangered plants and provides specific protection measures for identified populations.	CDFG	Project owner will avoid, minimize, or mitigate impacts to rare and endangered plant species.
Porter Cologne Act	The ephemeral washes onsite may be considered waters of the state, under the Porter-Cologne Act.	RWQCB	The ephemeral washes onsite may require a Waste Discharge Permit from the RWQCB.
Public Resources Code §§25500 & 25527	Siting of facilities in certain areas of critical concern for biological resources, such as ecological preserves, wildlife refuges, estuaries, and unique or irreplaceable wildlife habitats of scientific or educational value is prohibited or when no alternative, strict criteria are applied.	CDFG	No areas of critical biological concern occur on project site.
Title 20 CCR §§1702 (q) and (v)	Protects “areas of critical concern” and “species of special concern” identified by local, state, or federal resource agencies in the project area, including the California Native Plant Society.	CDFG	No areas of critical concern occur on project site.
Title 14 CCR Section 15000 et seq.	Describes the types and extent of information required to evaluate the effects of a proposed project on biological resources of a project site.	CEC	AFC provides this information.
Food and Agriculture Code (FAC) § 5400, Division 18, Chapter 2, California Seed Law Sections 52251 through 52515	The Secretary of Agriculture regulates noxious weeds.	CDFA	Mitigation Measure 3 – Noxious Weeds will conform to this code.

**TABLE 5.2-1**  
Laws, Ordinances, Regulations, and Standards for Biological Resources

<b>LORS</b>	<b>Requirements/ Applicability</b>	<b>Administering Agency</b>	<b>AFC Section Explaining Conformance</b>
Fish and Game Code §3503	This code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.	CDFG	Mitigation Measure 7 - Nesting Migratory and Resident Birds will conform to this code.
Fish and Game Code §3503.5	This code protects all birds of prey and their eggs and nests.	CDFG	Mitigation Measure 8 – Raptors will conform to this code.
Fish and Game Code § 3513	This code makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird.	CDFG	Mitigation Measure 8 – Raptors will conform to this code.
Fish and Game Code Sections 4700, 5050, and 5515	These codes list mammal, amphibian, and reptile species that are fully protected in California.	CDFG	Project owner will avoid take of fully protected species by implementing avoidance and protection measures
Inyo County General Plan	Contains specific objectives to protect water quality and to ensure that groundwater is withdrawn at sustainable levels pursuant to Section 1810 of the Water Code and the Inyo County Groundwater Ordinance.	Inyo Co.	The project is consistent with Inyo County General Plan and Solar and Wind Renewable Energy General Plan Amendment (REGPA) policies for this area. It is a permitted use in the applicable Renewable Energy Land Use Designation Overlay.
Inyo County Renewable Energy Ordinance	(1) support and encourage the responsible development of its solar and wind resources  (2) recover the county's costs of increased services resulting from such development; and (3) ensure that the citizens of Inyo County equitably share in the benefits resulting from the use of such resources.	Inyo Co.	The project will comply with the requirements of this ordinance and requirements of the County.

**TABLE 5.2-2**  
Special-status Plant Species With the Potential to Occur Within the HHSEGS Site and 250-foot Buffer

Common Name/ Scientific Name	Conservation Status (Fed/CA/NV/CNPS)	Habitat Preferences	Flowering Period	Potential to Occur within the Study Area, as Estimated Prior to Surveys
Mormon needle grass ( <i>Achnatherum aridum</i> [= <i>Stipa arida</i> ])	BLM - none NNHP - none NNPS - none CNPS 2.3	Joshua tree woodland, pinyon-juniper woodland; carbonate substrates. 500-2570m	May-July	None. Habitat not present in study area. Nearest known localities 10-15 mi south of project area.
Ivory-spined agave ( <i>Agave utahensis</i> var. <i>eborispina</i> )	BLM - none NNHP - none NNPS - dropped CNPS 1B.3	Mojave Desert scrub; rocky carbonate slopes. 945-1370m	May-June	None. Habitat not present in study area. Nearest known locality on E side of Nopah Range, 5-7 mi west of project area.
Clark Mountain agave ( <i>Agave utahensis</i> var. <i>nevadensis</i> )	BLM - none NNHP - none NNPS - dropped CNPS 4.2	Mojave Desert scrub, Joshua tree woodland, pinyon-juniper woodland; carbonate or volcanic. 900-1585m	May-July	None. Nearest known locality is in Kingston Range, about 15 mi south of project area.
Ripley's aliciella ( <i>Aliciella</i> [= <i>Gilia</i> ] <i>ripleyi</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Mojave Desert scrub; carbonate. 305-1950m	May-July	None. Habitat not present in study area. Nearest known locality is in Kingston Range, about 15 mi south of project area.
Coyote gilia ( <i>Aliciella</i> [= <i>Gilia</i> ] <i>triodon</i> )	BLM - none NNHP - none NNPS - none CNPS 2.2	Great Basin scrub, pinyon-juniper woodland; sometimes sandy. 610-1700m	Apr-June	Very Low. Nearest known locality W slope of Nopah Range, about 8 mi west of project area.
Inyo onion ( <i>Allium atrorubens</i> var. <i>cristatum</i> )	BLM - none NNHP - none NNPS - none CNPS 4.3	Mojave Desert scrub, Joshua tree woodland, pinyon-juniper woodland; sandy or rocky. 1200-2560m	Apr-June	Very Low. Nearest known locality in the Kingston Range, about 15 mi south of the project area.
Nevada onion ( <i>Allium nevadense</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Pinyon-juniper woodland; sandy or gravelly. 1300-1700m	Apr-May	None. Habitat not present in study area. Nearest known locality is at Horsethief Spring, Kingston Range, about 15 mi south of project area.

**TABLE 5.2-2**  
Special-status Plant Species With the Potential to Occur Within the HHSEGS Site and 250-foot Buffer

Common Name/ Scientific Name	Conservation Status (Fed/CA/NV/CNPS)	Habitat Preferences	Flowering Period	Potential to Occur within the Study Area, as Estimated Prior to Surveys
Pink-funnel lily ( <i>Androstegium breviflorum</i> )	BLM - none NNHP - none NNPS - none CNPS 2.2	Desert dunes, Mojave Desert scrub; bajadas; sandy. 220-640m	Mar-Apr	Very Low. Prior to surveys for this project, nearest known locality near the Valjean Hills, about 25 mi southwest of the project area.
White bear poppy ( <i>Arctomecon merriamii</i> )	BLM - NS NNHP - S NNPS - watch CNPS 2.2	Chenopod scrub, Mojave Desert scrub; rocky. 490-1800m	Apr-May	None. Nearest known location S end of Nopah Range, about 15 mi southwest of project area.
Borrego milk-vetch ( <i>Astragalus lentiginosus</i> var. <i>borreanus</i> )	BLM - none NNHP - none NNPS - M CNPS 4.3	Mojave Desert scrub, Sonoran desert scrub; sandy. 30-270m	Feb-May	None. Nearest known locality is at the Salt Spring Hills, about 25 mi southwest of the project area.
Providence Mountains milk-vetch ( <i>Astragalus nutans</i> )	BLM - none NNHP - none NNPS - none CNPS 4.3	Mojave Desert scrub, Joshua tree woodland, pinyon-juniper woodland; Sonoran desert scrub; sandy or gravelly. 450-1950m	Mar-June (Oct)	Very Low. Nearest known locality is in the Kingston Range, about 15 mi south of the project area.
Preuss' milk-vetch ( <i>Astragalus preussii</i> var. <i>preussii</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Chenopod scrub, Mojave Desert scrub; clay. 750-780m	May-June	Low. Prior to surveys for this project, nearest known localities are about 15 mi SE in Mesquite Valley in CA, and about 30 mi northwest in Ash Meadows National Wildlife Refuge in NV.
Tidestrom's milk-vetch ( <i>Astragalus tidestromii</i> )	BLM - none NNHP - none NNPS - none CNPS 2.2	Mojave Desert scrub; carbonate, sandy. 600-1585m	Apr-July	Very Low. Prior to surveys for this project, nearest known localities were southeast of Nopah Range and south side of Kingston Range, about 15 mi from project area.
Scaly cloak fern ( <i>Astrolepis cochisensis</i> ssp. <i>cochisensis</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Joshua tree woodland, pinyon-juniper woodland; rocky, carbonate. 900-1800m	None	None. Habitat not present in study area. Nearest known locality is in Clark Mountains, more than 20 mi south of project area.

**TABLE 5.2-2**  
Special-status Plant Species With the Potential to Occur Within the HHSEGS Site and 250-foot Buffer

Common Name/ Scientific Name	Conservation Status (Fed/CA/NV/CNPS)	Habitat Preferences	Flowering Period	Potential to Occur within the Study Area, as Estimated Prior to Surveys
Pahrump silverscale ( <i>Atriplex argentea</i> var. <i>longitrichoma</i> )	BLM - CS NNHP - track NNPS - watch CNPS 1B.1	Mojave Desert scrub, chenopod scrub; alkaline, sometimes roadsides. 700-850m	Apr-May	Moderate. Potentially suitable habitat present in study area. Nearest known locality is less than 5 mi north of study area.
Three-awned gramma ( <i>Bouteloua trifida</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Mojave Desert scrub; rocky, carbonate. 700-2000m	May-Sept	None. Habitat not present in study area. Nearest known locality is in Kingston Range, 10-15 mi south of project area.
Booth's hairy evening-primrose ( <i>Camissonia boothii</i> ssp. <i>intermedia</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Great Basin scrub (sandy), pinyon-juniper woodland. 1500-2150m	June	Very Low. Habitat not present in study area. Nearest known locality in Kingston Range, 10-15 mi south of project area.
California sawgrass ( <i>Cladium californicum</i> )	BLM - none NNHP - none NNPS - M CNPS 2.2	Meadows and seeps, marshes and swamps; alkaline or freshwater. 60-600m	June-Sept	None. Habitat not present in study area. Nearest known locality is near Tecopa, about 15 mi west of the project area.
Tecopa bird's-beak ( <i>Cordylanthus tecopensis</i> )	BLM - CS, NS NNHP - S NNPS - T CNPS 1B.2	Mojave Desert scrub, meadows and seeps; mesic, alkaline. 60-900m	July-Oct	None. Habitat not present within study area. Nearest known locality is near Tecopa, about 15 mi west of the project area.
Desert pincushion ( <i>Coryphantha chlorantha</i> )	BLM - none NNHP - none NNPS - none CNPS 2.1	Joshua tree woodland, Mojave Desert scrub, pinyon-juniper woodland; carbonate, gravelly, rocky. 45-1525m	Apr-Sept	None. Habitat not present in study area. Nearest known locality is in Kingston Range, 10-15 mi south of project area.
Hall's meadow hawksbeard ( <i>Crepis runcinata</i> ssp. <i>hallii</i> )	BLM - none NNHP - none NNPS - none CNPS 2.1	Mojave Desert scrub, pinyon-juniper woodland; mesic, alkaline. 1250-1980m	May-July	None. Nearest known locality is near Shoshone, about 20 mi west of the project area.

**TABLE 5.2-2**  
Special-status Plant Species With the Potential to Occur Within the HHSEGS Site and 250-foot Buffer

Common Name/ Scientific Name	Conservation Status (Fed/CA/NV/CNPS)	Habitat Preferences	Flowering Period	Potential to Occur within the Study Area, as Estimated Prior to Surveys
Gilman's cymopterus ( <i>Cymopterus gilmanii</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Mojave Desert scrub; often carbonate. 915-2000m	Apr-May	None. Nearest known locality is in Kingston Range, 10-15 mi south of project area.
Purple-veined cymopterus ( <i>Cymopterus multinervatus</i> )	BLM - none NNHP - none NNPS - none CNPS 2.2	Mojave Desert scrub, pinyon-juniper woodland; sandy or gravelly. 790-1800m	Mar-Apr	Low. Potential habitat present within the study area. Nearest known locality is Clark Mountains, about 25 mi south of the study area.
Harwood's eriastrum ( <i>Eriastrum harwoodii</i> )	BLM - none NNHP - none NNPS - none CNPS 1B.2	Desert dunes. 200-915m	Mar-June	Very Low. Nearest known locality is at Cadiz Dunes, more than 30 mi south of project area.
White-flowered rabbitbrush ( <i>Ericameria</i> [= <i>Chrysothamnus</i> ] <i>albida</i> )	BLM - none NNHP - none NNPS - none CNPS 4.2	Chenopod scrub, meadows and seeps, playas; saline or alkaline. 300-1950m	June-Nov	Very Low. Nearest known locations are near Tecopa and Shoshone, about 15-20 mi west of the project area.
Narrow-leaved yerba santa ( <i>Eriodictyon angustifolium</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Pinyon-juniper woodland. 1500-1900m	May-Aug	None. Habitat not present in study area. Nearest known locality is in west Mesquite Valley, 12-15 mi southeast of the project area.
Pahrump Valley buckwheat ( <i>Eriogonum bifurcatum</i> )	BLM - CS, NS NNHP - S NNPS - T CNPS 1B.2	Chenopod scrub; sandy. 700-810m	Apr-June (Sept-Oct)	High. Nearest known localities are within the study area, found in October 2010 during survey conducted for this project.
Reveal's buckwheat ( <i>Eriogonum contiguum</i> )	BLM - none NNHP - track NNPS - M CNPS 2.3	Mojave Desert scrub; sandy. 30-1320m	(Feb) Mar-May (June)	Moderate. Nearest known locality is in Stewart Valley, less than 5 mi north of the study area.

**TABLE 5.2-2**  
Special-status Plant Species With the Potential to Occur Within the HHSEGS Site and 250-foot Buffer

Common Name/ Scientific Name	Conservation Status (Fed/CA/NV/CNPS)	Habitat Preferences	Flowering Period	Potential to Occur within the Study Area, as Estimated Prior to Surveys
Juniper sulphur-flowered buckwheat ( <i>Eriogonum umbellatum</i> var. <i>juniporinum</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Mojave Desert scrub, pinyon-juniper woodland. 1300-2500m	July-Oct	None. Nearest known localities are in the Kingston Range, 10-15 mi south of the project area.
Hairy erioneuron ( <i>Erioneuron pilosum</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Pinyon-juniper woodland; rocky, sometimes carbonate. 1500-2010m	May-June	None. Habitat not present in the study area. Nearest known locality is in the Kingston Range, 10-15 mi south of project area.
Hot springs fimbristylis ( <i>Fimbristylis thermalis</i> )	BLM - none NNHP - none NNPS - M CNPS 2.2	Meadows and seeps; alkaline, near hot springs. 110-1340m	July-Sept	None. Habitat not present in the study area. Nearest known locality is near Shoshone, 15 mi west of project area.
Kingston Mountains bedstraw ( <i>Galium hilendiae</i> ssp. <i>kingstonense</i> )	BLM - CS, NS NNHP - S NNPS - T CNPS 1B.3	Lower montane coniferous forest, pinyon-juniper woodland; rocky. 1200-2100m	June	None. Habitat not present in the project area. Nearest known localities are in Kingston Range, about 15 mi south of project area.
Desert bedstraw ( <i>Galium proliferum</i> )	BLM - none NNHP - none NNPS - none CNPS 2.2	Joshua tree woodland, Mojave Desert scrub, pinyon-juniper woodland; rocky, carbonate. 1190-1570m	Mar-June	None. Habitat not present in the study area. Nearest known locality in Kingston Range, about 15 mi south of project area.
Ash Meadows gumplant ( <i>Grindelia fraxinipratensis</i> )	FT BLM - SS NNHP - S NNPS - T CNPS 1B.2	Meadows and seeps; mesic clay. 635-700m.	June-Oct	None. Habitat not present in the study area. Known from three extant Element Occurance (EO) in CA. Nearest known localities are in Carson Slough, Amargosa River drainage, about 30 mi northwest of the project area.
Prickle-leaf ( <i>Hecastocleis shockleyi</i> )	BLM - none NNHP - none NNPS - M CNPS 3	Chenopod scrub, Mojave Desert scrub; rocky slopes, washes; often carbonate or slate. 1200-2200m	May-July	None. Nearest known locality is in northeast part of Kingston Range, about 15 mi south of the project area.

**TABLE 5.2-2**  
Special-status Plant Species With the Potential to Occur Within the HHSEGS Site and 250-foot Buffer

Common Name/ Scientific Name	Conservation Status (Fed/CA/NV/CNPS)	Habitat Preferences	Flowering Period	Potential to Occur within the Study Area, as Estimated Prior to Surveys
Copperwort ( <i>Iva acerosa</i> )	BLM - none NNHP - none NNPS - M CNPS 4.2	Meadows and seeps (alkaline), playas (saline). 60-900m	May-Dec	None. Nearest known locality is near Tecopa Hot Springs, about 15 mi west of the project area.
Kingston Mountains ivesia ( <i>Ivesia patellifera</i> )	BLM - none NNHP - none NNPS - none CNPS 1B.3	Pinyon-juniper woodland; granitic, rocky. 1400-2100m	June-Oct	None. Habitat not present in the project area. Nearest known localities are in Kingston Range, about 15 mi south of the project area.
Cooper's rush ( <i>Juncus cooperi</i> )	BLM - none NNHP - none NNPS - none CNPS 4.3	Meadows and seeps; mesic, alkaline or saline. -260-1770m	Apr-May (Aug)	None. Nearest known localities are near Tecopa and Shoshone, about 15-20 mi west of project area.
Inyo blazing star ( <i>Mentzelia inyoensis</i> )	BLM - CS NNHP - track NNPS - watch CNPS 1B.3	Great Basin scrub, pinyon-juniper woodland; rocky, sometimes carbonate. 1160-1980m	Apr-Oct	None. Habitat not present in the project area. Nearest known locality is in Kingston Range, 10-15 mi south of project area.
Wing-seed blazing star ( <i>Mentzelia pterosperma</i> )	BLM - none NNHP - none NNPS - none CNPS 2.2	Mojave Desert scrub; gypsum soils. 1140m	Apr-June	Low. Prior to surveys for this project, known in CA only from the Valley Wells and Clark Mountains areas, about 35 mi south of the project area.
Spiny-hair blazing star ( <i>Mentzelia tricuspis</i> )	BLM - none NNHP - none NNPS - none CNPS 2.1	Mojave Desert scrub; sandy, gravelly, slopes and washes. 150-1280m	Mar-May	Low. Nearest known locality is from northeast Kingston Range, about 15 mi south of the project area.
Red four-o'clock ( <i>Mirabilis coccinea</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Pinyon-juniper woodland. 1070-1800m	May-July	None. Habitat not present within the project area. Nearest known locality is from northeast Kingston Range, about 15 mi south of the project area.

**TABLE 5.2-2**  
Special-status Plant Species With the Potential to Occur Within the HHSEGS Site and 250-foot Buffer

Common Name/ Scientific Name	Conservation Status (Fed/CA/NV/CNPS)	Habitat Preferences	Flowering Period	Potential to Occur within the Study Area, as Estimated Prior to Surveys
Utah mortonia ( <i>Mortonia utahensis</i> )	BLM - none NNHP - none NNPS - none CNPS 4.3	Mojave Desert scrub, Joshua tree woodland, pinyon-juniper woodland; carbonate. 760-2100m	Mar-May	None. Habitat not present within the project area. Nearest known localities are at the southern end of the Nopah Range, about 8 mi west of the project area.
Crowned muilla ( <i>Muilla coronata</i> )	BLM - none NNHP - none NNPS - M CNPS 4.2	Chenopod scrub, Mojave Desert scrub, Joshua tree woodland, pinyon-juniper woodland. 765-1960m	Mar-Apr (May)	Low. Nearest known localities are in vicinity of Clark Mtn, more than 20 mi south of project area.
Amargosa nitrophila ( <i>Nitrophila mohavensis</i> )	FE BLM - SS NV - CE NNHP - track SE CNPS 1B.1	Playas; mesic, clay. 425-750m.	May-Oct	None. Habitat not present within the study area. Fewer than five EOs in CA, mainly near Carson Slough in the Amargosa Desert. Nearest known locality is near Tecopa, about 15 mi southwest of project area.
Spiny cliff-brake ( <i>Pellaea truncata</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Pinyon-juniper woodland; volcanic or granitic, rocky. 1200-2150m	None	None. Habitat not present within the study area. Nearest known location is in Kingston Range, about 15 mi south of the project area.
Amargosa beardtongue ( <i>Penstemon fruticiformis</i> var. <i>amargosae</i> )	BLM - CS, NS NNHP - S NNPS - T CNPS 1B.3	Mojave Desert scrub. 850-1400m	Apr-June	Low. Nearest known locality is in south Nopah Range, about 10 mi west of study area.
Stephen's beardtongue ( <i>Penstemon stephensii</i> )	BLM - none NNHP - none NNPS - none CNPS 1B.3	Mojave Desert scrub, pinyon-juniper woodland; usually carbonate, rocky. 1160-1850m	Apr-June	None. Habitat not present in study area. Many known localities are in the Kingston Range, about 15 mi south of the project area.
Utah beardtongue ( <i>Penstemon utahensis</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Chenopod scrub, Great Basin scrub, Mojave Desert scrub, pinyon-juniper woodland; rocky. 1065-2500m	Apr-May	Low. Nearest known localities are in the Kingston Range, about 15 mi south of the project area.

**TABLE 5.2-2**  
Special-status Plant Species With the Potential to Occur Within the HHSEGS Site and 250-foot Buffer

Common Name/ Scientific Name	Conservation Status (Fed/CA/NV/CNPS)	Habitat Preferences	Flowering Period	Potential to Occur within the Study Area, as Estimated Prior to Surveys
Spine-noded milk-vetch ( <i>Peteria thompsoniae</i> )	BLM - none NNHP - none NNPS - M CNPS 2.3	Mojave Desert scrub; sandy, alluvial fans. 800-825m. Known in CA from only 1 EO in California Valley (near project site – check)	May-June	Low. Known in CA from only one EO, in California Valley, about 5 mi southwest of the project area.
Death Valley round-leaved phacelia ( <i>Phacelia mustelina</i> )	BLM - CS NNHP - track NNPS - watch CNPS 1B.3	Mojave Desert scrub, pinyon-juniper woodland; carbonate or volcanic; gravelly or rocky. 730-2620m.	May-July	None. Known in CA from 20 EOs; most historic. Nearest known locality is from the Salsberry Peak area, about 20 mi west of the project area.
Parish's phacelia ( <i>Phacelia parishii</i> )	BLM - CS, NS NNHP - S NNPS - watch CNPS 1B.1	Mojave Desert scrub, playas; clay or alkaline. 540-1200m	Apr-May (June-July)	Very Low. Nearest known localities are in CA near the T-line route include: Coyote Dry Lake. Also known from Pahrump Valley in NV.
Goodding's phacelia ( <i>Phacelia pulchella</i> var. <i>gooddingii</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Mojave Desert scrub; clay, often alkaline. 800-1000m.	Apr-June	High. Prior to surveys for this project, known in CA from only four EOs, all historical, including two in Pahrump Valley.
Small-flowered rice grass ( <i>Piptatherum micranthum</i> [= <i>Stipa divericata</i> ])	BLM - none NNHP - none NNPS - none CNPS 2.3	Pinyon-juniper woodland; gravelly, carbonate. 700-2950m.	June-Sept	None. Habitat not present within the project area. Nearest known locality is in the Kingston Range, 10-15 mi south of project area.
Desert popcorn-flower ( <i>Plagiobothrys salsus</i> )	BLM - none NNHP - none NNPS - none CNPS 2.2	Playas; alkaline. 700m.	May-Aug	None. Known in CA from approximately five EOs, of which four are historical. Nearest known locality is in the vicinity of Death Valley Junction, about 20 mi northwest of the project area.
Death Valley sage ( <i>Salvia funerea</i> )	BLM - none NNHP - S NNPS - watch CNPS 4.3	Mojave Desert scrub; carbonate. 0-1865m	Mar-May	None. Habitat not present within study area. Nearest known locality is near Ryan, about 35 mi northwest of the study area.

**TABLE 5.2-2**  
Special-status Plant Species With the Potential to Occur Within the HHSEGS Site and 250-foot Buffer

Common Name/ Scientific Name	Conservation Status (Fed/CA/NV/CNPS)	Habitat Preferences	Flowering Period	Potential to Occur within the Study Area, as Estimated Prior to Surveys
Johnson's bee-hive cactus ( <i>Sclerocactus johnsonii</i> )	BLM - none NNHP - none NNPS - none CNPS 2.2	Mojave Desert scrub; granitic. 500-1200m	Apr-May	Very Low. Nearest known locality at the southern end of the Nopah Range, about 8 mi west of the project area.
Desert wing-fruit ( <i>Sellinocarpus nevadensis</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Joshua tree woodland, Mojave Desert scrub; rocky. 1160-1250m.	June-Sept	Very Low. Prior to surveys for this project, known in CA from only one locality, northeastern end of the Kingston Range, about 10 mi southeast of the project area.
Rusby's desert mallow ( <i>Sphaeralcea rusbyi</i> var. <i>eremicola</i> )	BLM - none NNHP - none NNPS - none CNPS 1B.2	Joshua tree woodland, Mojave Desert scrub. 975-1500m.	Mar-June	None. Endemic to CA. Known from approx. 20 EOs in Death Valley National Park and near Clark Mountains. Nearest known locality is in Kingston Range, 10-15 mi south of project area.
Plummer's woodsia ( <i>Woodsia plummerae</i> )	BLM - none NNHP - none NNPS - none CNPS 2.3	Pinyon-juniper woodland; granitic, rocky. 1600-2000m.	None	None. Habitat not present within the study area. Nearest known locality on high peaks of Kingston Range, 10-15 mi south of the project area.

**Sources:**

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California Native Plant Society. 2011. Inventory of Rare and Endangered Plants of California. On-line version.

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Jepson Online Interchange. 2011. Consortium of California Herbaria collection records.

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**TABLE 5.2-2**  
Special-status Plant Species With the Potential to Occur Within the HHSEGS Site and 250-foot Buffer

Common Name/ Scientific Name	Conservation Status (Fed/CA/NV/CNPS)	Habitat Preferences	Flowering Period	Potential to Occur within the Study Area, as Estimated Prior to Surveys
<b>Status Codes:</b>				
<b>USFWS Status</b> FE – Federally listed as Endangered FT – Federally listed as Threatened		<b>Nevada Native Plant Society Status (NNPS)</b> Watch – conservation concern in Nevada M = Marginal – conservation concern in Nevada but more widespread elsewhere Dropped – no longer of conservation concern in Nevada		
<b>BLM Status</b> SS - Special status CS - Sensitive in California NS - Sensitive in Nevada		<b>California Native Plant Society (CNPS) Status</b> 1A – Plants presumed extinct in California  1B – Plants rare, threatened, or endangered in California and elsewhere 2 – Plants rare, threatened, or endangered in California, but more common elsewhere 3 – Plants about which we need more information – a review list 4 – Plants of limited distribution – a watch list		
<b>California State Status</b> SE – State listed as endangered ST – State listed as threatened SR – State listed as rare		<b>CNPS threat code extensions:</b>		
<b>Nevada State Status</b> CE – Critically Endangered		.1 -- Seriously endangered in California. .2 -- Fairly endangered in California. .3 -- Not very endangered in California. ? -- Not determined.		
<b>Nevada Natural Heritage Program Status (NVNH)</b> Track – location data is maintained for these species				

**TABLE 5.2-3**  
 Plant Species Observed within the HHSEGS Site and 250-foot Buffer during 2011 Surveys

Scientific Name	Common Name	Site	250' Site Buffer	Life Form
<b>Gymnosperms</b>				
<b>Cupressaceae</b>		Cypress Family		
<i>Cupressus arizonica</i> var. <i>glabra</i> *	blue Arizona cypress	x		tree
<b>Ephedraceae</b>		Ephedra Family		
<i>Ephedra funerea</i>	Death Valley ephedra	x	x	shrub
<i>Ephedra nevadensis</i>	Nevada ephedra	x	x	shrub
<b>Flowering Plants</b>				
<b>Dicots</b>				
<b>Amaranthaceae</b>		Amaranth Family		
<i>Amaranthus albus</i> *	tumbleweed	x		annual
<b>Apiaceae</b>		Carrot Family		
<i>Cymopterus multinervatus</i>	purplenerve springparsley	x		perennial
<b>Asclepiadaceae</b>		Milkweed Family		
<i>Asclepias erosa</i>	desert milkweed	x	x	perennial
<b>Asteraceae</b>		Sunflower Family		
<i>Acamptopappus shockleyi</i>	Shockley's goldenhead	x	x	shrub
<i>Acamptopappus sphaerocephalus</i> var. <i>sphaerocephalus</i>	goldenhead	x	x	shrub
<i>Acroptilon repens</i> *	Russian knapweed	x		annual
<i>Adenophyllum cooperi</i>	Cooper's dogweed	x		subshrub
<i>Ambrosia dumosa</i>	burrobush	x	x	shrub
<i>Baccharis brachyphylla</i>	short-leaf baccharis	x		shrub
<i>Baccharis sergiloides</i>	desert baccharis		x	shrub
<i>Baileya multiradiata</i> var. <i>multiradiata</i>	desert marigold	x	x	annual
<i>Baileya pleniradiata</i>	woolly desert marigold	x	x	annual
<i>Calycoseris wrightii</i>	white tackstem		x	annual
<i>Chaenactis carphoclinia</i>	pebble pincushion	x	x	annual
<i>Chaenactis fremontii</i>	desert pincushion	x	x	annual
<i>Chaenactis macrantha</i>	Mojave pincushion	x	x	annual
<i>Chaenactis stevioides</i>	desert pincushion	x	x	annual
<i>Chaetadelpa wheeleri</i>	Wheeler's dune broom	x	x	perennial
<i>Chrysothamnus nauseosus</i>	rubber rabbitbrush	x		shrub

**TABLE 5.2-3**  
Plant Species Observed within the HHSEGS Site and 250-foot Buffer during 2011 Surveys

Scientific Name	Common Name	Site	250' Site Buffer	Life Form
<i>Encelia virginensis</i>	Virgin River encelia	x	x	shrub
<i>Eriophyllum wallacei</i>	Wallace's woolly daisy	x	x	annual
<i>Glyptopleura marginata</i>	carved seed	x	x	annual
<i>Gutierrezia microcephala</i>	broom snakeweed	x	x	shrub
<i>Gutierrezia sarothrae</i>	broom snakeweed	x	x	shrub
<i>Hymenoclea salsola</i>	cheesebush	x	x	shrub
<i>Isocoma acradenia</i>	goldenbush	x		shrub
<i>Malacothrix coulteri</i>	snake's head	x		annual
<i>Malacothrix glabrata</i>	desert dandelion	x	x	annual
<i>Monoptilon bellioides</i>	desert star	x	x	annual
<i>Pectis papposa</i>	chinchweed	x		annual
<i>Prenanthes exigu</i>	brightwhite	x	x	annual
<i>Psathyrotes annua</i>	turtleback	x	x	annual
<i>Psilostrophe cooperi</i>	paper-daisy	x	x	subshrub
<i>Rafinesquia neomexicana</i>	desert chicory	x	x	annual
<i>Stephanomeria exigua</i>	small wire-lettuce	x		annual
<i>Stephanomeria pauciflora</i>	wire-lettuce	x	x	perennial
<i>Stylocline micropoides</i>	desert nest-straw	x		annual
<i>Tetradymia axillaris</i>	cotton-thorn		x	shrub
<i>Xylorhiza tortifolia</i>	Mojave aster	x	x	perennial
<b>Boraginaceae</b>	Borage Family			
<i>Amsinckia tessellata</i>	fiddleneck	x	x	annual
<i>Cryptantha angustifolia</i>	narrow leaved cryptantha	x	x	annual
<i>Cryptantha barbiger</i>	bearded cryptantha		x	annual
<i>Cryptantha circumscissa</i>	cushion cryptantha	x	x	annual
<i>Cryptantha micrantha</i> ssp. <i>micrantha</i>	purple-rooted cryptantha	x	x	annual
<i>Cryptantha nevadensis</i>	Nevada cryptantha	x	x	annual
<i>Cryptantha pterocarya</i>	wingnut cryptantha	x	x	annual
<i>Cryptantha recurvata</i>	curved cryptantha	x	x	annual
<i>Cryptantha virginensis</i>	Virgin River cat's-eye	x		annual
<i>Heliotropium curassavicum</i>	heliotrope		x	perennial
<i>Lappula redowskii</i> var. <i>cupulata</i>	stickseed	x	x	annual

**TABLE 5.2-3**  
Plant Species Observed within the HHSEGS Site and 250-foot Buffer during 2011 Surveys

Scientific Name	Common Name	Site	250' Site Buffer	Life Form
<i>Pectocarya heterocarpa</i>	chuckwalla combseed	x	x	annual
<i>Pectocarya platycarpa</i>	broadfruit combseed	x	x	annual
<i>Pectocarya recurvata</i>	curvenut combseed		x	annual
<i>Plagiobothrys jonesii</i>	Jones' popcorn flower	x		annual
<b>Brassicaceae</b>	Mustard Family			
<i>Caulanthus cooperi</i>	Cooper's jewelflower	x	x	annual
<i>Chorispora tenella*</i>	blue mustard	x		annual
<i>Descurainia pinnata</i> ssp. <i>glabra</i>	tansy mustard	x	x	annual
<i>Descurainia sophia*</i>	flix weed	x	x	annual
<i>Guillenia lasiophylla</i>	California mustard	x	x	annual
<i>Lepidium fremontii</i>	desert alyssum	x	x	subshrub
<i>Lepidium lasiocarpum</i> var. <i>lasiocarpum</i>	modest peppergrass	x	x	annual
<i>Malcolmia africana*</i>	African mustard	x	x	annual
<i>Sisymbrium altissimum*</i>	tumble mustard	x	x	annual
<i>Sisymbrium irio*</i>	London rocket	x	x	annual
<i>Sisymbrium orientale*</i>	Indian hedge mustard		x	annual or perennial
<i>Stanleya pinnata</i> var. <i>pinnata</i>	prince's-plume	x	x	subshrub
<i>Streptanthella longirostris</i>	longbeak streptanthella	x	x	annual
<b>Cactaceae</b>	Cactus Family			
<i>Opuntia basilaris</i> var. <i>basilaris</i>	beavertail cactus	x	x	stem succulent
<i>Opuntia echinocarpa</i>	silver cholla	x	x	stem succulent
<i>Opuntia ramosissima</i>	pencil cholla	x		stem succulent
<b>Chenopodiaceae</b>	Goosefoot Family			
<i>Atriplex canescens</i>	four-wing saltbush	x	x	shrub
<i>Atriplex confertifolia</i>	shadscale	x	x	shrub
<i>Atriplex polycarpa</i>	allscale	x	x	shrub
<i>Halogeton glomeratus*</i>	halogeton	x	x	annual
<i>Kraschennikovia lanata</i>	winter fat	x	x	shrub
<i>Salsola</i> sp.*	Russian thistle	x	x	annual

**TABLE 5.2-3**  
 Plant Species Observed within the HHSEGS Site and 250-foot Buffer during 2011 Surveys

Scientific Name	Common Name	Site	250' Site Buffer	Life Form
<b>Convolvulaceae</b>		Morning Glory Family		
<i>Convolvulus arvensis</i> *	bindweed		x	perennial herb/vine
<b>Cuscutaceae</b>		Dodder Family		
<i>Cuscuta cf. californica</i>	California dodder	x	x	parasitic vine
<b>Euphorbiaceae</b>		Spurge Family		
<i>Chamaesyce albomarginata</i>	rattlesnake weed	x	x	perennial
<i>Chamaesyce micromera</i>	desert spurge	x		annual
<b>Fabaceae</b>		Pea Family		
<i>Astragalus lentiginosus</i> var. <i>fremontii</i>	freckled milk-vetch	x	x	perennial
<i>Astragalus nuttallianus</i>	Nuttall locoweed	x	x	annual
<i>Astragalus nyensis</i>	Nye milk-vetch	x	x	annual
<i>Astragalus preussii</i> var. <i>preussii</i>	Preuss' milk-vetch	x	x	perennial
<i>Astragalus sabulonum</i>	gravel milk-vetch	x	x	annual
<i>Astragalus tidiestromii</i>	Tidestrom's milk-vetch	x	x	perennial
<i>Gleditsia triacanthos</i> *	honey locust	x		tree
<i>Hoffmannseggia glauca</i>	hog potato	x	x	perennial
<i>Prosopis glandulosa</i>	honey mesquite	x	x	shrub
<i>Psoralethamnus arborescens</i> var. <i>arborescens</i>	Mojave indigo bush	x	x	shrub
<i>Senna armata</i>	desert senna	x		shrub
<b>Geraniaceae</b>		Geranium Family		
<i>Erodium cicutarium</i> *	red-stemmed filaree	x	x	annual
<b>Hydrophyllaceae</b>		Waterleaf Family		
<i>Nama demissum</i>	purple mat	x	x	annual
<i>Phacelia crenulata</i> var. <i>ambigua</i>	purple phacelia	x	x	annual
<i>Phacelia fremontii</i>	Fremont's phacelia	x	x	annual
<i>Phacelia ivesiana</i>	Ive's phacelia		x	annual
<i>Phacelia pulchella</i> var. <i>gooddingii</i>	Goodding's phacelia	x	x	annual
<b>Krameriaceae</b>		Rhatany Family		
<i>Krameria erecta</i>	pima ratany	x	x	shrub

**TABLE 5.2-3**  
**Plant Species Observed within the HHSEGS Site and 250-foot Buffer during 2011 Surveys**

Scientific Name	Common Name	Site	250' Site Buffer	Life Form
<b>Lamiaceae</b>	Mint Family			
<i>Salazaria mexicana</i>	Mexican bladder sage	x		shrub
<b>Loasaceae</b>	Sandpaper-plant Family			
<i>Mentzelia cf. albicaulis</i>	little blazing star	x	x	annual
<b>Malvaceae</b>	Mallow Family			
<i>Eremalche rotundifolia</i>	desert five-spot	x		annual
<i>Sphaeralcea ambigua</i>	desert mallow	x	x	subshrub
<i>Sphaeralcea emoryi</i>	Emory's globemallow	x	x	subshrub
<b>Nyctaginaceae</b>	Four-o'clock Family			
<i>Mirabilis bigelovii</i>	wishbone bush	x		perennial
<i>Selinocarpus nevadensis</i>	desert moonpod	x		perennial
<b>Oleaceae</b>	Olive Family			
<i>Menodora spinescens</i>	spiny menodora	x		shrub
<i>Fraxinus sp.*</i>	ash		x	tree
<b>Onagraceae</b>	Evening-primrose Family			
<i>Camissonia boothii</i>	Booth's sun cup	x	x	annual
<i>Camissonia brevipes</i>	yellow cups	x	x	annual
<i>Camissonia claviformis</i>	brown-eyed evening-primrose	x		annual
<i>Camissonia refracta</i>	narrowleaf suncup	x	x	annual
<i>Gaura coccinea</i>	scarlet beeblossom	x	x	perennial
<i>Oenothera primiveris</i>	yellow evening-primrose	x	x	annual
<b>Papaveraceae</b>	Poppy Family			
<i>Eschscholzia glyptosperma</i>	desert golden poppy	x		annual
<b>Plantaginaceae</b>	Plantain Family			
<i>Plantago ovate</i>	woolly plantain	x	x	annual
<b>Polemoniaceae</b>	Phlox Family			
<i>Aliciella hutchinsifolia</i>	desert pale aliciella	x	x	annual
<i>Gilia sp.</i>	gilia	x	x	annual
<i>Gilia cana ssp. speciformis</i>	showy gilia	x	x	annual
<i>Gilia stellata</i>	star gilia	x	x	annual
<i>Ipomopsis polycladon</i>	branching gilia	x	x	annual

**TABLE 5.2-3**  
Plant Species Observed within the HHSEGS Site and 250-foot Buffer during 2011 Surveys

Scientific Name	Common Name	Site	250' Site Buffer	Life Form
<i>Langloisia setosissima</i> ssp. <i>setosissima</i>	lilac sunbonnet	x	x	annual
<i>Linanthus jonesii</i>	Jones' linanthus	x		annual
<i>Loeseliastrum matthewsii</i>	desert calico	x	x	annual
<i>Loeseliastrum schottii</i>	Schott's calico	x	x	annual
<b>Polygonaceae</b>	Buckwheat Family			
<i>Chorizanthe brevicornu</i> var. <i>brevicornu</i>	brittle spineflower	x	x	annual
<i>Chorizanthe rigida</i>	rigid spiny-herb	x	x	annual
<i>Eriogonum bifurcatum</i>	Pahrump Valley buckwheat	x	x	annual
<i>Eriogonum brachypodum</i>	glandular skeleton-weed	x	x	annual
<i>Eriogonum inflatum</i> var. <i>inflatum</i>	desert trumpet	x	x	perennial
<i>Eriogonum nidularium</i>	birdnest buckwheat	x		annual
<i>Eriogonum trichopes</i>	little desert trumpet	x	x	annual
<b>Ranunculaceae</b>	Buttercup Family			
<i>Delphinium parishii</i> var. <i>parishii</i>	desert larkspur	x		perennial
<b>Rosaceae</b>	Rose Family			
<i>Prunus persica</i> *	peach (planted)	x		tree
<b>Scrophulariaceae</b>	Figwort Family			
<i>Antirrhinum filipes</i>	tangled snapdragon	x	x	annual
<i>Antirrhinum kingie</i>	King's snapdragon		x	annual
<i>Castilleja angustifolia</i>	desert paintbrush	x	x	perennial
<b>Solanaceae</b>	Nightshade Family			
<i>Datura wrightii</i>	devil's trumpet	x		perennial
<i>Lycium andersonii</i>	Anderson's box-thorn	x	x	shrub
<i>Lycium cooperi</i>	Cooper's box-thorn	x	x	shrub
<i>Lycium pallidum</i> var. <i>oligospermum</i>	rabbit-thorn	x	x	shrub
<b>Tamaricaceae</b>	Tamarisk Family			
<i>Tamarix ramosissima</i> *	tamarisk	x	x	tree
<b>Zygophyllaceae</b>	Caltrop Family			
<i>Larrea tridentata</i>	creosote bush	x	x	shrub

**TABLE 5.2-3**  
 Plant Species Observed within the HHSEGS Site and 250-foot Buffer during 2011 Surveys

Scientific Name	Common Name	Site	250' Site Buffer	Life Form
<b>Monocots</b>				
<b>Liliaceae</b>	Lily Family			
<i>Androstegium breviflorum</i>	pink star-tulip	x	x	perennial
<i>Calochortus flexuosus</i>	winding mariposa lily	x		perennial
<i>Dichelostemma capitatum</i> var. <i>pauciflora</i>	desert blue dicks	x		perennial
<b>Poaceae</b>	Grass Family			
<i>Achnatherum hymenoides</i>	Indian ricegrass	x	x	perennial
<i>Achnatherum speciosum</i>	desert needlegrass	x		perennial
<i>Bromus madritensis</i> ssp. <i>rubens</i> *	red brome	x	x	annual
<i>Bromus tectorum</i> *	cheat grass	x	x	annual
<i>Cynodon dactylon</i> *	Bermuda grass	x	x	perennial
<i>Elymus elymoides</i>	squirreltail	x	x	perennial
<i>Erioneuron pulchellum</i>	fluff grass	x		perennial
<i>Hordeum murinum</i> ssp. <i>leporinum</i> *	foxtail barley	x	x	annual
<i>Muhlenbergia porteri</i>	Porter's muhly	x		perennial
<i>Pleuraphis rigida</i>	big galleta	x	x	perennial
<i>Schismus arabicus</i> *	Mediterranean grass	x	x	annual
<i>Sporobolus airoides</i>	alkali sacaton	x		perennial
<i>Vulpia octoflora</i>	sixweeks fescue	x	x	Annual

Source: GANDA, 2011b

**TABLE 5.2-4**  
Common Wildlife Species Observed or Expected at the Site.

<b>Common Name</b>	<b>Scientific Name</b>
side-blotched lizard	<i>Uta stansburiana</i>
desert iguana	<i>Dipsosaurus dorsalis</i>
long-nosed leopard lizard	<i>Gambelia wislizenii</i>
western whiptail	<i>Cnemidophorus tigris</i>
zebra-tailed lizard	<i>Callisaurus draconoides</i>
common collared lizard	<i>Crotaphytus collaris</i>
sidewinder	<i>Crotalus cerastes</i>
gopher snake	<i>Pituophis melanoleucus</i>
Say's phoebe	<i>Sayornis saya</i>
black-throated sparrow	<i>Amphispiza bilineata</i>
white-crowned sparrow	<i>Zonotrichia leucophrys</i>
sage sparrow	<i>Amphispiza belli</i>
blue-gray gnatcatcher	<i>Polioptila caerulea</i>
cactus wren	<i>Campylorhynchus brunneicapillus</i>
verdin	<i>Auriparus flaviceps</i>
western kingbird	<i>Tyrannus verticalis</i>
sage thrasher	<i>Oreoscoptes montanus</i>
house finch	<i>Carpodacus mexicanus</i>
common raven	<i>Corvus corax</i>
lesser nighthawk	<i>Chordeiles acutipennis</i>
common ground-dove	<i>Columbina passerine</i>
mourning dove	<i>Zenaida macroura</i>
Gambel's quail	<i>Callipepla gambelii</i>
American kestrel	<i>Falco sparverius</i>
red-tailed hawk	<i>Buteo jamaicensis</i>
Audubon's cottontail	<i>Sylvilagus audubonii</i>
black-tailed jackrabbit	<i>Lepus californicus</i>
whitetail antelope squirrel	<i>Ammospermophilus leucurus</i>
desert kit fox	<i>Vulpes macrotis</i>
feral burro	<i>Equus asinus</i>
coyote	<i>Canis latrans</i>

**TABLE 5.2-5**  
Non-native Invasive Plants (Weeds) With Potential to Occur at the HHSEGS Site

Code	Scientific Name	Common Name	CDFA Rating	Cal-IPC rating	NVDA Rating
ACRE	<i>Acroptilon repens</i>	Russian knapweed	B	Moderate	B
ALMA	<i>Alhagi maurorum</i>	Camelthorn	A	Moderate	A
BRT0	<i>Brassica tournefortii</i>	Sahara mustard	none	High	B
BRMAR	<i>Bromus madritensis</i> ssp. <i>Rubens</i>	Red brome	none	High	None
BRTE	<i>Bromus tectorum</i>	Cheatgrass	none	High	None
CHTE	<i>Chorispora tenella</i>	Purple mustard	B	Watch list	None
COAR	<i>Convolvulus arvensis</i>	Field bindweed	C	Watch list	None
HAGL	<i>Halogeton glomeratus</i>	Halogeton	A	Moderate	None
MAAF	<i>Malcolmia Africana</i>	African mustard	none	Watch list	none
PEHA	<i>Peganum harmala</i>	African rue	A	Watch list	A
PESE	<i>Pennisetum setaceum</i>	Green fountain grass	none	High	A
SAL	<i>Salsola</i> spp.	Russian thistle	A or C	Limited to Moderate	none
SIAL	<i>Sisymbrium altissimum</i>	Tumble mustard	none	Watch list	none
SIIR	<i>Sisymbrium irio</i>	London rocket	none	Moderate	none
SOEL	<i>Solanum elaeagnifolium</i>	White horse-nettle	B	Watch list	B
TAAP	<i>Tamarix aphylla</i>	Athel	none	none	C
TARA	<i>Tamarix ramosissima</i>	Tamarisk	B	High	C
TRTE	<i>Tribulus terrestris</i>	Puncturevine	C	Watch list	C

**Notes:**

**Sources:** California Department of Food and Agriculture (CDFA 2010).  
California Invasive Plant Council (Cal-IPC 2010).  
Mojave Resource Conservation District. 2003.  
Nevada Department of Agriculture. 2011

**Cal-IPC ratings:**

High – These species have severe ecological impacts on physical processes, plant and animal communities and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed.

Moderate – These species have substantial and apparent – but generally not severe – ecological impacts on physical processes, plant and animal communities and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, although establishment is generally dependent on ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

**TABLE 5.2-5**  
**Non-native Invasive Plants (Weeds) With Potential to Occur at the HHSEGS Site**

<b>Code</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>CDFA Rating</b>	<b>Cal-IPC rating</b>	<b>NVDA Rating</b>
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Watch list – plants not currently included on the Cal-IPC statewide inventory list, which have been reported from wildlands in California. When additional information is received on distribution and impacts to wildlands, these species may become candidates for listing on the Cal-IPC list.

**CDFA ratings:**

A rated weeds are those for which eradication, containment, control or other holding action is conducted at the discretion of the state-county level. Quarantine interceptions to be rejected or treated at any point in the state.

B rated weeds are those for which eradication, containment, control or other holding action is conducted at the discretion of the County Agricultural Commissioner.

C rated weeds are those for which state-endorsed holding action and eradication is conducted only when the weed is found in a nursery; action to retard spread outside of nurseries is at the discretion of the County Agricultural Commissioner; reject only when found in a cropseed for planting or at the discretion of the commissioner.

Q rated weeds are those that receive a temporary “A” action outside of nurseries at the state-county level pending determination of a permanent rating.

**Nevada Department of Agriculture Noxious Weed Categories:**

Category “A”: Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations

Category “B”: Weeds established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur

Category “C”: Weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer

**TABLE 5.2-6**  
Summary of Special-status Plant Reference Site Visits

Species Name	Description of Reference Site and Observations
<b>Fall 2010 Reference Site Visits</b>	
Tecopa bird's-beak <i>Cordylanthus tecopensis</i>	A population of approximately 600 individuals, with about 30 percent in flower, was observed in salt-encrusted clay soil at 2,050 feet elevation in the Amargosa River drainage south of Stateline Road about 2.7 miles east of its intersection with Hwy 127 at Death Valley Junction, Inyo County, California. The site was observed on October 23 and October 31, 2010. This is CNDDDB Element Occurance (EO) #3 for this species.
Pahrump Valley buckwheat <i>Eriogonum bifurcatum</i>	A population of approximately 200 individuals, mostly in fruit, was observed in silty-gravelly soil in creosote bush-shadscale scrub at about 2,500 feet elevation on two small hills at an old dump site south of Hwy 372 1.0 mile east of the California-Nevada state line, Nye County, Nevada. This site is the type locality for this species (Reveal, 1971). This site was visited on October 24, 2010. In addition, the entire survey team observed this species within the site at the beginning of the survey period (GANDA, 2011a).
Copperwort <i>Iva acerosa</i>	A population of unknown size, with plants in flower and in fruit, was observed in salt-encrusted clay soil at 2,030 feet elevation in the Amargosa River drainage south of Stateline Road about 3.0 miles east of its intersection with Hwy 127 at Death Valley Junction, Inyo County, California. The site was observed on October 23 and October 31, 2010.
Amargosa nitrophila <i>Nitrophila mohavensis</i>	A population of approximately 25 individuals, mainly in fruit, was observed in gravelly clay bottomlands at 2,050 feet in the Amargosa River drainage south of Stateline Road about 2.7 miles east of its intersection with Hwy 127 at Death Valley Junction, Inyo County, California. The site was observed on October 23 and October 31, 2010. This is CNDDDB EO #1 for this species.
<b>Spring 2011 Reference Site Visits</b>	
Pink star-tulip <i>Androstaphyllum breviflorum</i>	Twenty plants in fruit and in flower were observed by the entire survey team within the site west of the California-Nevada border on April 12, 2011, in Mojave Desert scrub vegetation, in Inyo County, California, at approximately 2,525 feet elevation.
Preuss' milkvetch <i>Astragalus preussii</i> var. <i>preussii</i>	About 200 individuals in flowering and fruiting condition were observed by the entire survey team on the north side of Tecopa Road, 0.3 mile east of the California-Nevada border, on April 14, 2011. The plants were growing in whitish silty soil within the cleared roadside margin.
Tidestrom's milkvetch <i>Astragalus tidestromii</i>	Tidestrom's milkvetch was observed by the entire survey team when it was first identified on April 14, 2011, in Mojave Desert scrub, in Clark County, Nevada. Approximately 10 plants were observed with flowers and young fruit. Plants with mature fruits were observed in many locations and on many dates in late April and May 2011.
Pahrump silverscale <i>Atriplex argentea</i> var. <i>longitrichoma</i>	This species was observed by the entire survey team in the BLM Nopah Wilderness, south of Highway 178, 0.3 mile west of the California-Nevada border, in alkali sink scrub vegetation, on April 12, 2011, in Inyo County, California, at 2,500 feet elevation. This is CNDDDB EO #1 for this species. Plants were in flowering and fruiting condition, and the diagnostic elongate inflated hairs were observed by all team members.
Wheeler's skeletonweed <i>Chaetadelpa wheeleri</i>	Plants in vegetative condition and in bud were observed by the entire survey team when this species was first identified on April 13, 2011. This location is approximately 1 mile east of the California-Nevada border, north of Tecopa Road. Plants in flower were observed in many locations, on many dates, in late April and in May 2011.

**TABLE 5.2-6**  
Summary of Special-status Plant Reference Site Visits

Species Name	Description of Reference Site and Observations
Tecopa bird's-beak <i>Cordylanthus tecopensis</i>	A population of approximately 600 individuals, with about 30 percent in flower, was observed in salt-encrusted clay soil, at 2,050 feet elevation in the Amargosa River drainage south of Stateline Road about 2.7 miles east of its intersection with Hwy 127 at Death Valley Junction, Inyo County, California. The site was observed on October 23 and October 31, 2010. This is CNDDDB EO #3 for this species.
Desert pincushion <i>Coryphantha chlorantha</i>	This species was observed in flower by all survey team members at several locations in calcareous substrates in Mojave Desert scrub and Joshua tree woodland in late April and May 2011, in Nye and Clark counties, Nevada.
Blue Diamond cholla <i>Cylindropuntia multigeniculata</i>	This species was observed by eight team members at its type locality on the north side of Hwy 159, north of the community of Blue Diamond, in calcareous rubble, Mojave Desert scrub on May 14, 2011, at 3,420 feet elevation. The diagnostic thin stems, stem branching pattern, thin spines, and spineless hypanthia all were visible.
Pahrump Valley buckwheat <i>Eriogonum bifurcatum</i>	This species was observed on the site on October 26, 2010, and multiple dates in April and May 2011, by the entire survey team. In October, the distinctive skeletons and some flowering plants were observed. In early April, skeletons and rosettes were observed. Later in the season, flowering plants were observed in many locations.
Reveal's buckwheat <i>Eriogonum contiguum</i>	This species was observed in flower by the entire survey team in the BLM Nopah Wilderness, south of Highway 178, 0.3 mile west of the California-Nevada border in alkali sink scrub vegetation on April 12, 2011, in Inyo County, California, at 2,500 feet elevation.
Copperwort <i>Iva acerosa</i>	A population of unknown size, with plants in flower and in fruit, was observed in salt-encrusted clay soil at 2,030 feet elevation in the Amargosa River drainage south of Stateline Road, about 3.0 miles east of its intersection with Hwy 127 at Death Valley Junction, Inyo County, California. The site was observed on October 23 and October 31, 2010.
Amargosa nitrophila <i>Nitrophila mohavensis</i>	A population of approximately 25 individuals, mainly in fruit, was observed in gravelly clay bottomlands at 2,050 feet in the Amargosa River drainage south of Stateline Road, about 2.7 miles east of its intersection with Hwy 127 at Death Valley Junction, Inyo County, California. The site was observed on October 23 and October 31, 2010. This is CNDDDB EO #1 for this species.
White-margined beardtongue <i>Penstemon albomarginatus</i>	A population of at least 300 plants was observed in flower on April 11, 2011, in sandy soil, in Mojave Desert scrub, along a transmission tower line about 4 miles northeast of Primm, Clark County, Nevada, at 2,635 feet elevation. Field crews viewed plants at this location on May 10, 2011, when about 80 percent of the plants were in fruit, and 20 percent were flowering.
Yellow two-toned beardtongue <i>Penstemon bicolor ssp. bicolor</i>	Ten flowering individuals were observed by field crews in a dry, travertine-coated wash on the north side of SR 159, north of the community of Blue Diamond, in Clark County, Nevada, at 3,400 feet elevation, on May 14, 2011.
Pink two-toned beardtongue <i>Penstemon bicolor ssp. roseus</i>	Two flowering plants were observed in a small gully filled with granitic rubble, in the McCullough Range, along the transmission line road, approximately 0.5 mile below and west of the summit, on April 11, 2011. Four team members observed these plants in fruiting condition with a few shriveled flowers on May 14, 2011.

**TABLE 5.2-6**  
Summary of Special-status Plant Reference Site Visits

Species Name	Description of Reference Site and Observations
Parish's phacelia <i>Phacelia parishii</i>	More than 300 flowering and vegetative plants were observed by six team members in light-colored silty soil, in alkali sink scrub, in California Valley on Mesquite Valley Road, 2.7 miles southwest of its intersection with Tecopa Road, in Inyo County, California, at 2,460 feet elevation. This population is the first documented locality for this species in Inyo County.
Goodding's phacelia <i>Phacelia pulchella</i> var. <i>gooddingii</i>	Approximately 100 plants in flower and in vegetative condition were observed by the entire survey team within the site, west of the California-Nevada border, on April 12, 2011, in Mojave Desert scrub, in Inyo County, California, at approximately 2,525 feet elevation.
Desert wing-fruit <i>Selinocarpus nevadensis</i>	Plants in vegetative condition and in bud were observed by the entire survey team when this species was first identified on April 13, 2011. This location is approximately 1 mile east of the California-Nevada border, north of Tecopa Road, at approximately 2,600 feet elevation, in Clark County, Nevada. Plants in flower and fruit were observed in many locations, on many dates in late April and May 2011.

Notes:

Reference site visits were performed in Fall 2010 and Spring 2011

Sources:

GANDA, 2011a

GANDA, 2011b

Nye milkvetch (*Astragalus nyensis*). Nye milkvetch was observed by the entire survey team when it was first identified on April 14, 2011, in Mojave Desert scrub vegetation in Clark County, Nevada. Approximately 20 plants were observed with flowers and fruit. This species was observed by the entire survey team in many locations in flower and fruit in the southern Pahrump Valley on many dates in late April and May 2011. This species was not previously documented in California. It is not included on CDFG's list of "Special Plants" and it is therefore not considered to be a special-status plant.

**TABLE 5.2-7**  
Special-status Wildlife Species Occurring or Potentially Occurring in the HHSEGS Project Area

Common Name	Scientific Name <sup>a</sup>	Status <sup>b</sup>	Season <sup>c</sup>	Primary Habitat <sup>d</sup>	Potential Occurrence in Project Area	Comments
<b>Insects</b>						
Death Valley Agabus diving beetle	<i>Agabus rumppi</i>	C2	RES	Known only from Carson Slough, which drains Ash Meadows. Aquatic diving beetle.	No potential. CNDDDB has a record for Grimshaw (or North Francis) Lake, just north of Tecopa, approximately 15 miles west of the site.	
Death Valley June beetle	<i>Polyphylla erratica</i>		RES	Halophytic species. Larva, pupae and adults found in moist, salt-encrusted soil in the Amargosa River system. Larvae taken at roots of <i>Distichlis divaricata</i> .	No potential. No suitable habitat. Closest CNDDDB location is 20 miles west of the site.	
Amargosa naucorid bug	<i>Pelocoris shoshone</i>		RES	Endemic to the Amargosa River drainage in Death Valley, Inyo County, and San Bernardino County.	No potential. Closest CNDDDB record is 20 miles away. No suitable habitat.	
Carole's silverspot	<i>Speyeria zerene carolae</i>		RES	Bristlecone pine community generally at elevations of 2,000-2,300 m (6,560-7,500 feet).	No Potential. No suitable habitat.	
<b>Fish</b>						
Amargosa Canyon speckled dace	<i>Rhinichthys osculus</i> ssp. 1	CSC	RES	Found only in Amargosa Canyon and tributaries of the Amargosa River, esp. Willow Creek and Willow Creek Reservoir. Prefers pools with relatively deep water (0.5-0.75 m) and slow water velocity.	No potential. No suitable habitat. Closest CNDDDB site is 22 miles to the SW.	

**TABLE 5.2-7**  
Special-status Wildlife Species Occurring or Potentially Occurring in the HHSEGS Project Area

Common Name	Scientific Name <sup>a</sup>	Status <sup>b</sup>	Season <sup>c</sup>	Primary Habitat <sup>d</sup>	Potential Occurrence in Project Area	Comments
Amargosa pupfish	<i>Cyprinodon nevadensis amargosae</i>	CSC	RES	Endemic to the warm spring-fed streams on the Ash Meadows National Wildlife Refuge (NWR), Amargosa Valley, NV.	No Potential. No suitable habitat. Closest record is 34 miles northwest at Ash Meadows NWR.	
Pahrump poolfish	<i>Empetrichthys latos latos</i>	FE	RES	Endemic to Manse Springs in Nye County, Nevada. Managed populations survive in remote artificial refugia.	No Potential. NNHP recorded an historical occurrence at Manse Springs, near Pahrump, NV, 10 miles north of the project site. No springs occur on the project site.	The Manse Springs population was extirpated in 1975 when Manse Springs dried up.
<b>Reptiles</b>						
Desert tortoise	<i>Gopherus agassizii</i>	FT, CT	RES	Common in desert scrub, desert wash, and Joshua tree habitats. Requires friable soils for burrow and nest construction. Also requires creosote bush habitat with large annual wildflower blooms for foraging.	Observed and recorded in project area during the 2011 biological surveys. High potential for foraging and breeding.	
Banded Gila monster	<i>Heloderma suspectum ssp. cinctum</i>	CSC	RES	Prefers rocky areas in desert scrub and semi-desert grassland. Found in lower mountain slopes, rocky bajadas, canyon bottoms, and arroyos.	Low potential for the species to occur on the site in washes. CNDDDB records occur for this species in the Kingston Mountains south of the project area and they are known from the Spring Mountains approximately 20 miles to the east in Nevada. No observations were reported in field crew reports.	Spends greater than 95 percent of life underground.

**TABLE 5.2-7**  
Special-status Wildlife Species Occurring or Potentially Occurring in the HHSEGS Project Area

Common Name	Scientific Name <sup>a</sup>	Status <sup>b</sup>	Season <sup>c</sup>	Primary Habitat <sup>d</sup>	Potential Occurrence in Project Area	Comments
<b>Birds</b>						
Northern harrier	<i>Circus cyaneus</i>	CSC	RES	Small breeding population in California deserts. Nest on ground among shrubs. Breeds and forages in treeless habitats that provide adequate vegetative cover, suitable prey, and scattered perches such as shrubs or fence posts.	Potential to nest and to forage. Observed on site in spring 2011 point-count surveys.	
Golden eagle	<i>Aquila chrysaetos</i>	CSC, FP, BLM SS	RES	Open country, rolling foothills, mountain areas and desert; breeds on overhanging ledges, high cliff sites, and large trees.	High potential for foraging. Low potential for nesting near the project area. Observed off site near the project area near the southwest corner of site, near Tecopa Road during 2011 surveys and northwest of sit during avian survey. May provide suitable foraging habitat.	
Prairie falcon	<i>Falco mexicanus</i>	WL, MB, CSC	RES	Open treeless terrain including prairies, deserts, riverine escarpments, canyons, foothills, and mountains in arid west. Nest in foothills and mountains on cliffs from 30 feet to 400 feet high.	Low potential for nesting in project area. Observed west of the site during late-season 2010 surveys. High potential for foraging and potential for nesting in nearby hills, 8 miles to the west.	Many adults tend to be residents on their breeding range if there is an adequate year-round food supply.
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	FPE, SE, MNBMC	SPR, SUM	Almost exclusively near water in large, continuous patches of native woodlands with cottonwoods and willows	Not observed on site. No potential for nesting. CNDDDB nearest records are near Tecopa, approximately 20 miles to the west.	
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	CSC, MB, MNBMC, BLM SS	RES	Habitats includes open grassland habitat with fossorial mammal burrows, often associated with ground squirrels.	Observed onsite during late-season 2010 surveys and desert tortoise surveys in spring 2011. No CNDDDB record. Low to moderate habitat for burrowing owl.	Uses small mammal burrows for cover and natal dens. Breeding season is typically from February through August.

**TABLE 5.2-7**  
Special-status Wildlife Species Occurring or Potentially Occurring in the HHSEGS Project Area

Common Name	Scientific Name <sup>a</sup>	Status <sup>b</sup>	Season <sup>c</sup>	Primary Habitat <sup>d</sup>	Potential Occurrence in Project Area	Comments
Vermilion flycatcher	<i>Pyrocephalus rubinus</i>	CSC, MB	SPR, SUM	During nesting, inhabits desert riparian adjacent to irrigated fields, irrigation ditches, pastures, and other open, mesic sites. Nests in cottonwood, willow, mesquite, and other large desert riparian trees.	Low potential for foraging. No potential for nesting. No suitable habitat. Not observed in surveys. Nearest CNDDDB site is 15 miles to the west. Not observed on site.	
Brown-crested flycatcher	<i>Myiarchus tyrannulus</i>	CSC, MB	SPR, SUM	Inhabits desert riparian along Colorado River, as well as other desert oases and riparian areas NW to Victorville. Sites generally dominated by cottonwoods and willows. Requires riparian thickets, trees, snags, and shrubs for foraging perches, nesting cavities, and cover.	No Potential. No suitable habitat. Not observed during surveys.	Secondary cavity users Cavities are usually 10-30 feet (3-9 m) above ground
Loggerhead shrike	<i>Lanius ludovicianus</i>	CSC, MB, MNBMC	RES	Desert resident; primarily of open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats with adequate hunting perches.	Observed onsite during late-season 2010 surveys and spring 2011 point count surveys. High potential for foraging and nesting in the project area.	Largely non-migratory and has been known to defend year-round territories. Nests are typically well concealed and built in dense shrubs or trees. In California the breeding period typically begins in March and may extend into August.

**TABLE 5.2-7**  
Special-status Wildlife Species Occurring or Potentially Occurring in the HHSEGS Project Area

Common Name	Scientific Name <sup>a</sup>	Status <sup>b</sup>	Season <sup>c</sup>	Primary Habitat <sup>d</sup>	Potential Occurrence in Project Area	Comments
Least Bell's vireo	<i>Vireo bellii pusillus</i>	FE, SE, MNBMC	SPR, SUM	Summer resident of southern California in low riparian in vicinity of water or in dry river bottoms; below 2,000 feet. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, or mesquite. Uses dense shrubs and small trees along rivers and streams.	No potential. No suitable habitat. Not observed onsite.	
Gray vireo	<i>Vireo vicinior</i>	BCC, CSC, BLM SS, MB	RES, SUM	(Nesting) Uncommon, local, summer resident in arid pinyon-juniper and chamise-redshank chaparral habitats from 2000-6500 feet in mountains of eastern Mojave Desert. Associated with juniper artemisia.	Low potential. No nesting or foraging habitat in or adjacent to project area, though CNDDDB record exists for species to the south in Kingston Mountains. May migrate through area. No individual or sign of gray vireos was observed during the course of the field surveys.	Forages and nests in areas formed by a continuous growth of twigs, 1-5 feet above ground.
Bendire's thrasher	<i>Toxostoma bendirei</i>	BCC, CSC, BLM SS, MB, MNBMC	RES, SUMR	Local spring/summer resident in flat areas of desert succulent shrub/Joshua tree habitats in Mojave Desert.	Reported in creosote bush scrub on site in late-season 2010 surveys. Low potential. Nesting and foraging habitat potentially exist in vicinity of project area. No CNDDDB record. May migrate through area. May have been misidentified.	Nests in cholla, yucca, palo verde, thorny shrub, or small tree, usually 0.5 to 20 feet above ground.
Crissal thrasher	<i>Toxostoma crissale</i>	BCC, CSC	RES	Non-migratory resident ranging from southern Nevada and southeastern California to western Texas and central Mexico. Prefers habitats characterized by dense, low scrubby vegetation, such as desert and foothill scrub and riparian brush.	Potential for foraging and nesting in the project area. No CNDDDB record exists for this species in project vicinity. Not observed in surveys.	Nest typically consists of an open cup of twigs, lined with finer vegetation, placed in the middle of a dense shrub or bush.

**TABLE 5.2-7**  
Special-status Wildlife Species Occurring or Potentially Occurring in the HHSEGS Project Area

Common Name	Scientific Name <sup>a</sup>	Status <sup>b</sup>	Season <sup>c</sup>	Primary Habitat <sup>d</sup>	Potential Occurrence in Project Area	Comments
Phainopepla	<i>Phainopepla nitens</i>	MB	SPR, SUM	Migratory breeding population that utilizes desert, riparian woodlands, and chaparral. Feeds on insects and mistletoe berries.	Observed on site during wildlife surveys in May 2011. Potential for foraging. No potential for nesting on site. Small stands of mesquite are within 10 miles of the site. NNHP has records of occurrence approximately 2 miles east of the site. May overfly the site in migrations or foraging.	Nests and forages in mesquite stands.
Brewer's sparrow	<i>Spizella breweri</i>	BCC, MB	RES, SUMR	Common summer resident and breeder east of the Cascade-Sierra Nevada crest in mountains and higher valleys of the Mojave Desert. Often finds cover in sagebrush in extensive stands with moderate canopy unbroken by trees.	Observed on project site during May 2011 desert tortoise survey and May 2011 avian survey. High potential for foraging and nesting in the project area. No CNDDDB record exists for this species in project vicinity.	Breeds in treeless shrub habitats with moderate canopy, especially in sagebrush. In winter, is common in open desert scrub and cropland habitats of southern Mojave and Colorado deserts, usually in areas with some herbaceous understory.
Hepatic tanager	<i>Piranga flava</i>	CSC, MB	RES, SUMR	(Nesting) White fir-pinyon forest on desert peaks, 5300-8100 foot elevation, understory of xerophytic shrubs.	Low potential. No nesting or foraging habitat in project vicinity. Nearest CNDDDB record for the species is in the Kingston Mountains at Horsetheif Springs, 14 miles away. May migrate through area. No individual or sign of hepatic tanagers was observed during the course of the field surveys.	

**TABLE 5.2-7**  
Special-status Wildlife Species Occurring or Potentially Occurring in the HHSEGS Project Area

Common Name	Scientific Name <sup>a</sup>	Status <sup>b</sup>	Season <sup>c</sup>	Primary Habitat <sup>d</sup>	Potential Occurrence in Project Area	Comments
Summer tanager	<i>Piranga rubra</i>	CSC, MB	RES, SUMR	(Nesting) Uncommon summer resident and breeder in desert riparian habitat along lower Colorado River, also occurring very locally elsewhere in southern California deserts.	Low potential. No nesting or foraging habitat in or adjacent to project area. No individual or sign of summer tanagers was observed during the course of the field surveys. May migrate through area. Nearest CNNDDB location is at China Ranch, 21 miles away.	Requires cottonwood-willow riparian for nesting and foraging; prefers older, dense stands along streams.
<b>Mammals</b>						
Nelson's bighorn sheep	<i>Ovis canadensis ssp. nelsoni</i>	FSS, BLM SS, FP	RES	Open, rocky, steep areas used for escape cover with available water and herbaceous vegetation for forage.	Low potential. Biologists found partial remains on the site – pellets and a horn fragment. Low potential to use the project site since escape cover and foraging habitat do not exist.	Populations inhabit the Nopah Range, 8 miles west of site and the Kingston Range 9 miles to the south.
Kingston Mountain chipmunk	<i>Neotamias panamintinus acrus</i>	BLM SS	RES	Arid pinyon-juniper woodlands in the Kingston Mountains of northeastern San Bernardino Co. Occupies nests among rocks in fissured cliffs and ledges.	No potential. No suitable habitat on the site. Closest CNDDDB record in Kingston Range near Horsetheif Springs, approximately 14 miles south of the site.	This population is apparently isolated from all other populations of <i>Tamias</i> by hot, low-lying desert communities (Johnson, 1943).
Amargosa vole	<i>Microtus californicus scirpensis</i>	FE, SE	RES	Burrows in soft soil. Nests are constructed in the burrows. Creates runway system through grasses from burrow.	No potential. Known only from bulrush marshes along the Amargosa River, approximately 15 miles west. Not observed in surveys.	

**TABLE 5.2-7**  
Special-status Wildlife Species Occurring or Potentially Occurring in the HHSEGS Project Area

Common Name	Scientific Name <sup>a</sup>	Status <sup>b</sup>	Season <sup>c</sup>	Primary Habitat <sup>d</sup>	Potential Occurrence in Project Area	Comments
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM SS, CSC	RES	Uncommon. Found throughout California, in all but subalpine and alpine habitats. May be found at any season throughout its range. Most abundant in mesic habitats.	No potential for roosting. Low potential for forage habitat in and adjacent to project area. No individual or sign of Townsend's big-eared bats was observed during the course of the field surveys. A CNDDDB record occurs for this species in the Kingston Mountains at Horsetheif springs, 14 miles from the site. Not observed in surveys.	Requires caves, mines, tunnels, buildings, or other human-made structures for roosting. Extremely sensitive to disturbance of roosting sites. Longest reported travel distance between roosts and foraging areas is 15 miles (Dobkin et al., 1993).
Pallid bat	<i>Antrozous pallidus</i>	CSC, BLM SS	RES	Most common in open, dry habitats with rocky areas for roosting. A year-long resident in most of the range.	No potential for roosting. Not observed on site. Nearest CNDDDB record for a location in Kingston Mountains south of the site approximately 15 miles. Forages over areas 1 to 3 miles from their day roost. They are capable of homing from distances of a few miles, but not further (Harris, 1988-1990)	Day roosts in caves, crevices, mines, and occasionally in hollow trees and buildings. Roost must protect bats from high temperatures.
Long-legged myotis	<i>Myotis volans</i>	CSC	SRP SUM	Most common in woodland and forest habitats above 4000 feet. Trees are important day roosts; caves and mines are night roosts. Nursery colonies usually under bark or in hollow trees, but occasionally in crevices or Buildings.	No potential for roosting. Low potential for foraging. Not observed in surveys. Closest CNDDDB record of occurrence is at Crystal Springs, in the Kingston Range, approximately 14 miles south of the site.	

**TABLE 5.2-7**  
Special-status Wildlife Species Occurring or Potentially Occurring in the HHSEGS Project Area

Common Name	Scientific Name <sup>a</sup>	Status <sup>b</sup>	Season <sup>c</sup>	Primary Habitat <sup>d</sup>	Potential Occurrence in Project Area	Comments
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>	CSC	SPR	In the spring, these migratory bats move northward from southern Arizona and Mexico, to the Lower Sonoran and Upper Sonoran life zones. Considered primarily a lowland species. All habitats up through mixed conifer forests are used, but open habitats such as woodlands, shrublands, and grasslands are preferred.	No Potential for roosting. Low potential for foraging. Not observed in surveys. NNHP record for location near Pahrump, Nevada, approximately 10 miles north of the project site.	Requires caves, mine tunnels, crevices, or buildings for roosting and hibernation.
American badger	<i>Taxidea taxus</i>	CSC	RES	Uncommon, permanent resident found throughout most of California. Most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils. Badgers are generally associated with treeless regions, prairies, parklands, and cold desert areas.	High potential for foraging and denning in the project area. No live animals observed onsite. Eight burrows observed on-site and three burrows observed in ZOI area during May 2007 and April 2011 surveys.	Somewhat tolerant of human activities.

**TABLE 5.2-7**  
Special-status Wildlife Species Occurring or Potentially Occurring in the HHSEGS Project Area

Common Name	Scientific Name <sup>a</sup>	Status <sup>b</sup>	Season <sup>c</sup>	Primary Habitat <sup>d</sup>	Potential Occurrence in Project Area	Comments
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## Notes:

<sup>a</sup>Scientific names are based on the following sources: AOU (1983); Jennings (1983); Zeiner et al. (1990a-c).

<sup>b</sup>Status. Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code:

**Federal Status**

FE = Federally listed as endangered.

FT = Federally listed as threatened.

FPE = Proposed endangered.

FPT = Proposed threatened.

MNBMC = USFWS: Migratory Nongame Birds of Management Concern

C2 = Category 2

FC = Candidate for listing as federally endangered or threatened. Proposed rules have not yet been issued because they have been precluded at present by other listing activity.

FD = Delisted from Federal threatened or endangered status.

MB = Migratory Bird Treaty Act. of 1918. Protects native birds, eggs, and their nests.

BCC = U.S. Fish and Wildlife Service: Bird of Conservation Concern.

FSS = USDA Forest Service Sensitive Species.

BLM SS = BLM Sensitive Species.

**Other Status.**

<sup>c</sup>Season. Season of use for animals. RES = Resident; SUMR = Summer; WNTR = Winter.

<sup>d</sup>Primary Habitat. Most likely habitat association.

**California Status**

CE = State listed as endangered. Species whose continued existence in California is jeopardized.

CT = State listed as threatened. Species that although not presently threatened in California with extinction are likely to become endangered in the foreseeable future.

CSC = California Department of Fish and Game "Species of Special Concern." Species with declining populations in California.

FP = Fully protected against take pursuant to the Fish and Game Code Sections 3503.5, 3511, 4700, 5050, 5515.

WL = Watch List - birds that are (1) not on the current Special Concern list but were on previous lists and they have not been state listed under CESA; (2) were previously state or federally listed and now are on neither list; or (3) are on the list of "Fully Protected" species.

SOURCE: California Dept. of Fish and Game, California Natural Diversity Database, July 2002; California Native Plant Society, Inventory of Rare and Endangered Vascular Plants of California, 2001.

**TABLE 5.2-8**  
Wildlife Species Observed at the HHSEGS Site during Fall-season 2010 and Spring 2011 Surveys

Scientific Name <sup>a</sup>	Common Name <sup>a</sup>	Comments <sup>b</sup>
<b>Class: Aves</b>		
<b>Birds</b>		
<b>Order: Galliformes</b>		
<b>Fowl</b>		
<b>Odontophoridae</b>		
<i>Callipepla gambelii</i>	Gambel's quail	S1
<b>Order: Accipitriformes</b>		
<b>Hawks, Eagles, Vultures</b>		
<b>Cathartidae</b>		
<b>New World Vultures And Condors</b>		
<i>Cathartes aura</i>	Turkey vulture	S1
<b>Pandionidae</b>		
<b>Osprey</b>		
<i>Pandion haliaetus</i>	Osprey	S1
<b>Accipitridae</b>		
<b>Hawks</b>		
<i>Circus cyaneus</i>	Northern harrier	S1
<i>Accipiter cooperii</i>	Cooper's hawk	S1
<i>Buteo jamaicensis</i>	Red-tailed hawk	S1
<i>Buteo regalis</i>	Ferruginous hawk	S1
<i>Aquila chrysaetos</i>	Golden eagle	S1
<b>Order: Falconiformes</b>		
<b>Hawks and Vultures</b>		
<b>Falconinae</b>		
<b>Falcons</b>		
<i>Falco sparverius</i>	American kestrel	S1
<i>Falco mexicanus</i>	Prairie falcon	S1
<b>Order: Columbiformes</b>		
<b>Doves and Pigeons</b>		
<b>Columbidae</b>		
<b>Pigeons and Doves</b>		
<i>Columba livia</i>	Rock pigeon	S1
<i>Streptopelia decaocto</i>	Eurasian collared-dove	S1
<i>Zenaida macroura</i>	Mourning dove	S1
<b>Order: Cuculiformes</b>		
<b>Cuckoos and Relatives</b>		
<b>Neomorphinae</b>		
<b>New World ground-cuckoos</b>		
<i>Geococcyx californianus</i>	Greater roadrunner	S1
<b>Order: Strigiformes</b>		
<b>Owls</b>		
<b>Tytonidae</b>		
<b>Barn Owls</b>		
<i>Tyto alba</i>	Barn owl	S1
<b>Strigidae</b>		
<b>True owls</b>		
<i>Athene cunicularia</i>	Burrowing owl	S1, S2, B

**TABLE 5.2-8**  
Wildlife Species Observed at the HHSEGS Site during Fall-season 2010 and Spring 2011 Surveys

Scientific Name <sup>a</sup>	Common Name <sup>a</sup>	Comments <sup>b</sup>
<b>Order: Caprimulgiformes</b>		
<b>Goatsuckers; Frogmouths; Oilbirds</b>		
<b>Caprimulginae</b>		
<b>Nightjars, Goatsuckers</b>		
<i>Chordeiles acutipennis</i>	Lesser Nighthawk	S1
<i>Phalaenoptilus nuttalli</i>	Common poorwill	S1
<b>Order: Apodiformes</b>		
<b>Hummingbirds and Swifts</b>		
<b>Apodinae</b>		
<b>Swifts</b>		
<i>Aeronautes saxatalis</i>	White-throated swift	S1
<b>Trochilinae</b>		
<b>Hummingbirds</b>		
<i>Calypte anna</i>	Anna's hummingbird	S1
<i>Calypte costae</i>	Costa's hummingbird	S1
<b>Order: Piciformes</b>		
<b>Woodpeckers and Relatives</b>		
<b>Picinae</b>		
<b>Woodpeckers</b>		
<i>Colaptes auratus</i>	Northern flicker	S1
<b>Order: Passeriformes</b>		
<b>Passerines and Perching Birds</b>		
<b>Tyrannidae</b>		
<b>Flycatchers</b>		
<i>Empidonax oberholseri</i>	Gray flycatcher	S1
<i>Empidonax oberholseri</i>	Dusky flycatcher	S1
<i>Sayornis nigricans</i>	Black phoebe	S1
<i>Sayornis saya</i>	Say's phoebe	S1
<i>Myiarchus cinerascens</i>	Ash-throated flycatcher	S1
<i>Tyrannus verticalis</i>	Western kingbird	S1
<b>Laniidae</b>		
<b>Shrikes</b>		
<i>Lanius ludovicianus</i>	Loggerhead shrike	S1
<b>Corvidae</b>		
<b>Jays, Magpies, and Crows</b>		
<i>Corvus brachyrhynchos</i>	American crow	S1
<i>Corvus corax</i>	Common raven	S1
<b>Alaudidae</b>		
<b>Larks</b>		
<i>Eremophila alpestris</i>	Horned lark	S1
<b>Hirundinidae</b>		
<b>Swallows</b>		
<i>Progne subis</i>	Purple martin	S1
<i>Tachycineta bicolor</i>	Tree swallow	S1
<i>Tachycineta thalassina</i>	Violet-green swallow	S1

**TABLE 5.2-8**  
Wildlife Species Observed at the HHSEGS Site during Fall-season 2010 and Spring 2011 Surveys

Scientific Name <sup>a</sup>	Common Name <sup>a</sup>	Comments <sup>b</sup>
<i>Stelgidopteryx serripennis</i>	Northern rough-winged swallow	S1
<i>Hirundo rustica</i>	Barn swallow	S1
<b>Troglodytidae</b>	<b>Wrens</b>	
<i>Campylorhynchus brunneicapillus</i>	Cactus wren	S1
<i>Salpinctes obsoletus</i>	Rock wren	S1
<b>Poliopitilidae</b>	<b>Gnatcatchers</b>	
<i>Poliopitila caerulea</i>	Blue-gray gnatcatcher	S1
<i>Poliopitila melaneura</i>	Black-tailed gnatcatcher	S1
<b>Turdidae</b>	<b>Thrushes</b>	
<i>Sialia currucoides</i>	Mountain bluebird	S1
<b>Mimidae</b>	<b>Mimic Thrashers</b>	
<i>Mimus polyglottos</i>	Northern mockingbird	S1
<i>Oreoscoptes montanus</i>	Sage thrasher	S1
<i>Toxostoma bendirei</i>	Bendire's thrasher	S1
<i>Toxostoma lecontei</i>	LeConte's thrasher	S1
<b>Sturnidae</b>	<b>Starlings, Mynahs, Oxpeckers</b>	
<i>Sturnus vulgaris</i>	European starling	S1
<b>Ptilonotidae</b>	<b>Silky Flycatchers</b>	
<i>Phainopepla nitens</i>	Phainopepla	S1
<b>Parulidae</b>	<b>New World Warblers</b>	
<i>Dendroica coronata</i>	Yellow-rumped warbler	S1
<b>Emberizidae</b>	<b>Emberizids</b>	
<i>Spizella passerina</i>	Chipping sparrow	S1
<i>Spizella breweri</i>	Brewer's sparrow	S1
<i>Chondestes grammacus</i>	Lark sparrow	S1
<i>Amphispiza bilineata</i>	Black-throated sparrow	S1
<i>Amphispiza belli</i>	Sage sparrow	S1
<i>Zonotrichia albicollis</i>	White-throated sparrow	S1
<i>Zonotrichia leucophrys</i>	White-crowned sparrow	S1
<b>Cardinalidae</b>		
<i>Pheucticus melanocephalus</i>	Black-headed grosbeak	S1

**TABLE 5.2-8**  
Wildlife Species Observed at the HHSEGS Site during Fall-season 2010 and Spring 2011 Surveys

Scientific Name <sup>a</sup>	Common Name <sup>a</sup>	Comments <sup>b</sup>
<b>Icteridae</b>		
<b>Blackbirds, Orioles, and Relatives</b>		
<i>Sturnella neglecta</i>	Western meadowlark	S1
<i>Xanthocephalus xanthocephalus</i>	Yellow-headed blackbird	S1
<i>Icterus bullockii</i>	Bullock's Oriole	S1
<i>Icterus parisorum</i>	Scott's oriole	S1
<b>Fringillidae</b>		
<b>Finches</b>		
<i>Carpodacus mexicanus</i>	House finch	S1
<i>Spinus psaltria</i>	Lesser goldfinch	S1
<b>Class: Reptilia</b>		
<b>Reptiles</b>		
<b>Order: Testudines</b>		
<b>Tortoises and Turtles</b>		
<b>Testudinidae</b>		
<b>Land Tortoises</b>		
<i>Gopherus agassizii</i>	Desert tortoise	S2, B
<b>Order: Squamata</b>		
<b>Lizards and Snakes</b>		
<b>Crotaphytidae</b>		
<b>Collared and Leopard Lizards</b>		
<i>Crotophytus callarus</i>	Common collared lizard	S1
<i>Gambelia wislizenii</i>	Long-nosed leopard lizard	S1
<b>Phrynosomatidae</b>		
<b>Earless, Spiny, Tree, Side-blotched and Horned Lizards</b>		
<i>Phrynosoma platyrhinos calidarium</i>	Southern desert horned lizard	S1
<i>Sceloporus occidentalis</i>	Western fence lizard	S1
<i>Uta stansburiana stejnegeri</i>	Side-blotched lizard	S1
<b>Iguanidae</b>		
<b>Iguanas</b>		
<i>Sauromalus ater</i>	Chuckwalla	
<i>Dipsosaurus dorsalis</i>	Desert iguana	S1
<b>Phrynosomatidae</b>		
<b>Phrynosomatids</b>		
<i>Callisaurus draconoides</i>	Zebra-tailed Lizard	S1
<b>Teiidae</b>		
<b>Whiptails</b>		
<i>Aspidoscelis tigris ssp. tigris</i>	Western whiptail (Great Basin)	S1
<b>Colubridae</b>		
<b>Colubrids</b>		
<i>Arizona elegans</i>	Glossy snake	S1
<i>Masticophis flagellum ssp. flagellum</i>	Coachwhip snake	S1
<i>Pituophis catenifer ssp. deserticola</i>	Great basin gopher snake	S1

**TABLE 5.2-8**  
Wildlife Species Observed at the HHSEGS Site during Fall-season 2010 and Spring 2011 Surveys

Scientific Name <sup>a</sup>	Common Name <sup>a</sup>	Comments <sup>b</sup>
<i>Rhinocheilus lecontei</i>	Long-nosed snake	S1
<i>Salvadora hexalepis mojavensis</i>	Mojave western patch-nosed snake	S1
<b>Viperidae</b>	<b>Pit Vipers</b>	
<i>Crotalus scutulatus scutulatus</i>	Northern Mojave rattlesnake	S1
<i>Crotalus cerastes</i>	Sidewinder	S1
<i>Crotalus mitchellii</i>	Speckled rattlesnake	S1
<b>Class: Mammalia</b>	<b>Mammals</b>	
<b>Order: Carnivora</b>	<b>Flesh-eaters</b>	
<b>Canidae</b>	<b>Dogs, Wolves, and Foxes</b>	
<i>Canis domesticus</i>	Domestic dog	S1, S2
<i>Canis latrans</i>	Coyote	S2, T
<i>Vulpes macrotis</i>	Desert kit fox	S2, D, ND, T
<b>Mustelidae</b>	<b>Weasels</b>	
<i>Taxidea taxus</i>	American badger	D
<b>Order: Rodentia</b>	<b>Gnawing Mammals</b>	
<b>Sciuridae</b>	<b>Squirrels</b>	
<i>Ammospermophilus leucurus</i>	Whitetail antelope squirrel	S1, B
<b>Heteromyidae</b>	<b>Mice, Pocket Mice, and Kangaroo Rats</b>	
<i>Dipodomys merriami</i>	Merriam kangaroo rat	S2, B, T, R
<i>Perognathus longimembris</i>	Pocket mouse	B
<b>Cricetidae</b>	<b>Field Mice, Voles, Lemmings, Muskrats</b>	
<i>Peromyscus sp. maniculatus</i>	Deer mouse	B
<b>Geomyidae</b>	<b>Pocket Gophers</b>	
<i>Thomomys bottae</i>	Botta pocket gopher	B
<b>Order: Lagomorpha</b>	<b>Pikas, Hares, and Rabbits</b>	
<b>Leporidae</b>	<b>Hares and Rabbits</b>	
<i>Lepus californicus</i>	Black-tailed jackrabbit	S1, S2
<i>Sylvilagus audubonii</i>	Audubon's cottontail	S2, B
<b>Order: Artiodactyla</b>	<b>Even-toed Hoofed Mammals</b>	
<b>Cervidae</b>	<b>Deer</b>	
<i>Odocoileus hemionus</i>	Black-tailed deer	S2

**TABLE 5.2-8**  
Wildlife Species Observed at the HHSEGS Site during Fall-season 2010 and Spring 2011 Surveys

Scientific Name <sup>a</sup>	Common Name <sup>a</sup>	Comments <sup>b</sup>
<b>Order: Ungulata</b>		<b>Hoofed Mammals</b>
<b>Bovidae</b>		<b>Bison, Goats, Muskox, and Sheep</b>
<i>Bos Taurus</i>	Domestic cow	S2
<i>Ovis aries</i>	Domestic sheep	S2, R (bones)
<i>Ovis canadensis nelsoni</i>	Desert (Nelson's) bighorn sheep	S2, R (horn fragment)
<b>Order: Perissodactyla</b>		<b>Odd-toed Ungulates</b>
<b>Equidae</b>		<b>Horse-like Animals</b>
<i>Equus asinus</i>	Feral burro	S2

<sup>a</sup>Scientific and common names from Special Animals List (CNDDDB 2011). Taxonomy of reptiles based on: The Center for North American Herpetology, accessed at: <http://www.cnah.org/>

<sup>b</sup>Evidence of Presence: S1 = sighting of live individual, S2 = scat or owl pellets, B = burrows, D = den, ND = natal den, R = remains (bones, horn fragments, etc.), T = tracks, NR = not reported.

Source: Field surveys conducted for this project.

**TABLE 5.2-9**  
Desert Tortoise Sign by Survey Area

<b>Area</b>	<b>Tortoise</b>	<b>Carcass</b>	<b>Burrow</b>	<b>Other Sign</b>	<b>Total Sign by Area</b>
Project Site	2	0	58	18	78
Zone of Influence	13	1	36	9	59
<b>Total Sign</b>	<b>15</b>	<b>1</b>	<b>94</b>	<b>27</b>	<b>137</b>

Source: Sundance Biology, 2011

**TABLE 5.2-10**  
 Non-native Invasive Plants (Weeds) Identified Within the HHSEGS Site and 250-foot Buffer During 2011 Surveys

Common Name (Scientific name)	HHSEGS Site	250-foot Buffer	Total Number of Localities
<b>Abundance Categories</b>			
<b>Russian knapweed (<i>Acroptilon repens</i>)</b>			
11-100	1	0	1
501-1000	1	0	1
TOTAL	2	0	2
<b>Red brome (<i>Bromus madritensis</i> ssp. <i>rubens</i>)</b>			
11-100	2	0	2
101-500	11	2	13
501-1000	16	9	25
1001-5000	44	26	70
5001-10,000	92	16	108
TOTAL	165	53	218
<b>Cheatgrass (<i>Bromus tectorum</i>)</b>			
1-10	6	1	7
11-100	7	3	10
101-500	2	1	3
501-1000	0	1	1
TOTAL	15	6	21
<b>Purple mustard (<i>Chorispora tenella</i>)</b>			
1-10	1	0	1
11-100	1	0	1
TOTAL	2	0	2
<b>Field bindweed (<i>Convolvulus arvensis</i>)</b>			
11-100	0	1	1
TOTAL	0	1	1
<b>Halogeton (<i>Halogeton glomeratus</i>)</b>			
1-10	1	2	3
11-100	5	1	6
101-500	7	1	8
501-1000	10	5	15
1001-5000	17	6	23
5001-10,000	69	11	80
TOTAL	109	26	135

**TABLE 5.2-10**

Non-native Invasive Plants (Weeds) Identified Within the HHSEGS Site and 250-foot Buffer During 2011 Surveys

<b>Common Name (Scientific name)</b>	<b>HHSEGS Site</b>	<b>250-foot Buffer</b>	<b>Total Number of Localities</b>
<b>African mustard (<i>Malcolmia africana</i>)</b>			
1-10	6	2	8
11-100	25	8	33
101-500	24	3	27
501-1000	21	1	22
1001-5000	10	16	26
5001-10,000	18	6	24
TOTALS	104	36	140
<b>Russian thistle (<i>Salsola</i> spp.)</b>			
1-10	5	2	7
11-100	19	2	21
101-500	9	3	12
501-1000	3	4	7
1001-5000	11	4	15
5001-10,000	1	3	4
TOTAL	46	18	64
<b>Tumble mustard (<i>Sisymbrium altissimum</i>)</b>			
1-10	7	1	8
11-100	7	2	9
101-500	0	2	2
501-1000	0	1	1
TOTAL	14	6	20
<b>London rocket (<i>Sisymbrium irio</i>)</b>			
1-10	9	0	9
11-100	19	4	23
101-500	14	4	18
501-1000	2	1	3
1001-5000	0	0	0
5001-10,000	1	0	1
TOTAL	45	9	54
<b>Tamarisk (<i>Tamarix ramosissima</i>)</b>			
1-10	0	4	4
11-100	0	4	4
101-500	0	1	1
TOTAL	0	9	9

Source: GANDA, 2011b.

**TABLE 5.2-11**  
Numbers of Special-Status Plants Observed Within the HHSEHS Site and 250-foot Buffer

Common Name/ Scientific Name	Conservation Status				Number of Localities and Individuals					
	Federal/State (CA) /BLM Status	CNPS	CNDDB	Nevada	Site Number of Localities	Site Number of Individuals	250-ft Buffer Number of Localities	250-ft Buffer Number of Individuals	Total Number of Individuals	Total Number of Localities
Pink-funnel lily <i>Androstephium breviflorum</i>	-/-	2.3	G5 S1.3	Present; no conservation status	66	352	24	88	440	90
Preuss' milkvetch <i>Astragalus preussii</i> var. <i>preussii</i>	-/-	2.3	G4T4 S1.2	Present; no conservation status	2	4	1	3	7	3
Tidestrom's milkvetch <i>Astragalus tidestromii</i>	-/-	2.2	G4G5 S2	Present; no conservation status	74	3134	20	248	3382	94
Wheeler's skeletonweed <i>Chaetadelpa wheeleri</i>	-/-	2.2	G4 S1S2	Present; no conservation status	56	783	29	408	1191	83
Purpleneve springparsley <i>Cymopterus multinervatus</i>	-/-	2.2	G5? S2	Present; no conservation status	1	1	0	0	1	1
Pahrump Valley buckwheat <i>Eriogonum bifurcatum</i> <sup>a</sup>	-/-CA	1B.2	G2 S2	BLM sensitive; NNPS threatened	57	15,000	11	346	15,346	68
Goodding's phacelia <i>Phacelia pulchella</i> var. <i>gooddingii</i>	-/-	2.3	G5T2T3 S1.3?	Present; no conservation status	232	27,706	65	6227	33,933	297
Desert wing-fruit <i>Selinocarpus nevadensis</i>	-/-	2.3	G5 S1.3	Present; no conservation status	13	63	0	0	63	13
Nye milkvetch <i>Astragalus nyensis</i> <sup>b</sup>	-/-	none	none	Present; status dropped	162	4859	34	2368	7227	196

## Notes:

<sup>a</sup> Number of plants for Pahrump Valley buckwheat are estimated.

<sup>b</sup> Table includes numbers of Nye milkvetch (*Astragalus nyensis*) observed during the surveys. This species was not previously documented in California. It is not included on CDFG's Special Plants List and does not have special-status.

Data Source: GANDA, 2011b

**Status Codes:****USFWS Status**

FE – Federally listed as Endangered  
FT – Federally listed as Threatened

**BLM Status**

SS - Special status  
CS - Sensitive in California  
NS - Sensitive in Nevada

**California State Status**

SE – State listed as endangered  
ST – State listed as threatened  
SR – State listed as rare

**Nevada State Status**

CE – Critically Endangered

**Nevada Natural Heritage Program Status (NVNH)**

Track – location data is maintained for these species

**Nevada Native Plant Society Status (NNPS)**

Watch – conservation concern in Nevada  
M = Marginal – conservation concern in Nevada but more widespread elsewhere  
Dropped – no longer of conservation concern in Nevada

**California Native Plant Society (CNPS) Status**

1A – Plants presumed extinct in California  
1B – Plants rare, threatened, or endangered in California and elsewhere  
2 – Plants rare, threatened, or endangered in California, but more common elsewhere  
3 – Plants about which we need more information – a review list  
4 – Plants of limited distribution – a watch list

**CNPS threat code extensions:**

.1 -- Seriously endangered in California.  
.2 -- Fairly endangered in California.  
.3 -- Not very endangered in California.  
? -- Not determined.



**TABLE 5.2-12**  
 Birds Observed During Avian Surveys Conducted March 23 through April 14, 2011; May 12-13, 2011

Common Name <sup>a</sup>	Scientific Name	Total Point Count <sup>c</sup>	Total Observation <sup>d</sup>
<b>Order: Accipitriformes</b>	<b>Hawks, Eagles, Vultures</b>		
<b>Accipitridae</b>	<b>Hawks</b>		
<i>Circus cyaneus</i>	Northern harrier	1	3
<i>Buteo jamaicensis</i>	Red-tailed Hawk	0	1
<i>Aquila chrysaetos</i>	Golden eagle	0	1
<b>Order: Falconiformes</b>	<b>Hawks, Vultures</b>		
<b>Falconidae</b>	<b>Falcons</b>		
<i>Falco sparverius</i>	American kestrel	1	1
<i>Falco mexicanus</i>	Prairie falcon	1	2
<b>Order: Columbiformes</b>	<b>Doves, Pigeons</b>		
<b>Columbidae</b>	<b>Pigeons and Doves</b>		
<i>Columba livia</i>	Rock pigeon	9	10
<i>Streptopelia decaocto</i>	Eurasian collared-dove	12	37
<i>Zenaida macroura</i>	Mourning dove	1	1
<b>Order: Passeriformes</b>	<b>Passerines and Perching Birds</b>		
<b>Tyrannidae</b>	<b>Flycatchers</b>		
<i>Empidonax oberholseri</i>	Dusky flycatcher	1	1
<i>Sayornis saya</i>	Say's phoebe	3	3
<b>Laniidae</b>	<b>Shrikes</b>		
<i>Lanius ludovicianus</i>	Loggerhead shrike	4	5
<b>Corvidae</b>	<b>Jays, Magpies, and Crows</b>		
<i>Corvus brachyrhynchos</i>	American crow	4	5
<i>Corvus corax</i>	Common raven	9	33
<b>Alaudidae</b>	<b>Larks</b>		
<i>Eremophila alpestris</i>	Horned lark <sup>b</sup>	76	81
<b>Hirundinidae</b>	<b>Swallows</b>		
<i>Tachycineta thalassina</i>	Violet-green swallow	1	1
<i>Stelgidopteryx serripennis</i>	Northern Rough-winged swallow	0	3
<i>Hirundo rustica</i>	Barn swallow	2	4

**TABLE 5.2-12**  
Birds Observed During Avian Surveys Conducted March 23 through April 14, 2011; May 12-13, 2011

<b>Common Name<sup>a</sup></b>	<b>Scientific Name</b>	<b>Total Point Count<sup>c</sup></b>	<b>Total Observation<sup>d</sup></b>
<b>Mimidae</b>	<b>Mimic Thrashers</b>		
<i>Mimus polyglottos</i>	Northern mockingbird	0	1
<i>Oreoscoptes montanus</i>	Sage thrasher	26	28
<i>Toxostoma</i> sp.	Unknown thrasher	4	8
<b>Emberizidae</b>	<b>Emberizids</b>		
<i>Spizella passerina</i>	Chipping sparrow	5	5
<i>Spizella breweri</i>	Brewer's sparrow	42	47
<i>Chondestes grammacus</i>	Lark sparrow	1	1
<i>Amphispiza bilineata</i>	Black-throated Sparrow <sup>b</sup>	191	211
<i>Amphispiza belli</i>	Sage sparrow	36	39
<i>Zonotrichia leucophrys</i>	White-crowned Sparrow	30	30
<b>Icteridae</b>	<b>Blackbirds, Orioles, and Relatives</b>		
<i>Sturnella neglecta</i>	Western meadowlark	0	2
<b>Fringillidae</b>	<b>Finches</b>		
<i>Carpodacus mexicanus</i>	House finch	35	74
<i>Carduelis psaltria</i>	Lesser goldfinch	7	10

## Notes:

<sup>a</sup>Common names in bold are CDFG and/or BLM sensitive species

<sup>b</sup>Observed nests or fledglings

<sup>c</sup>Birds observed during point counts in point count circles

<sup>d</sup>Birds observed during point counts, in transit along transects, and flyovers.

**TABLE 5.2-13**

Number of Birds and Species Observed on Four Point-Count Bird Surveys between March 23 through April 14, 2011

	<b>March 23</b>	<b>March 30</b>	<b>April 6</b>	<b>April 13</b>	<b>Spring</b>
Transect 1 (6 Pts)					
Birds Observed	16	15	16	16	63
Species Observed	3	4	3	4	6
Transect 2 (14 pts)					
Birds Observed	42	44	32	45	163
Species Observed	10	10	9	8	16
Transect 3 (19 pts)					
Birds Observed	46	75	70	81	272
Species Observed	9	11	12	14	18

**TABLE 5.2-14**  
**Agency Contacts for Biological Resources**

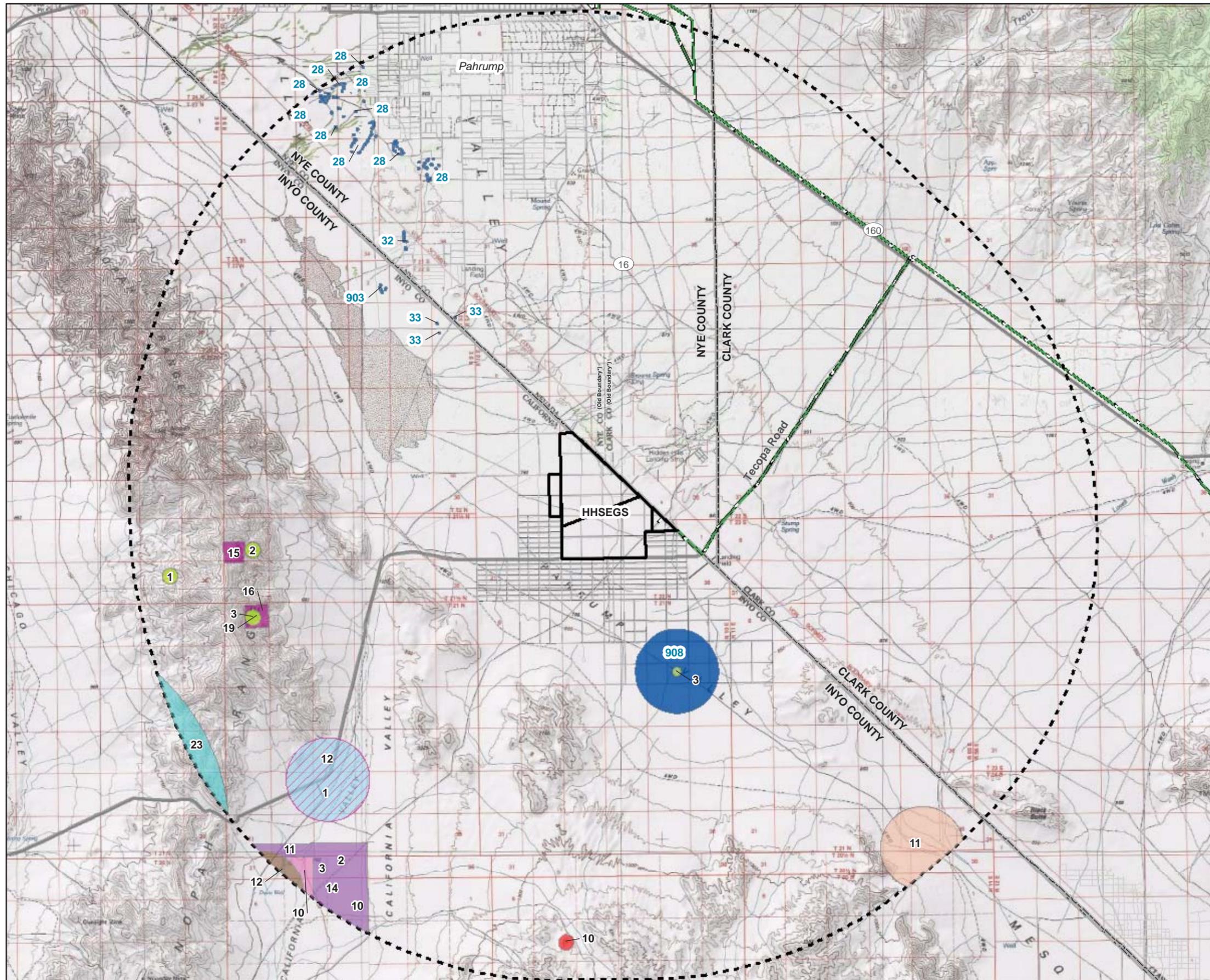
<b>Issue</b>	<b>Agency</b>	<b>Contact</b>
Federal threatened and endangered species - section 7 consultation; biological surveys	U.S. Bureau of Land Management	Mark Slaughter, Wildlife Biologist 4701 North Torrey Pines Drive Las Vegas, NV 89130 (702) 515-5195
Federal threatened and endangered species - section 7 consultation; biological surveys	U.S. Fish and Wildlife Service	Brian Novosak U.S. Fish and Wildlife Service Southern Nevada Field Office 4701 North Torrey Pines Drive Las Vegas, Nevada 89130 (702) 515-5495
California threatened and endangered species - CDFG 2081; Streambed Alteration Agreement - CDFG 1600; biological surveys	California Department of Fish and Game	
CWA 404 Permit; wetland delineations	U.S. Army Corps of Engineers	Bruce Henderson U. S. Army Corp of Engineers 2493 Portola Rd., Suite B Ventura, CA 93003 (805) 644-1766
CWA 401 Permit; Porter-Cologne Act, wetland delineations, waste discharge requirements	Lahontan Regional Water Quality Control Board	2501 Lake Tahoe Boulevard South Lake Tahoe, CA 96150-7704 (530) 542-5400

**TABLE 5.2-15**  
Agency Communications Regarding Biological Resources

<b>Date of Communication</b>	<b>Agency</b>	<b>Contact(s)</b>	<b>Issue Discussed</b>
	U. S. Army Corps of Engineers	Bruce Henderson 2493 Portola Rd., Suite B Ventura, CA 93003 (805) 644-1766	USACE informally stated that they will not take jurisdiction of the washes on the site.
March 17, 2011	Bureau of Land Management	Mark Slaughter, Wildlife Biologist 4701 North Torrey Pines Drive Las Vegas, NV 89130 (702) 515-5195	Onsite field meeting to discuss special-status plant, and wildlife species, noxious weed, and vegetation mapping survey protocols and procedures.
May 2, 2011	Bureau of Land Management	William Quillman, Supervisory Resource Management Specialist; 2601 Barstow Road Barstow, CA 92311 (760) 252-6020  Christopher Otahal, BLM Wildlife Biologist (760) 252-6033	Conversations with Jim Marble/CH2M HILL regarding bighorn sheep in the project region and golden eagle survey procedures.
May 4, 2011	California Department of Fish and Game	Jeff Villepique, Wildlife Biologist 407 West Line Street, Bishop, CA 93514 (760) 937-5966	Conversation with Jim Marble/CH2M HILL regarding bighorn sheep in the project region and golden eagle survey procedures.

**TABLE 5.2-16**  
Permits and Permit Schedule for Biological Resources

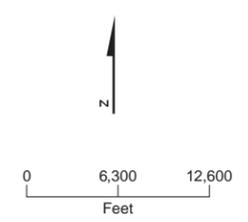
<b>Permit</b>	<b>Agency Contact</b>	<b>Schedule</b>
USFWS Biological Opinion pursuant to Section 7 of the ESA.	Desert tortoises were documented within the site during the protocol survey. The project is expected to adversely affect these tortoises. A Biological Assessment analyzing impacts to desert tortoise and its habitat will be prepared. Section 7 consultation with the USFWS will be conducted and the USFWS will issue a Biological Opinion.	6 to 9 months
CDFG 2081 Permit	A permit from the CDFG for impacts to desert tortoise, a state-listed species, will be required under Section 2081(b) of the CDFG Code.	6 to 9 months
CDFG Streambed Alteration Agreement	Numerous ephemeral drainages were documented within the project site (URS, 2011). The project is expected to alter these drainages. A streambed alteration agreement from CDFG may be required.	6 to 9 months
USACE CWA Section 404 Permit	A jurisdictional determination report has been submitted to the USACE (URS, 2011). It is anticipated that the USACE will not take jurisdiction over the ephemeral washes and a CWA Section 404 Permit will not be needed.	6 to 9 months
Lahontan RWQCB CWA Section 401 Permit; Porter-Cologne Act	If the ephemeral drainages are not subject to USACE jurisdiction, a CWA 401 permit would not be required. The ephemeral washes onsite may be considered waters of the state, under the Porter-Cologne Act.	6 to 9 months



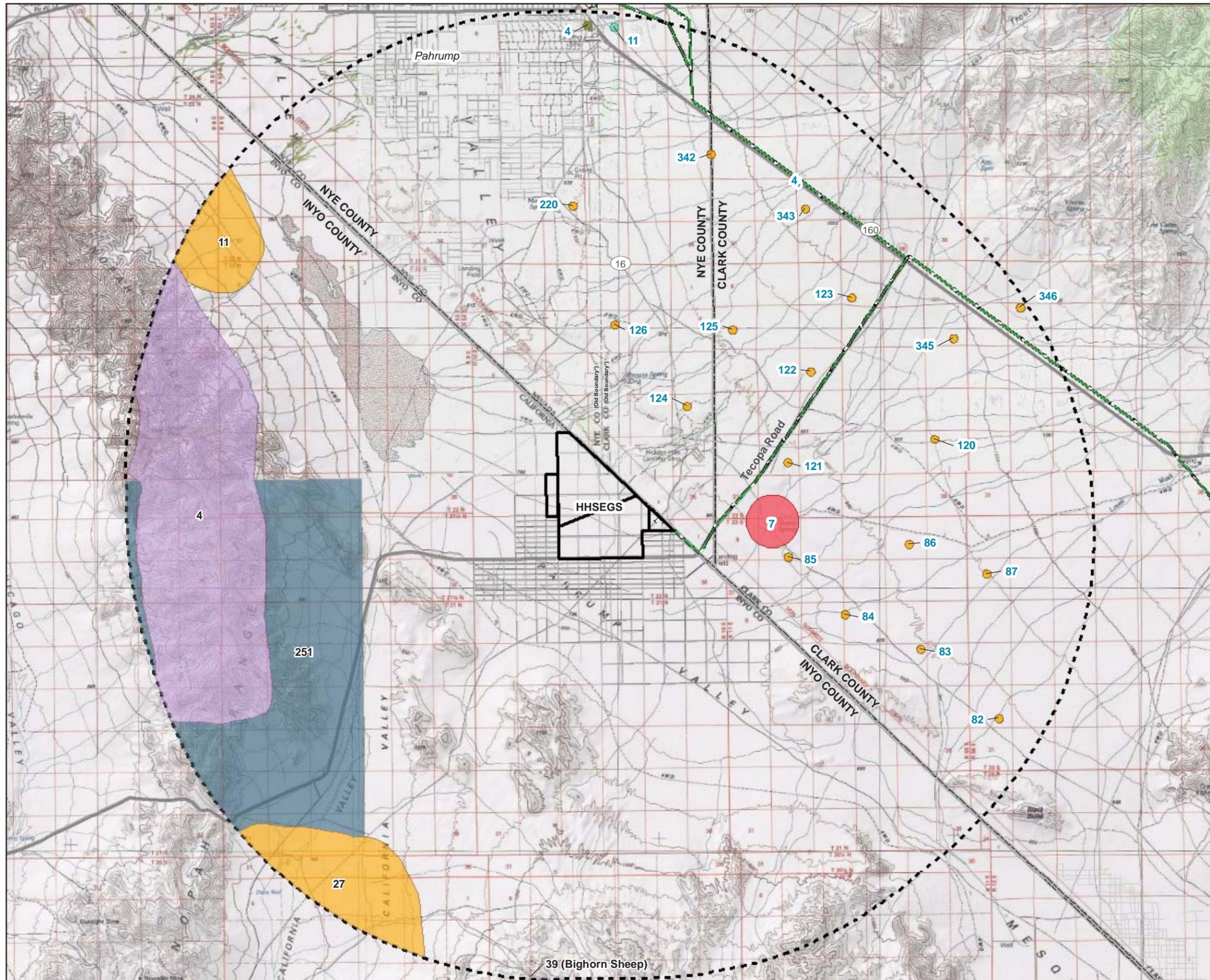
- LEGEND**
- Survey Corridor (300ft)
  - HHSEGS Boundary
  - 10-mile Buffer of HHSEGS
  - NNHP Data**
  - Pahrump Valley buckwheat (*Eriogonum bifurcatum*)
  - CNDDB Data**
  - Ash Meadows buckwheat (*Eriogonum contiguum*)
  - Johnson's bee-hive cactus (*Sclerocactus johnsonii*)
  - Mesquite Bosque, Mesquite Bosque
  - Mormon needle grass (*Stipa arida*)
  - Stephens' beardtongue (*Penstemon stephensii*)
  - Tidestrom's milk-vetch (*Astragalus tidestromii*)
  - Utah beardtongue (*Penstemon utahensis*)
  - forked buckwheat (*Eriogonum bifurcatum*)
  - ivory-spined agave (*Agave utahensis* var. *eborispina*)
  - spine-noded milk vetch (*Peteria thompsoniae*)
  - three-awned grama (*Bouteloua trifida*)
  - white bear poppy (*Arctomecon merriamii*)

\*County boundary moved due to annexation, 2001

Source:  
 1. NNHP: Nevada Natural Heritage data (plants and wildlife)  
 2. CNDDB: The California Natural Diversity Database, June 2011



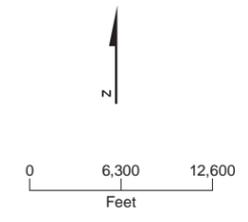
**FIGURE 5.2-1**  
**Special-status Plant Species within**  
**10 Miles of HHSEGS Site**  
 Hidden Hills Solar Electric Generating System



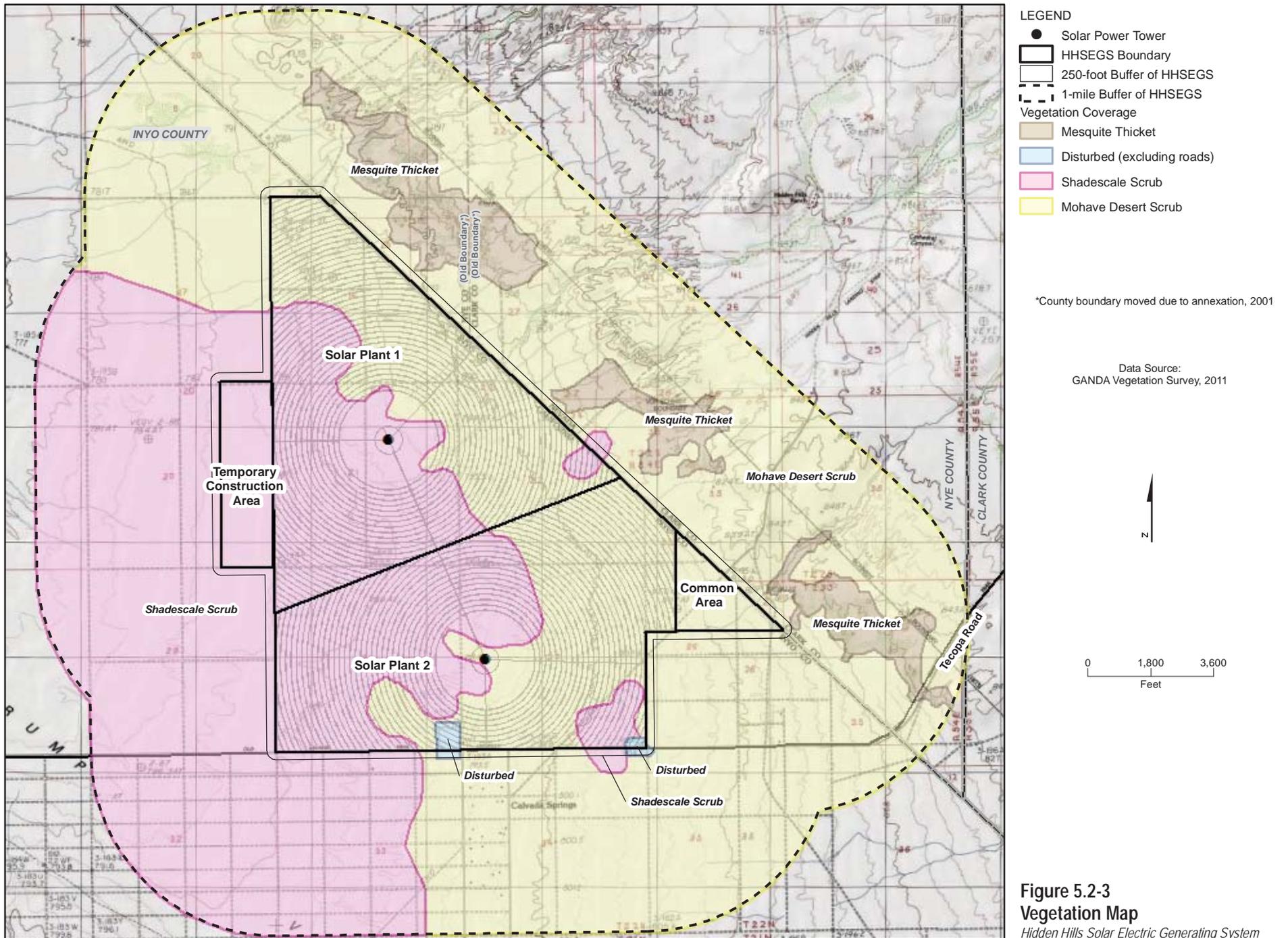
- LEGEND**
- Survey Corridor (300ft)
  - HHSEGS Boundary
  - 10-mile Buffer of HHSEGS
  - NNHP Data**
  - Brazilian free-tailed bat (*Tadarida brasiliensis*)
  - Desert tortoise (*Gopherus agassizii*)
  - Pahump poolfish (*Empetrichthys latos latos*)
  - Phainopepla (*Phainopepla nitens*)
  - Spring Mountains pyrg (*Pyrgulopsis deaconi*)
  - CNDDB Data**
  - Desert tortoise (*Gopherus agassizii*)
  - Nelson's bighorn sheep (*Ovis canadensis nelsoni*)
  - Prairie falcon (*Falco mexicanus*)

\*County boundary moved due to annexation, 2001

Source:  
 1. NNHP: Nevada Natural Heritage data (plants and wildlife)  
 2. CNDDB: The California Natural Diversity Database, June 2011



**FIGURE 5.2-2**  
**Special-status Wildlife Species within**  
**10 Miles of HHSEGS Site**  
 Hidden Hills Solar Electric Generating System



**Figure 5.2-3**  
**Vegetation Map**  
 Hidden Hills Solar Electric Generating System



Pink funnel-lily (*Androstephium breviflorum*)



Nye milkvetch (*Astragalus nyensis*)

**FIGURE 5.2-4 (1 of 6)**  
**Representative Photographs of**  
**Special-Status Plants and Vegetation**  
**Identified at the HHSEGS Site**  
*Hidden Hills Solar Electric Generating System*



Preuss' milkvetch (*Astragalus preussii* var. *preussii*)



Tidestrom's milkvetch (*Astragalus tidestromii*) (Photo by Chloe Scott)

**FIGURE 5.2-4 (2 of 6)**  
**Representative Photographs of**  
**Special-Status Plants and Vegetation**  
**Identified at the HHSEGS Site**  
*Hidden Hills Solar Electric Generating System*



Wheeler's skeletonweed (*Chaetadelpha wheeleri*) (Photo by Bill Clark)



Purpleneerve springparsley, showing fruit (*Cymopterus multinervatus*)

**FIGURE 5.2-4 (3 of 6)**  
**Representative Photographs of**  
**Special-Status Plants and Vegetation**  
**Identified at the HHSEGS Site**  
*Hidden Hills Solar Electric Generating System*



Pahrump Valley buckwheat (*Eriogonum bifurcatum*) (Photo by Bill Clark)



Goodding's phacelia (*Phacelia pulchella* ssp. *gooddingii*) (Photo by Bill Clark)

**FIGURE 5.2-4 (4 of 6)**  
**Representative Photographs of**  
**Special-Status Plants and Vegetation**  
**Identified at the HHSEGS Site**

*Hidden Hills Solar Electric Generating System*



Desert wing-fruit showing fruits (*Selinocarpus nevadensis*) (Photo by Chloe Scott)



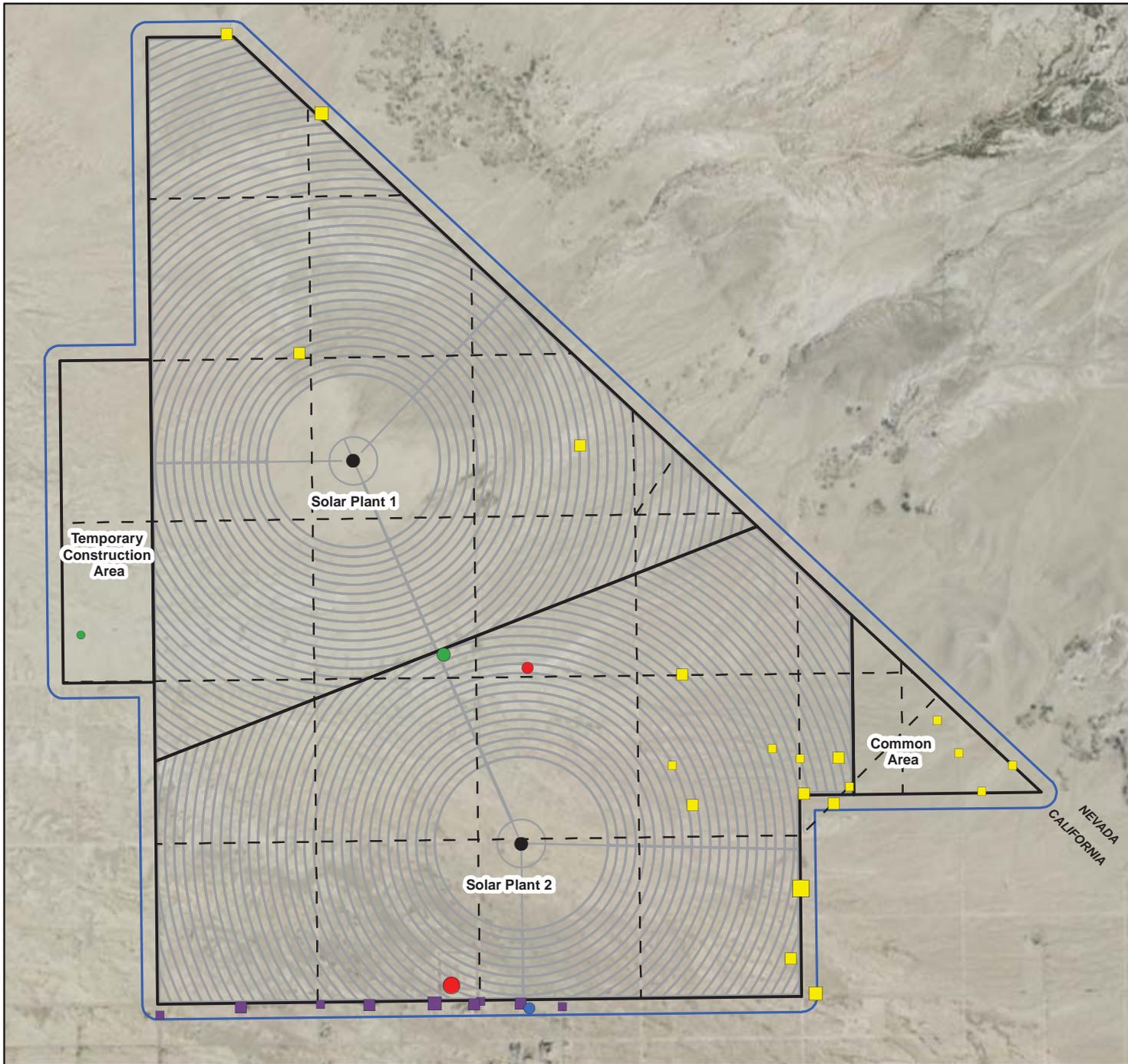
Mojave Desert Scrub vegetation, looking southwest toward the Nopah Range

**FIGURE 5.2-4 (5 of 6)**  
**Representative Photographs of**  
**Special-Status Plants and Vegetation**  
**Identified at the HHSEGS Site**  
*Hidden Hills Solar Electric Generating System*



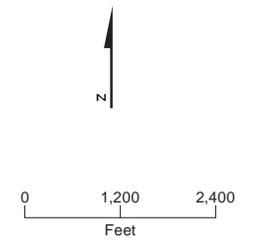
Shadscale Scrub vegetation, looking west toward the Nopah Range

**FIGURE 5.2-4 (6 of 6)**  
**Representative Photographs of**  
**Special-Status Plants and Vegetation**  
**Identified at the HHSEGS Site**  
*Hidden Hills Solar Electric Generating System*

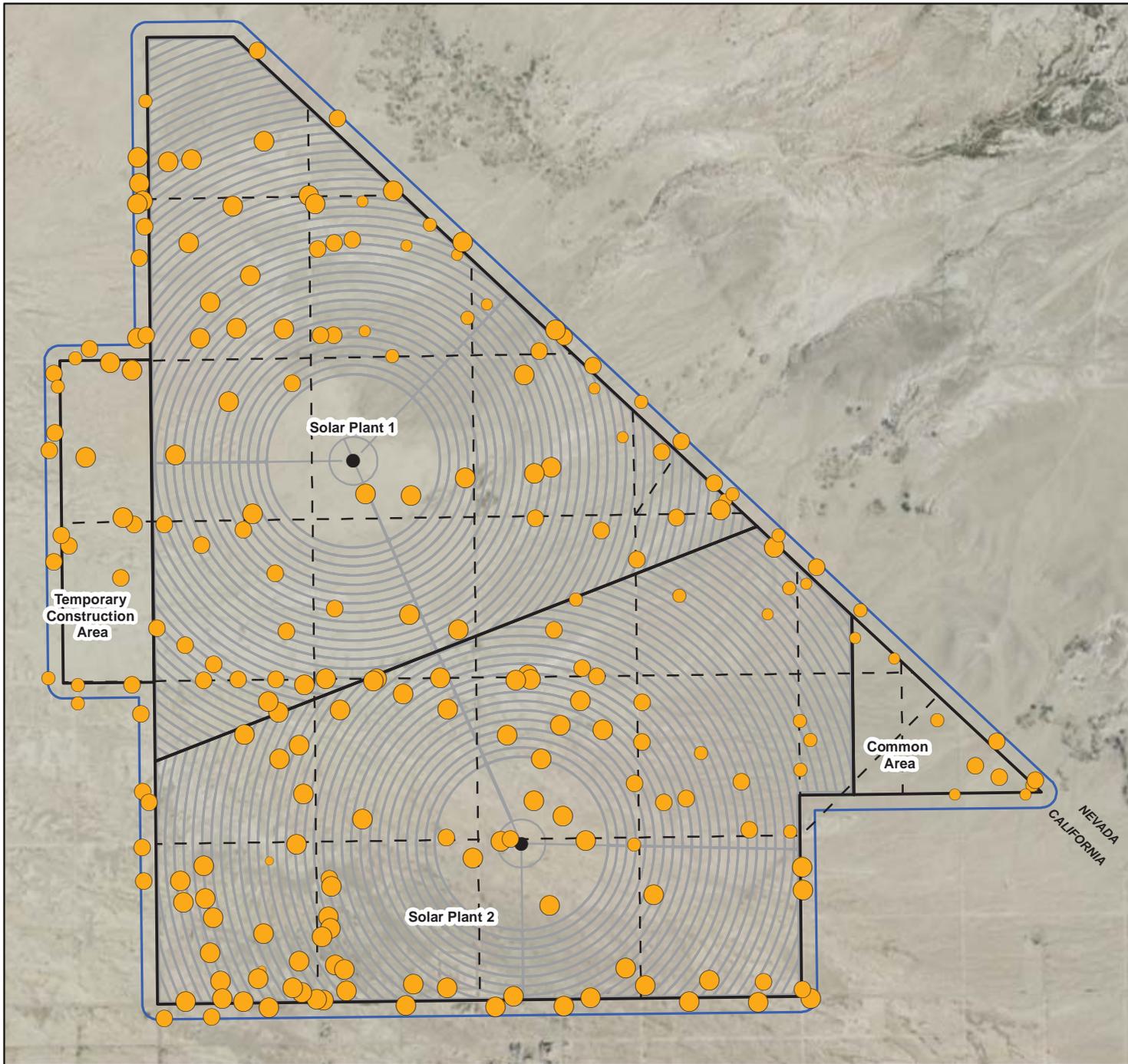


- LEGEND**
- Solar Power Tower
  - Acroptilon repens* (Russian knapweed)
    - 11-100
    - 5001-10000
  - Chorispora tenella* (Purple mustard)
    - 1-10
    - 11-100
  - Convolvulus arvensis* (Bindweed)
    - 11-100
  - Sisymbrium altissimum* (Tumble mustard)
    - 1-10
    - 11-100
    - 101-500
    - 501-1000
  - Tamarix ramosissima* (Tamarisk)
    - 1-10
    - 11-100
    - 101-500
  - - - Site Road
  - Solar Field Heliostat Arrays
  - ▭ HHSEGS Boundary
  - ▭ Site 250-foot Buffer

Source: GANDA

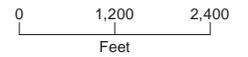


**Figure 5.2-5a**  
**Results of Weeds Surveys**  
 Hidden Hills Solar Electric Generating System

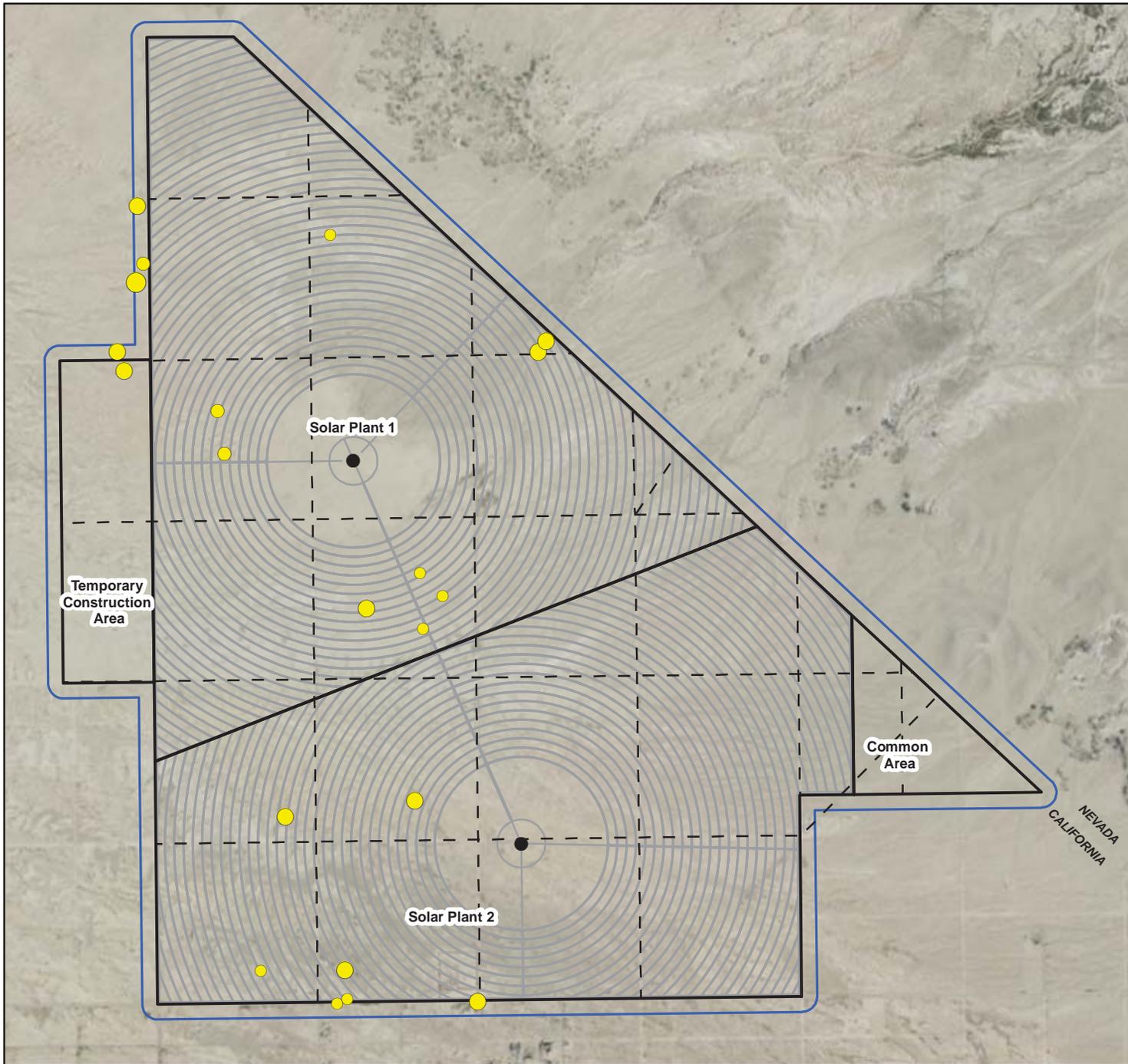


- LEGEND**
- Solar Power Tower
  - Bromus madritensis ssp. rubens* (Red Brome)
    - 11-100
    - 101-500
    - 501-1000
    - 1001-5000
    - 5001-10000
  - - - Site Road
  - Solar Field Heliostat Arrays
  - ▭ HHSEGS Boundary
  - ▭ Site 250-foot Buffer

Source: GANDA



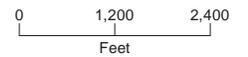
**Figure 5.2-5b**  
**Results of Weeds Surveys**  
 Hidden Hills Solar Electric Generating System



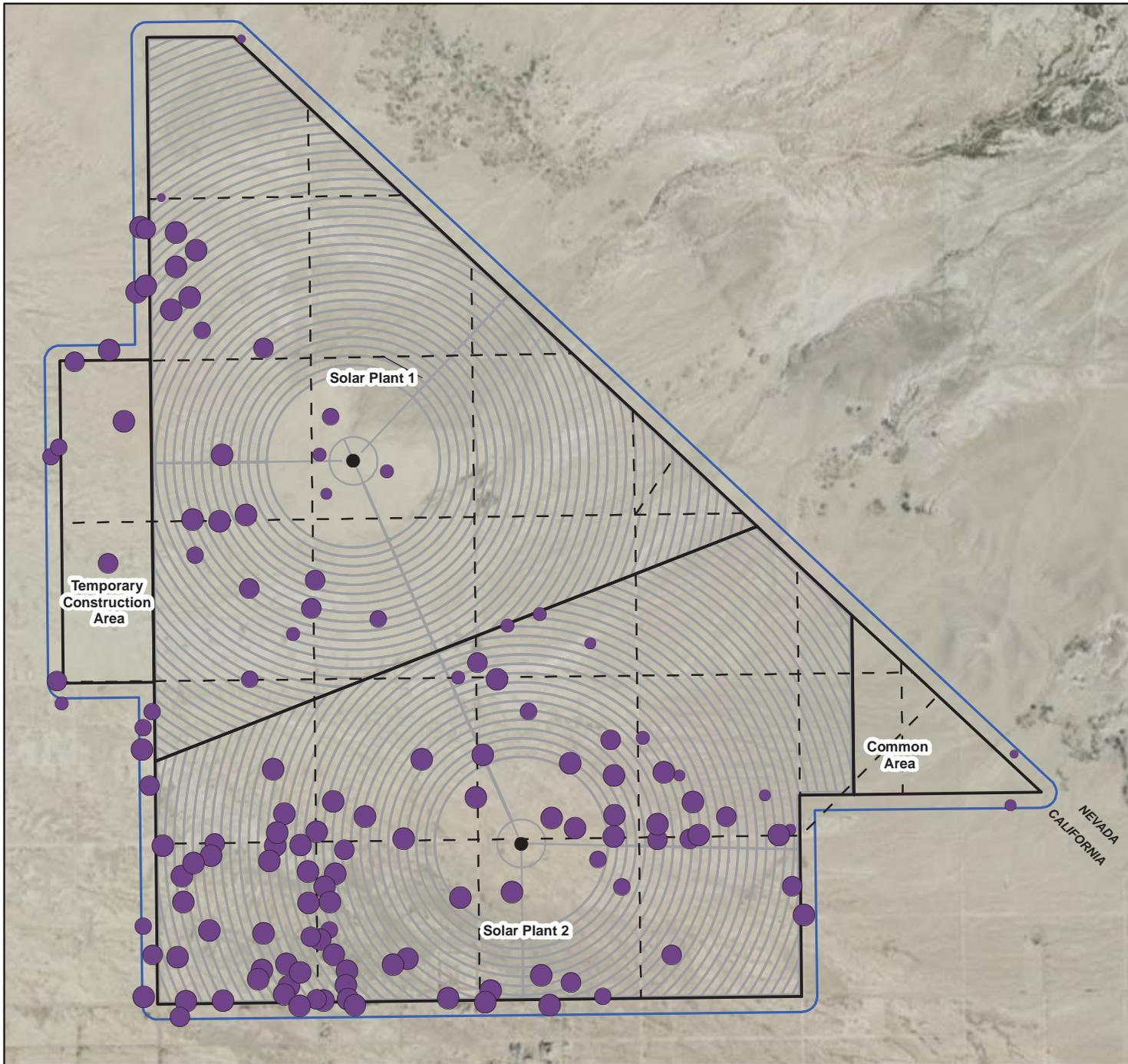
**LEGEND**

- Solar Power Tower
- Bromus tectorum* (Cheatgrass)
  - 1-10
  - 101-500
  - 11-100
  - 501-1000
- - - Site Road
- Solar Field Heliostat Arrays
- ▭ HHSEGS Boundary
- ▭ Site 250-foot Buffer

Source: GANDA



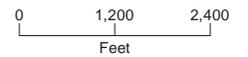
**Figure 5.2-5c**  
**Results of Weeds Surveys**  
 Hidden Hills Solar Electric Generating System



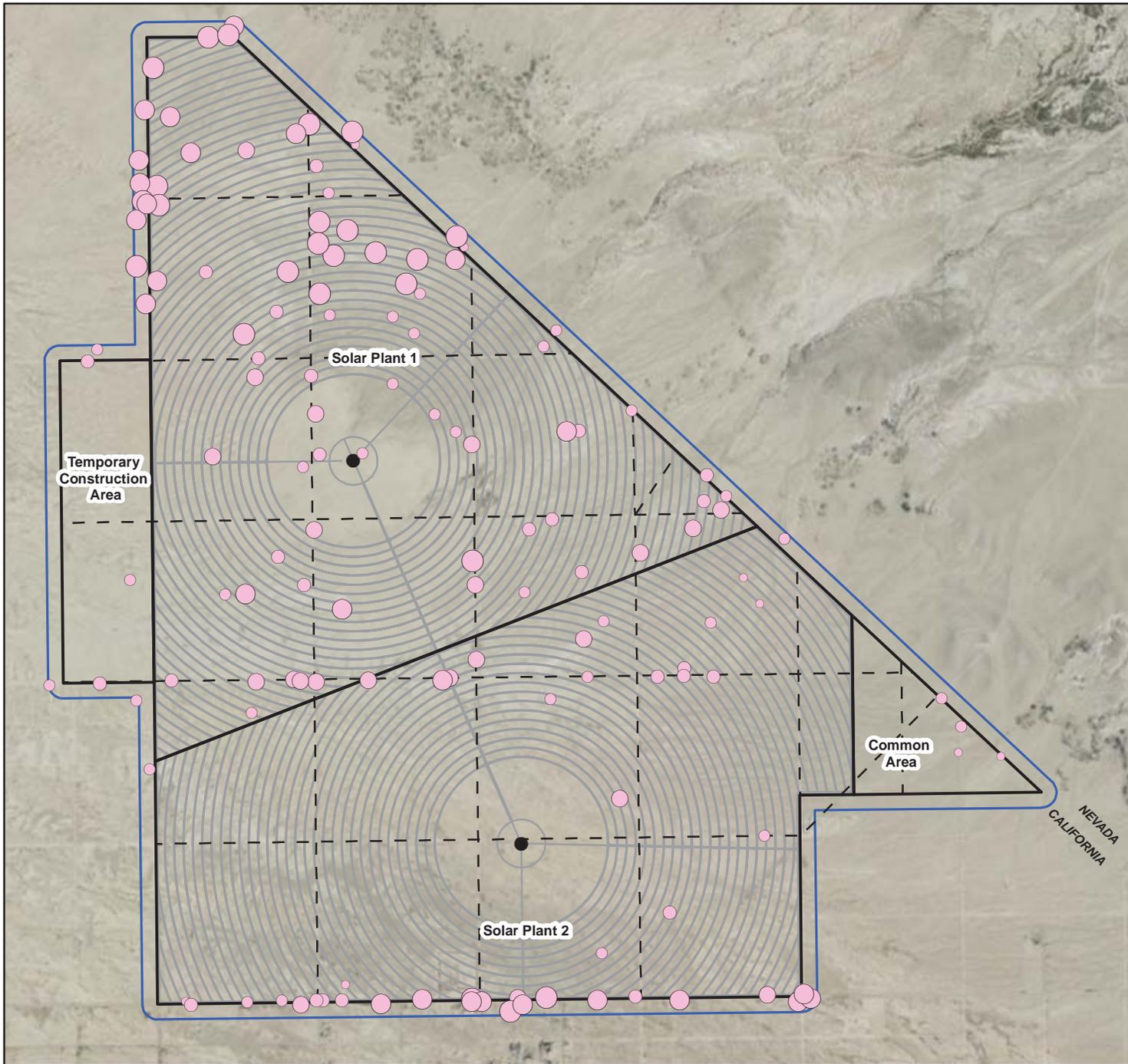
**LEGEND**

- Solar Power Tower
- Halogeton glomeratus* (Halogeton)
  - 1-10
  - 11-100
  - 101-500
  - 501-1000
  - 1001-5000
  - 5001-10000
- - Site Road
- Solar Field Heliostat Arrays
- ▭ HHSEGS Boundary
- ▭ Site 250-foot Buffer

Source: GANDA

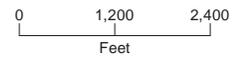


**Figure 5.2-5d**  
**Results of Weeds Surveys**  
 Hidden Hills Solar Electric Generating System

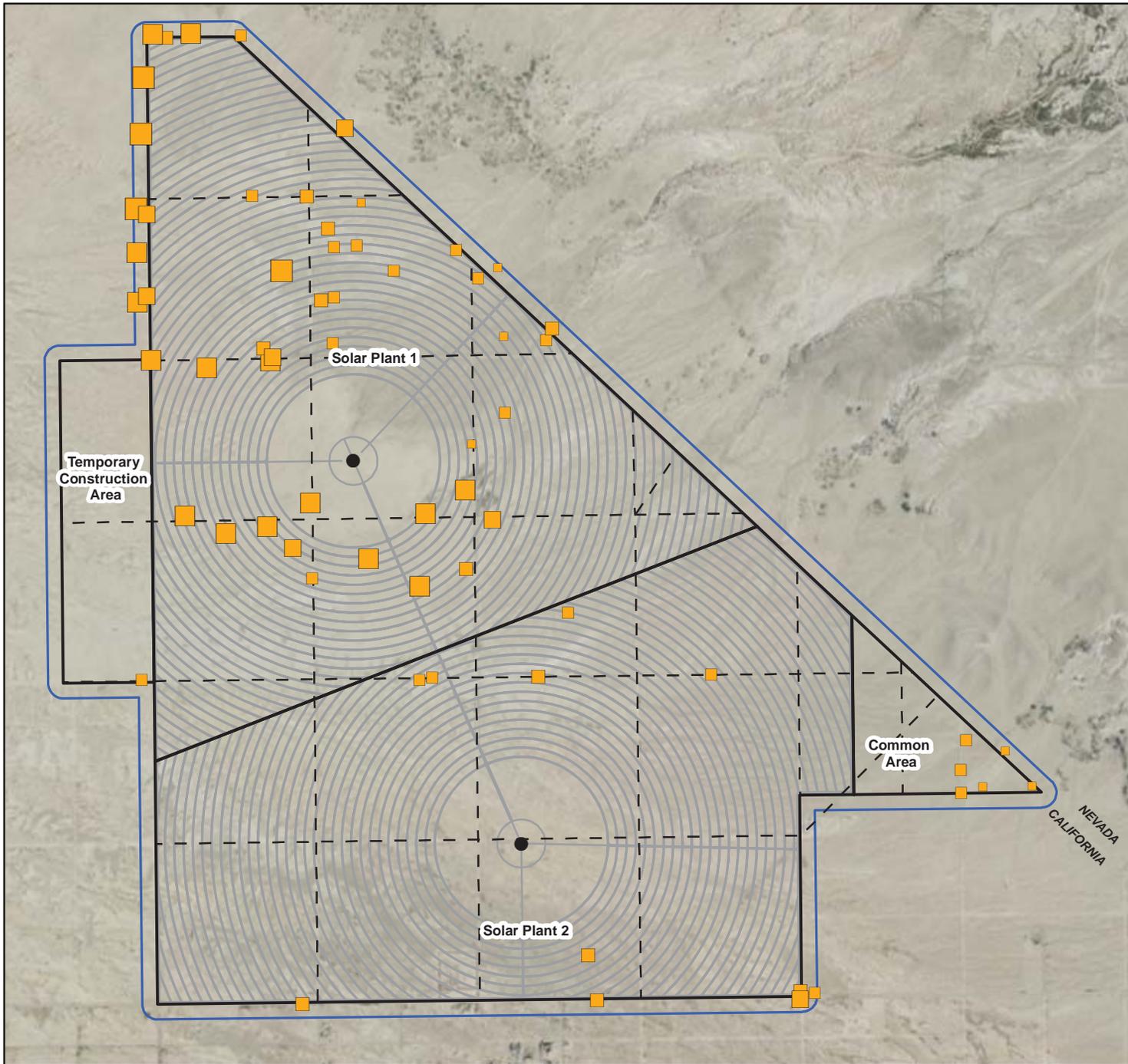


- LEGEND**
- Solar Power Tower
  - Malcolmia africana* (African mustard)
    - 1-10
    - 11-100
    - 101-500
    - 501-1000
    - 1001-5000
    - 5001-10000
  - - Site Road
  - Solar Field Heliostat Arrays
  - ▭ HHSEGS Boundary
  - ▭ Site 250-foot Buffer

Source: GANDA



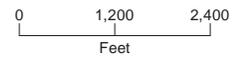
**Figure 5.2-5e**  
**Results of Weeds Surveys**  
 Hidden Hills Solar Electric Generating System



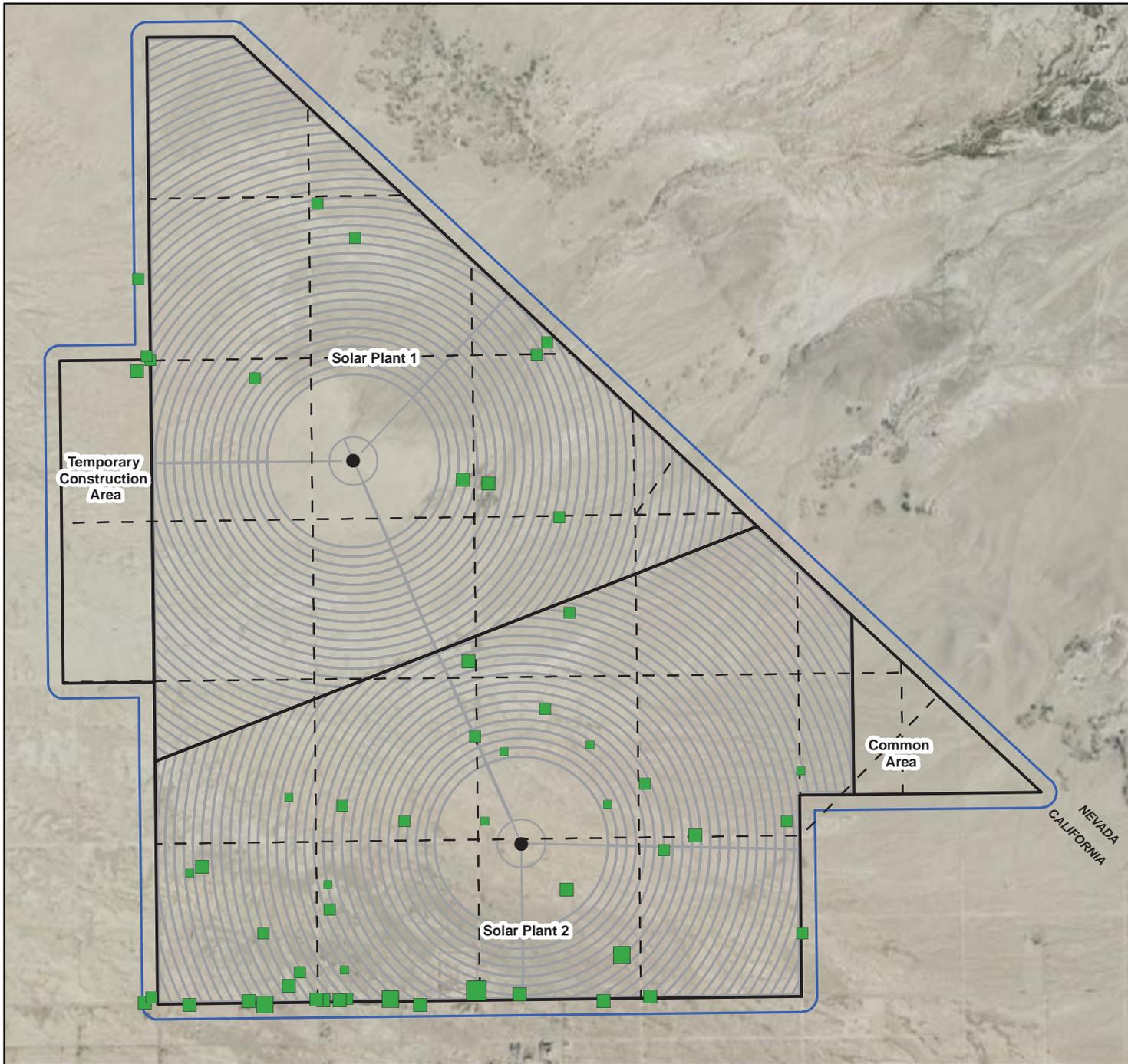
**LEGEND**

- Solar Power Tower
- Salsola sp.* (Russian thistle)
  - 1-10
  - 11-100
  - 101-500
  - 501-1000
  - 1001-5000
  - 5001-10000
- - - Site Road
- Solar Field Heliostat Arrays
- ▭ HHSEGS Boundary
- ▭ Site 250-foot Buffer

Source: GANDA



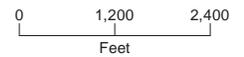
**Figure 5.2-5f**  
**Results of Weeds Surveys**  
 Hidden Hills Solar Electric Generating System



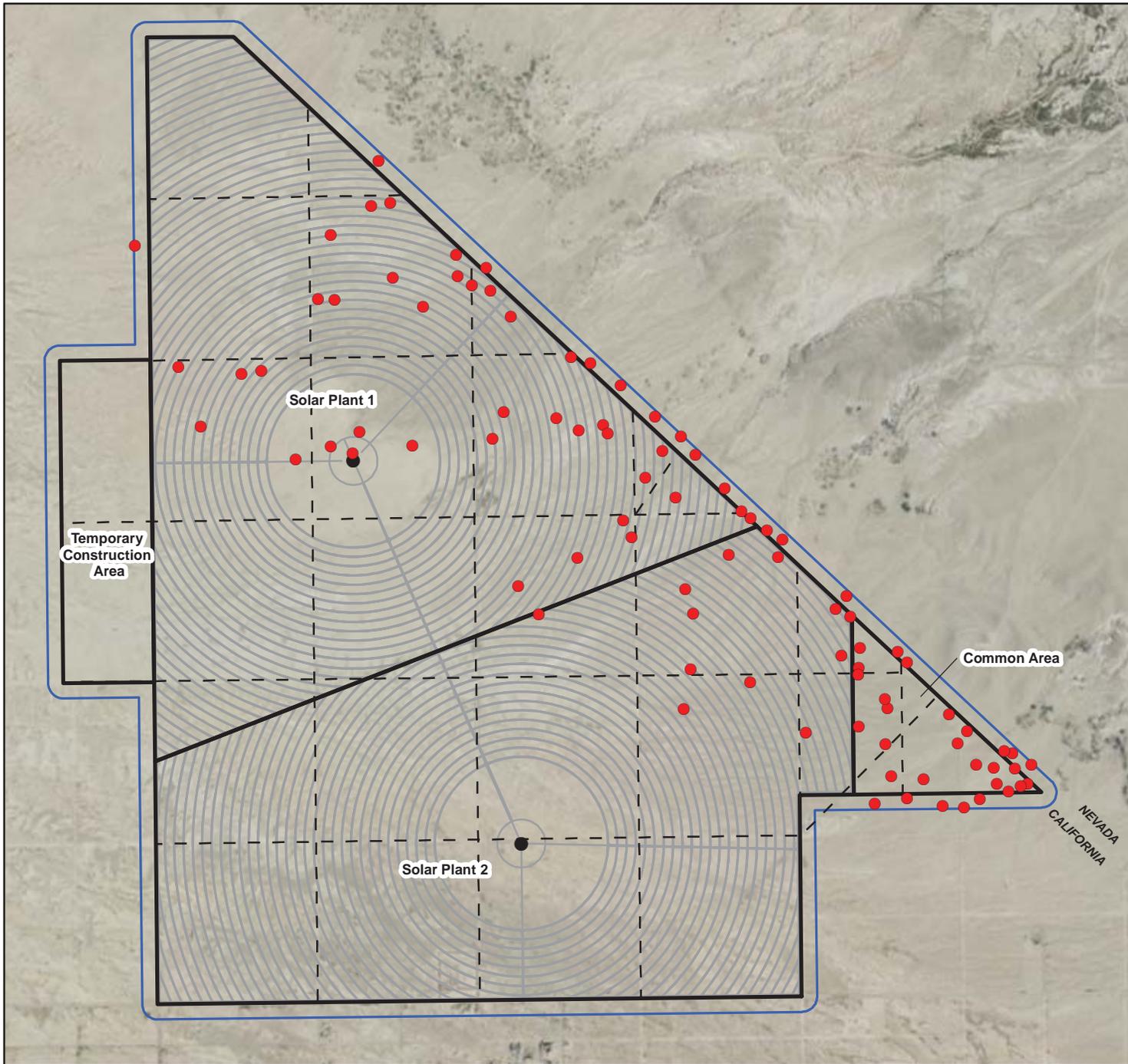
**LEGEND**

- Solar Power Tower
- Sisymbrium irio* (London rocket)
  - 1-10
  - 11-100
  - 101-500
  - 501-1000
  - 5001-10000
- - - Site Road
- Solar Field Heliostat Arrays
- ▭ HHSEGS Boundary
- ▭ Site 250-foot Buffer

Source: GANDA

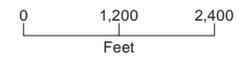


**Figure 5.2-5g**  
**Results of Weeds Surveys**  
 Hidden Hills Solar Electric Generating System

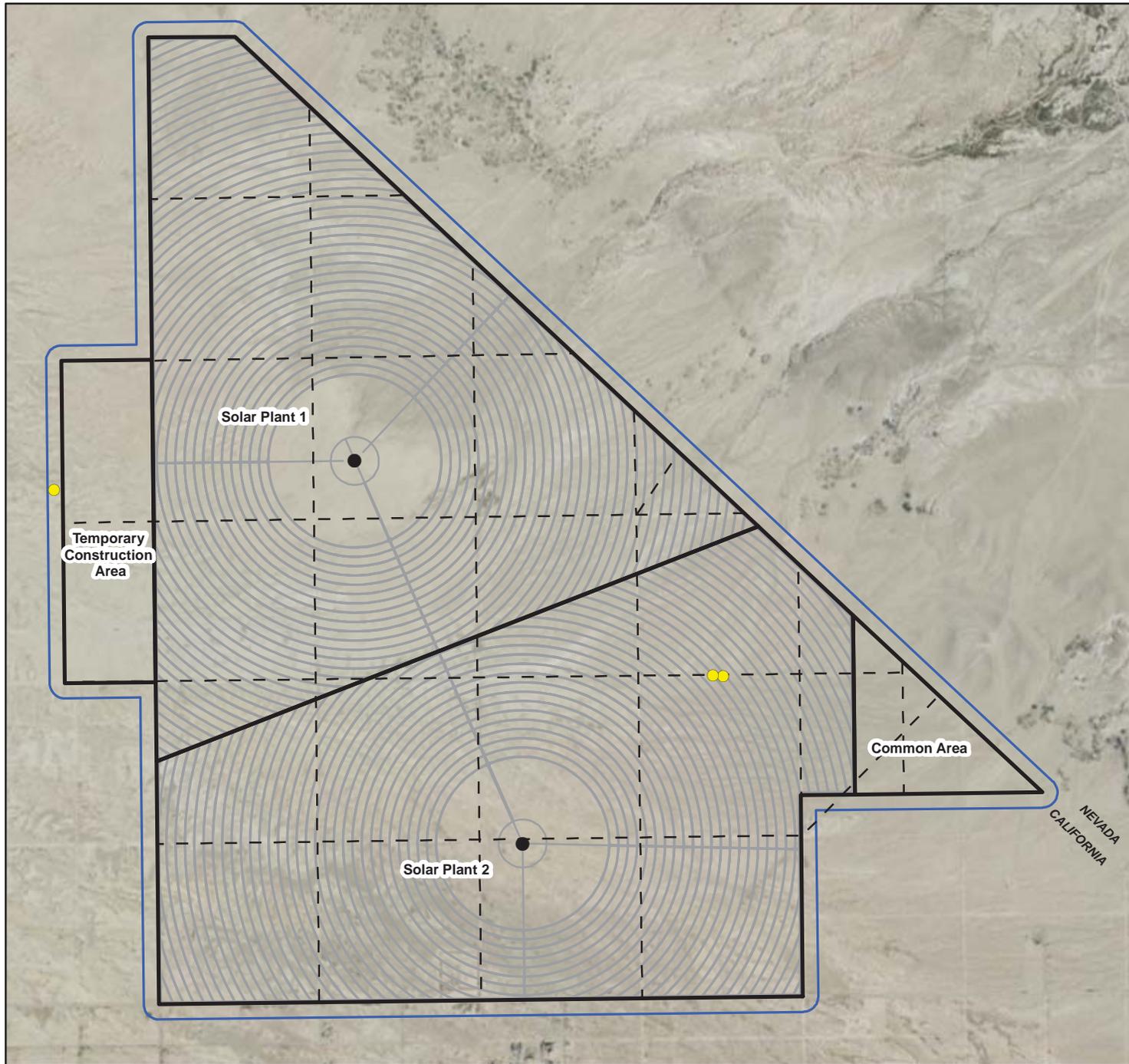


- LEGEND**
- *Androstephium breviflorum* (Pink funnel-lily)
  - Solar Power Tower
  - - - Site Road
  - Solar Field Heliostat Arrays
  - ▭ HHSEGS Boundary
  - ▭ Site 250-foot Buffer

Source: GANDA

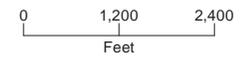


**Figure 5.2-6a**  
**Results of Special-Status Plant Surveys**  
 Hidden Hills Solar Electric Generating System

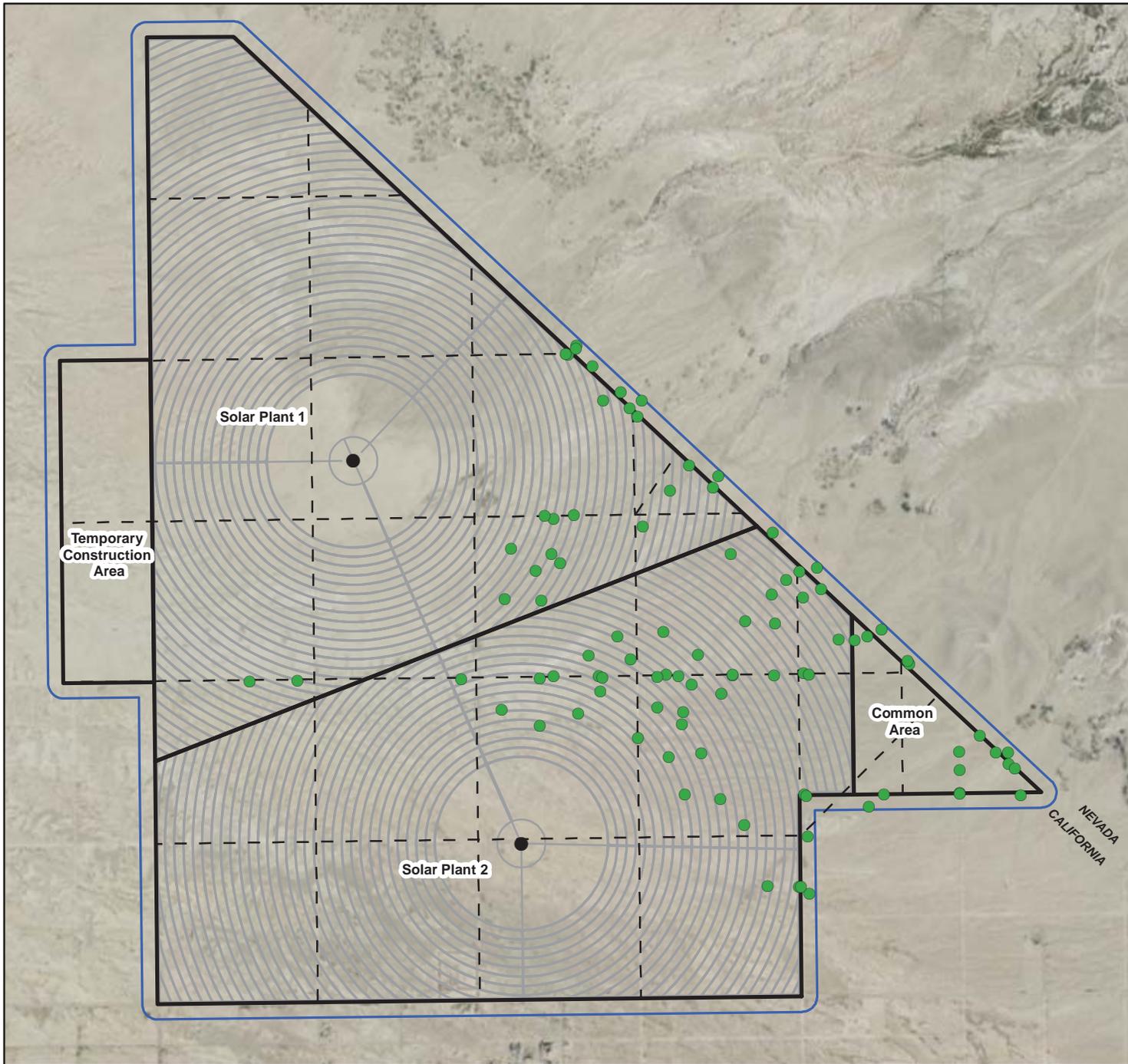


- LEGEND**
- *Astragalus preussii* var. *preussii* (Preuss' milkvetch)
  - Solar Power Tower
  - - - Site Road
  - Solar Field Heliostat Arrays
  - HHSEGS Boundary
  - Site 250-foot Buffer

Source: GANDA



**Figure 5.2-6b**  
**Results of Special-Status Plant Surveys**  
*Hidden Hills Solar Electric Generating System*



LEGEND

- *Astragalus tidestromii*  
(Tidestrom's milkvetch)
- Solar Power Tower
- - - Site Road
- Solar Field Heliostat Arrays
- ▭ HHSEGS Boundary
- ▭ Site 250-foot Buffer

Source: GANDA

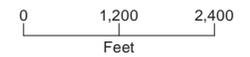
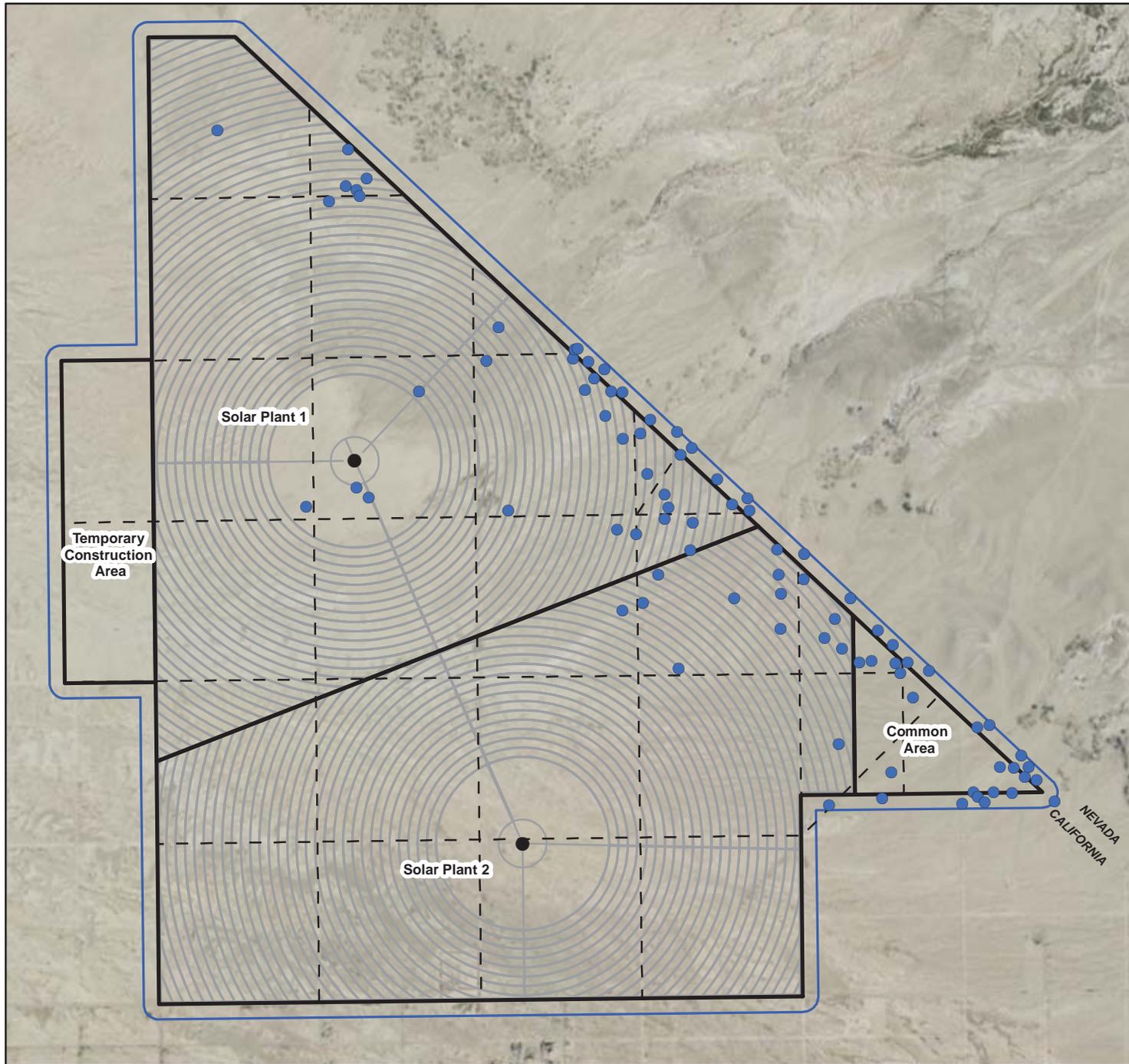


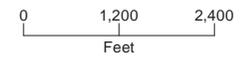
Figure 5.2-6c  
Results of Special-Status Plant Surveys  
Hidden Hills Solar Electric Generating System



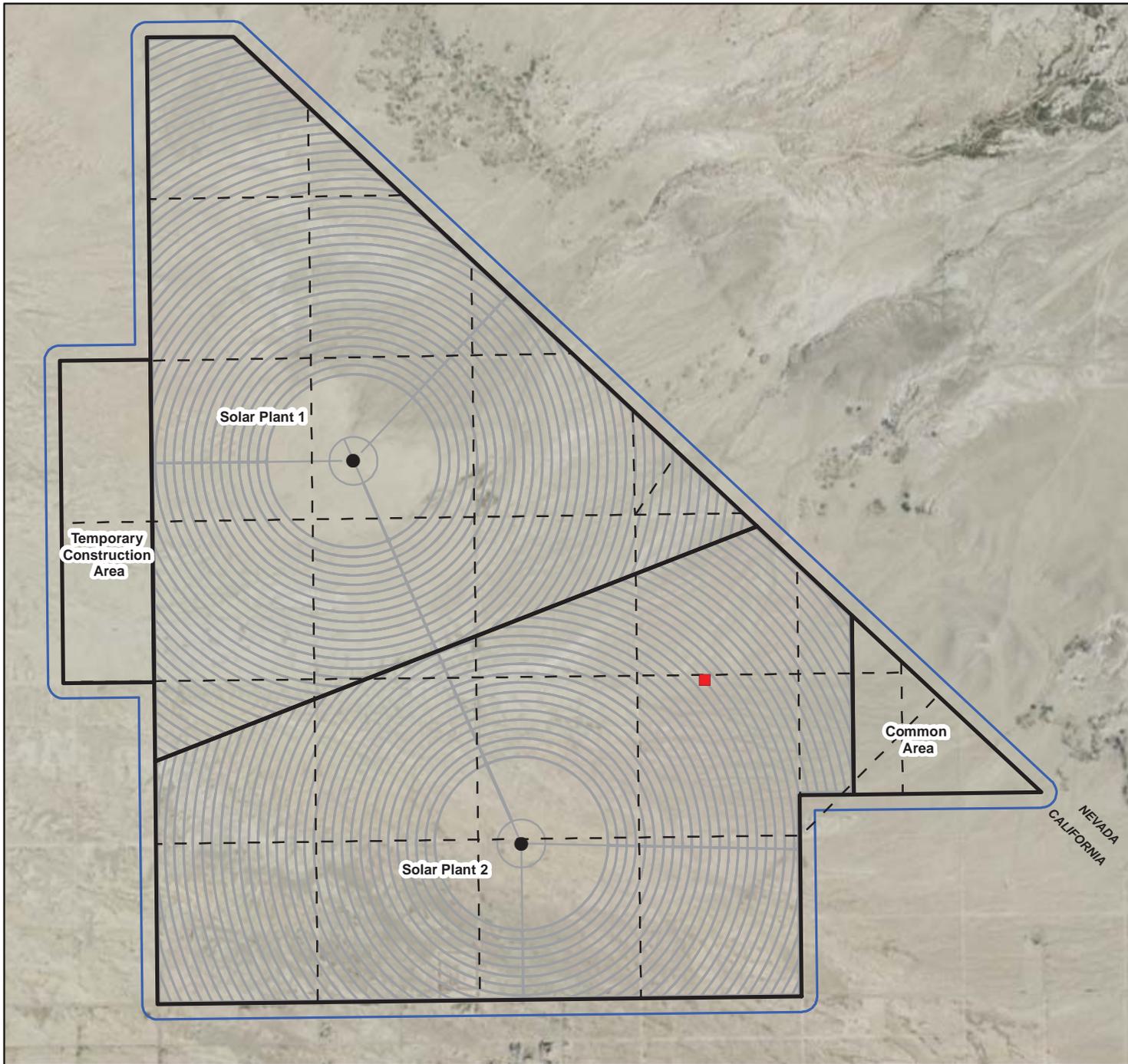
**LEGEND**

- *Chaetadelpa wheeleri*  
(Wheeler's skeletonweed)
- Solar Power Tower
- - Site Road
- Solar Field Heliostat Arrays
- ▭ HHSEGS Boundary
- ▭ Site 250-foot Buffer

Source: GANDA

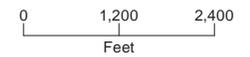


**Figure 5.2-6d**  
**Results of Special-Status Plant Surveys**  
*Hidden Hills Solar Electric Generating System*

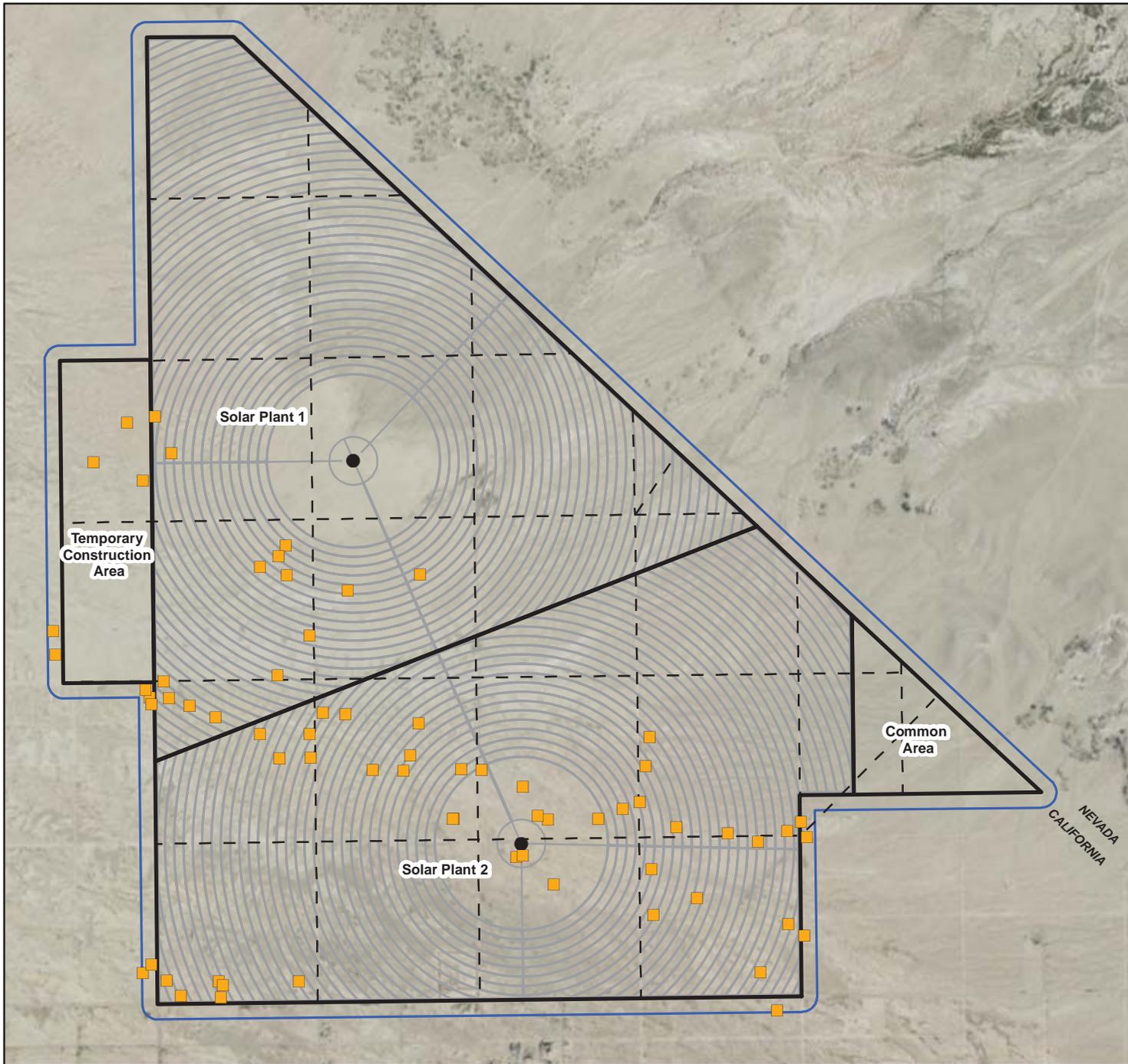


- LEGEND**
- *Cymopterus multinervatus*  
(Purple-nerve spingparsley)
  - Solar Power Tower
  - - Site Road
  - Solar Field Heliostat Arrays
  - ▭ HHSEGS Boundary
  - ▭ Site 250-foot Buffer

Source: GANDA

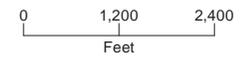


**Figure 5.2-6e**  
**Results of Special-Status Plant Surveys**  
*Hidden Hills Solar Electric Generating System*

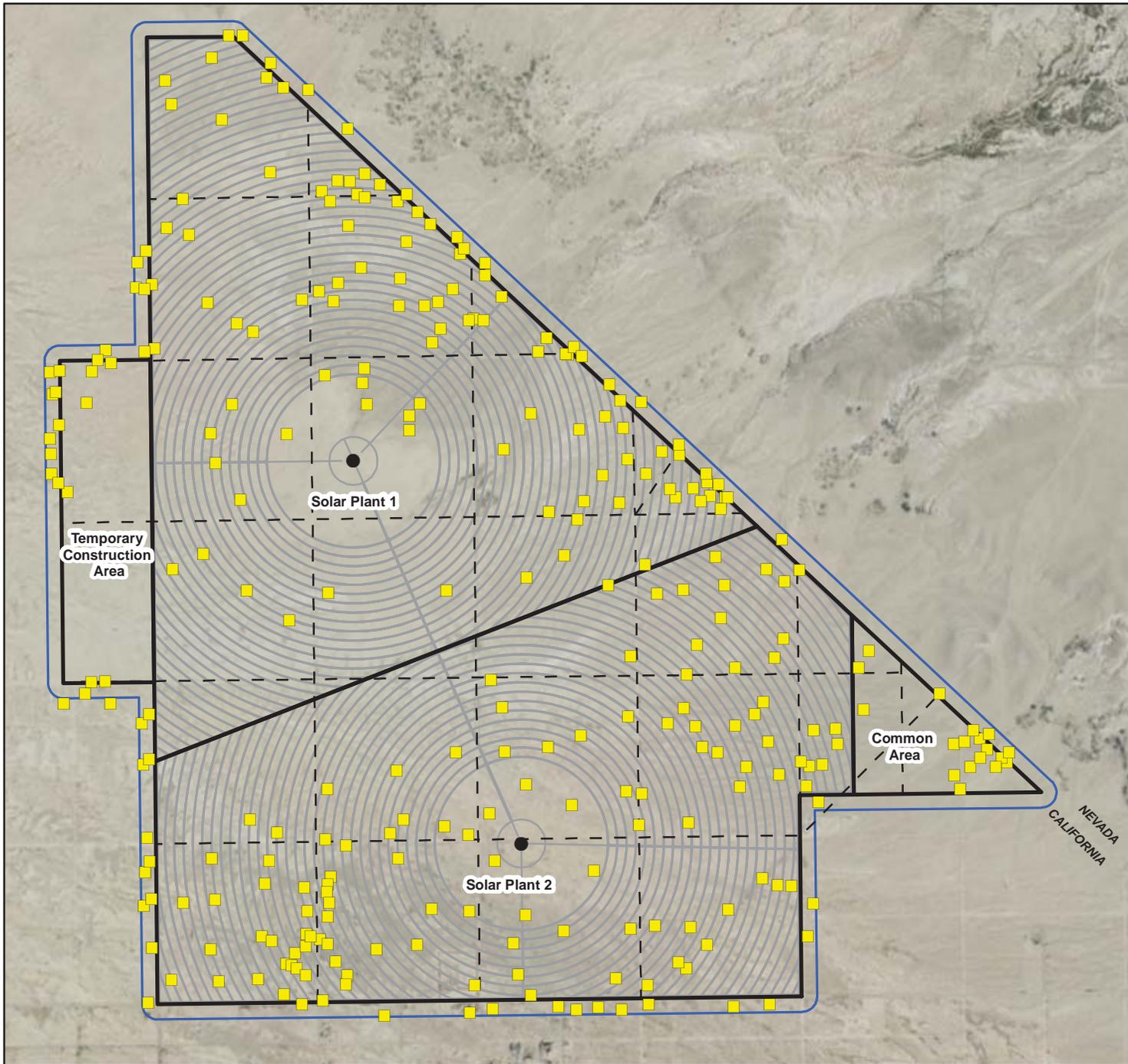


- LEGEND**
- *Eriogonum bifurcatum* (Pahrump Valley buckwheat)
  - Solar Power Tower
  - - - Site Road
  - Solar Field Heliostat Arrays
  - ▭ HHSEGS Boundary
  - ▭ Site 250-foot Buffer

Source: GANDA

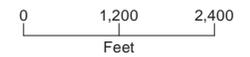


**Figure 5.2-6f**  
**Results of Special-Status Plant Surveys**  
 Hidden Hills Solar Electric Generating System

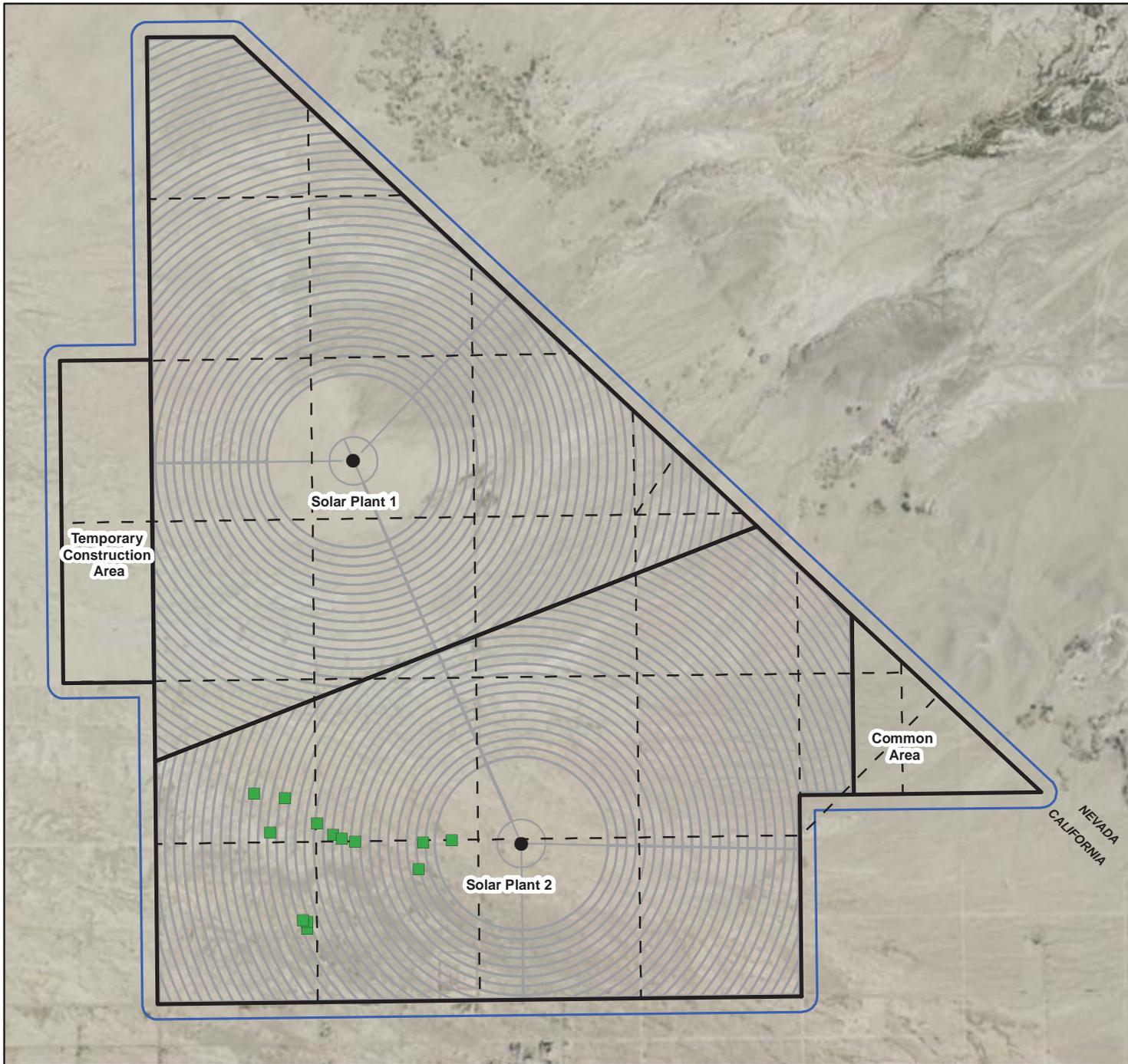


- LEGEND**
- *Phacelia pulchella* var. *gooddingii* (Goodding's phacelia)
  - Solar Power Tower
  - - - Site Road
  - Solar Field Heliostat Arrays
  - ▭ HHSEGS Boundary
  - ▭ Site 250-foot Buffer

Source: GANDA

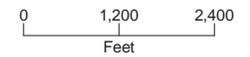


**Figure 5.2-6g**  
**Results of Special-Status Plant Surveys**  
 Hidden Hills Solar Electric Generating System

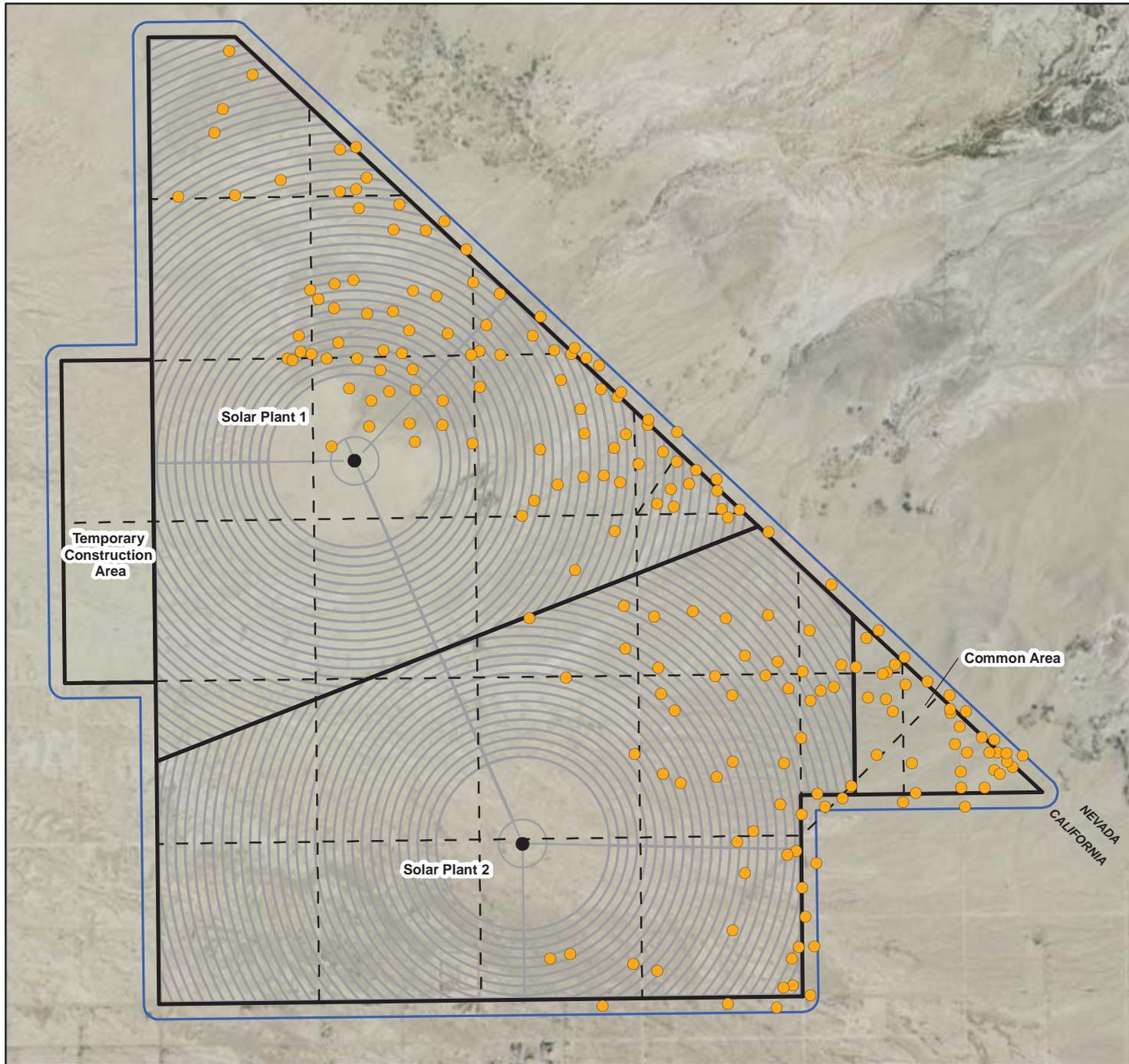


- LEGEND**
- *Selinocarpus nevadensis* (Desert wing-fruit)
  - Solar Power Tower
  - - - Site Road
  - Solar Field Heliostat Arrays
  - ▭ HHSEGS Boundary
  - ▭ Site 250-foot Buffer

Source: GANDA



**Figure 5.2-6h**  
**Results of Special-Status Plant Surveys**  
*Hidden Hills Solar Electric Generating System*



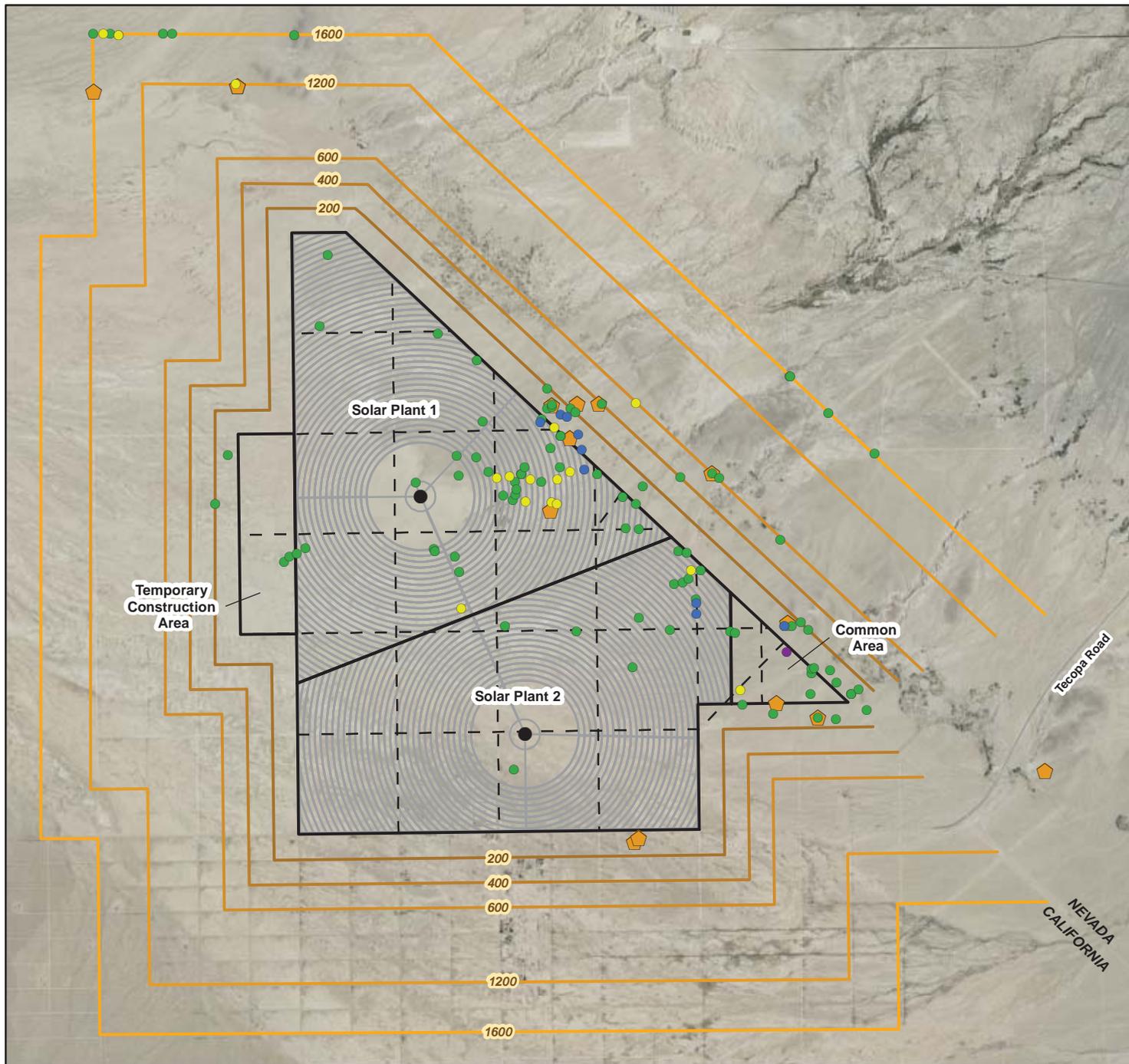
- LEGEND**
- *Astragalus nyensis* (Nye milkvetch)
  - Solar Power Tower
  - - - Site Road
  - Solar Field Heliostat Arrays
  - ▭ HHSEGS Boundary
  - ▭ Site 250-foot Buffer

Source: GANDA



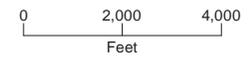
0 1,200 2,400  
Feet

**Figure 5.2-6i**  
**Location of Nye Milkvetch**  
*(Astragalus nyensis)*  
 Hidden Hills Solar Electric Generating System

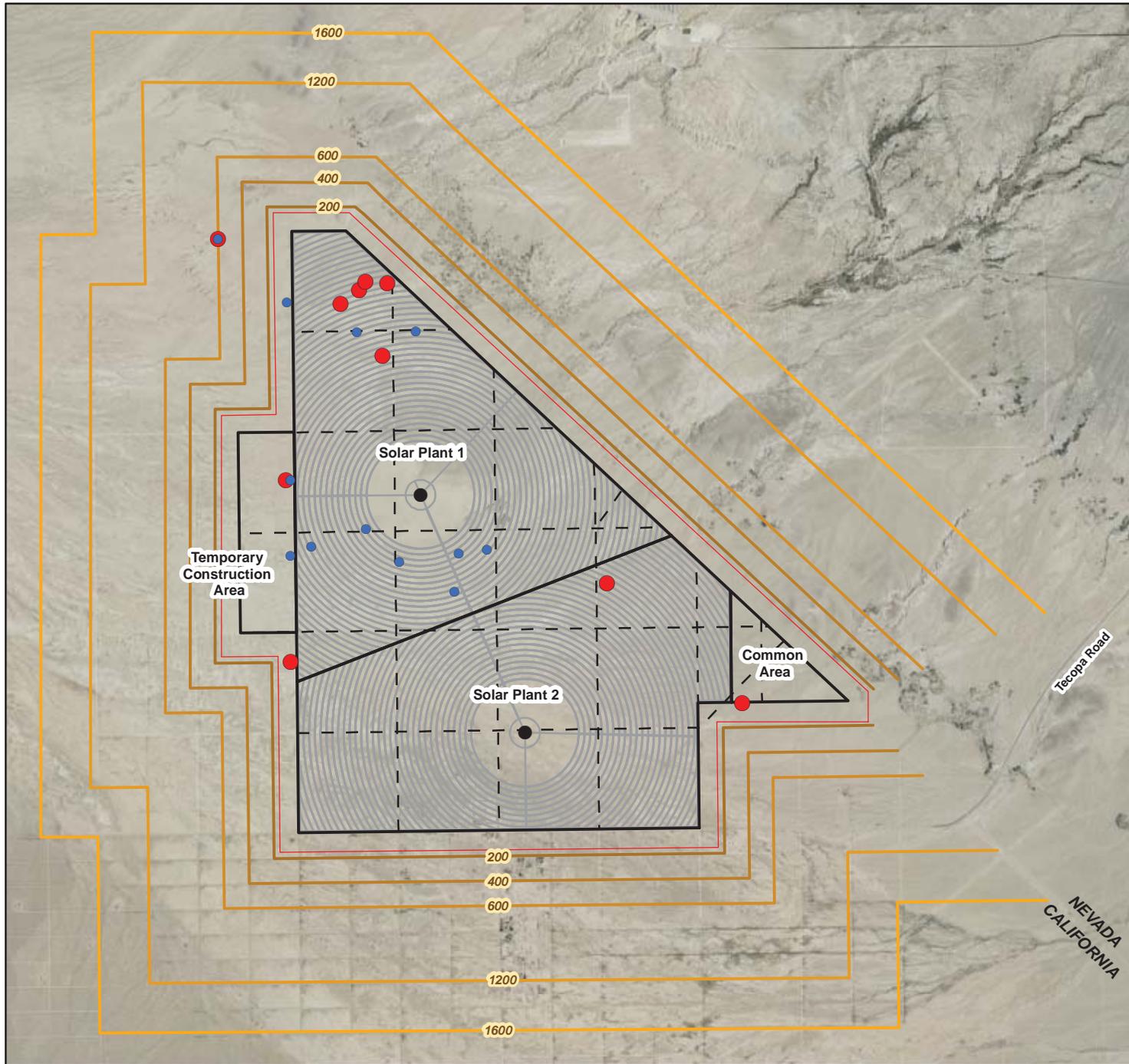


- LEGEND**
- Solar Power Tower
  - Tortoise Data**
    - ⬠ Live Tortoise
    - Tortoise Tracks
    - Tortoise Scat
    - Tortoise Carcass
    - Tortoise Burrows
  - Zone of Influence (ZOI) Survey Lines**
    - 200 meters
    - 400 meters
    - 600 meters
    - 1200 meters
    - 1600 meters
  - Site Road
  - Solar Field Heliostat Arrays
  - ⬠ HHSEGS Boundary

Source: Sundance Biology, Inc.

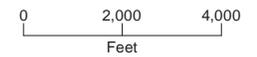


**Figure 5.2-7**  
**Desert Tortoise and Tortoise Sign**  
 Hidden Hills Solar Electric Generating System

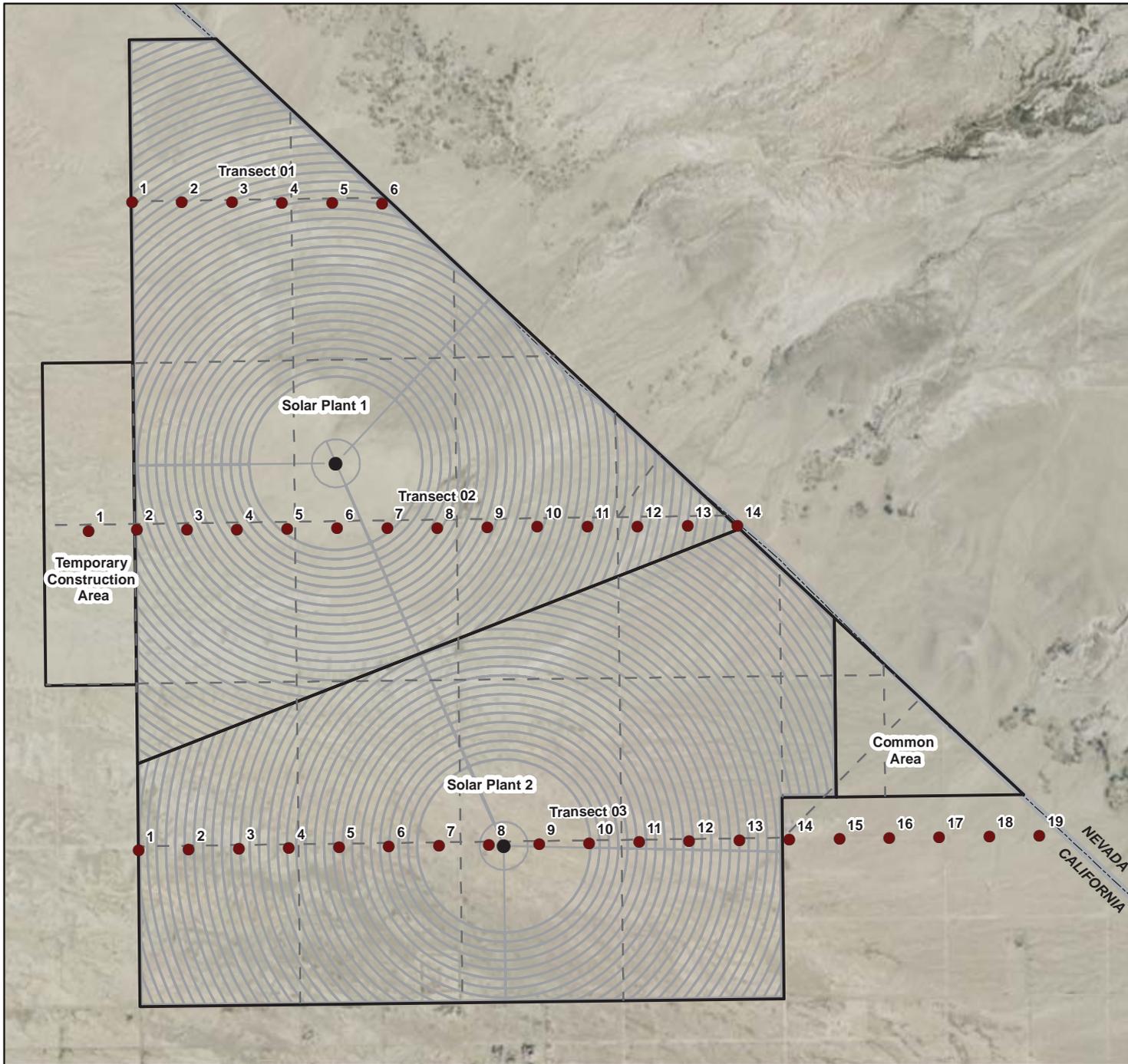


- LEGEND**
- Solar Power Tower
  - Burrowing Owl Burrow
  - Badger Burrow
- Zone of Influence (ZOI) Survey Lines
- 200 meters
  - 400 meters
  - 600 meters
  - 1200 meters
  - 1600 meters
- - Site Road
  - Solar Field Heliostat Arrays
  - ▭ HHSEGS Boundary
  - ▭ Burrowing Owl Buffer Zone (150 meters)

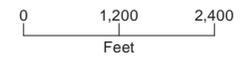
Source: Sundance Biology, Inc.



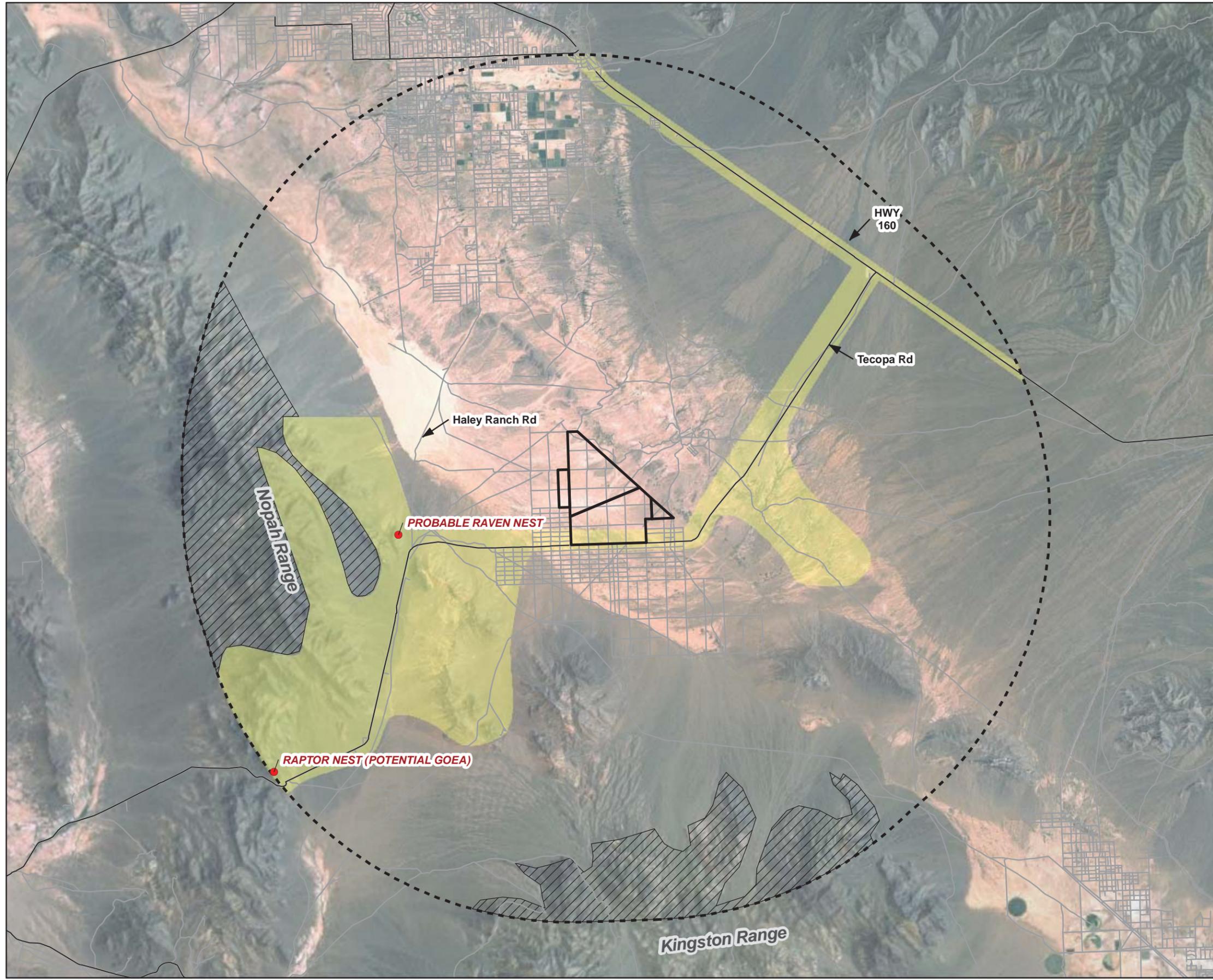
**Figure 5.2-8**  
**Location of Burrowing Owl and**  
**Badger Burrows**  
*Hidden Hills Solar Electric Generating System*



- LEGEND**
- Point Count (250 meters apart)
  - Solar Power Tower
  - - Site Road
  - Solar Field Heliostat Arrays
  - HHSEGS Boundary

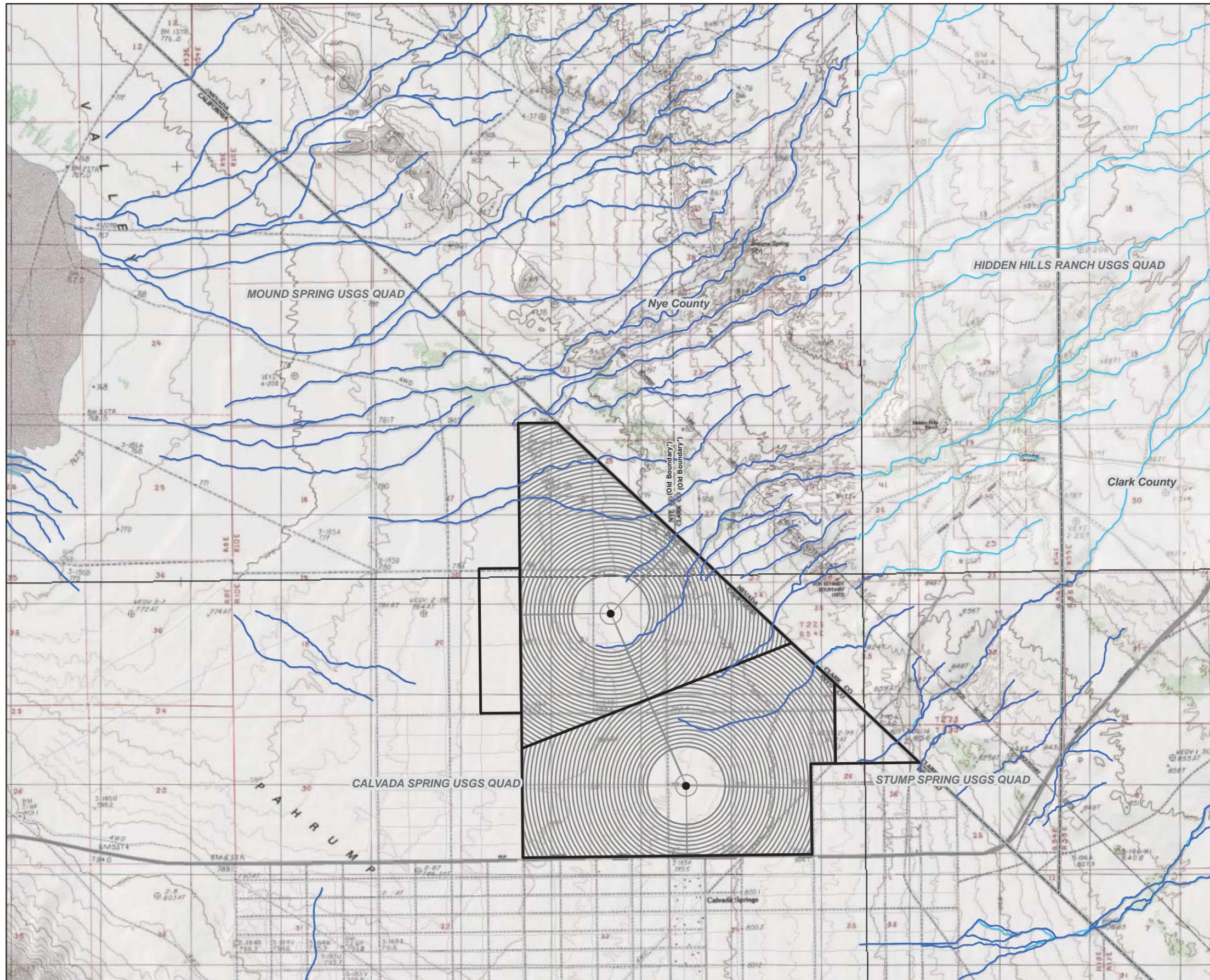


**Figure 5.2-9**  
**Avian Transects and Point Count**  
**Locations**  
*Hidden Hills Solar Electric Generating System*



- LEGEND**
- Golden Eagle Nest Search Results
  - Interstate
  - Highway
  - Major Road
  - Local Road
  - ▭ HHSEGS Boundary
  - ⋯ 10-mile Buffer of HHSEGS
  - Golden Eagle Nest Search Area
  - ▨ Helicopter Surveys Recommended

**FIGURE 5.2-10**  
**Golden Eagle Nest Search**  
 Hidden Hills Solar Electric Generating System



**LEGEND**

**Roads and Trails**

- Interstate
- Highway
- Major Road
- Local Road

**Hydrology**

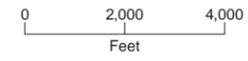
- National Hydrologic Database (NHD) Streams
- U.S. Geological Survey (USGS) Blue-Line Streams

**Project Site Data**

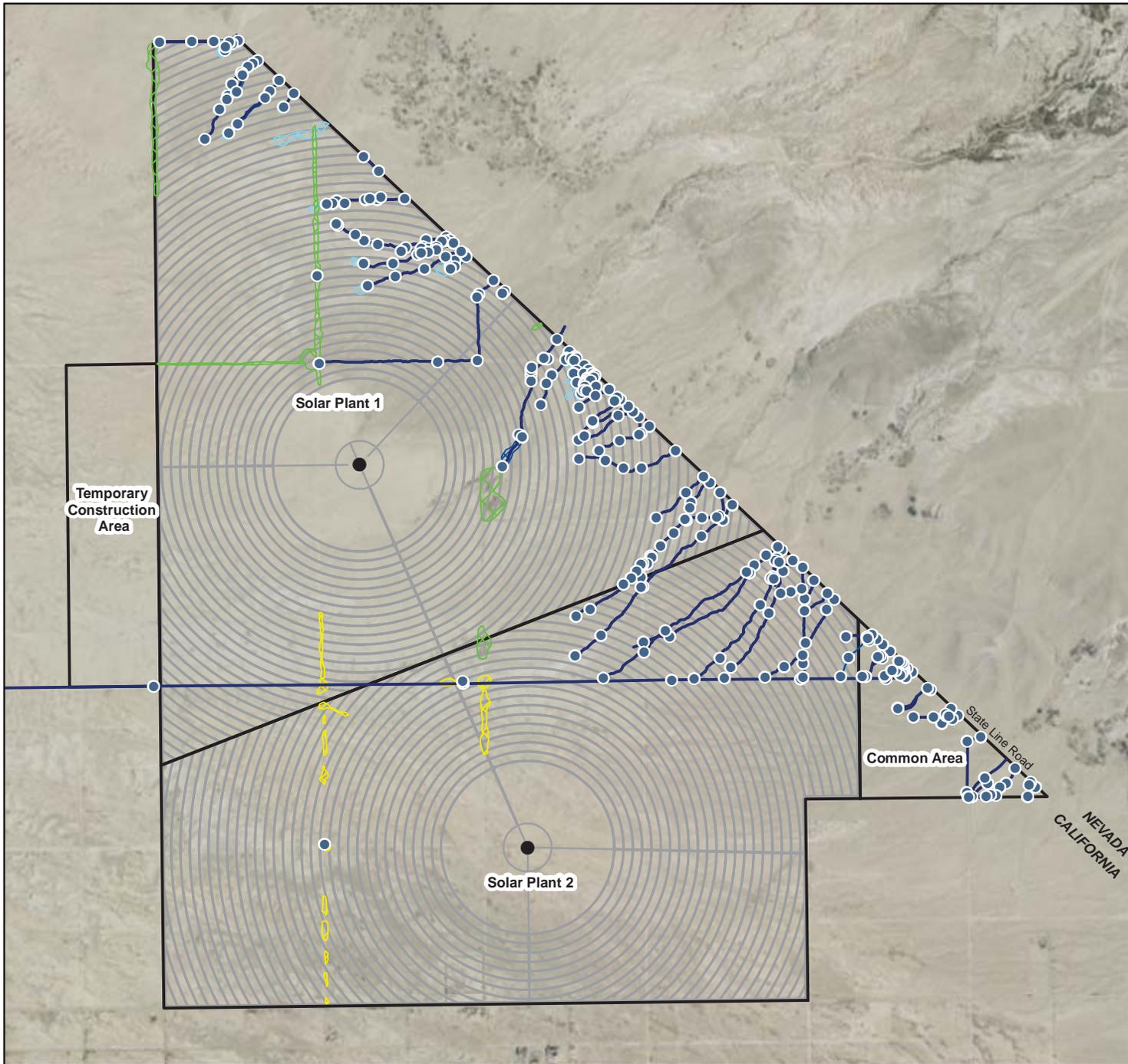
- ▭ Project Boundary

\*County boundary moved due to annexation, 2001

Sources:  
 National Hydrologic Database (NHD), National Wetland Inventory (NWI),  
 U.S. Geological Survey (USGS) Topographic Maps  
 URS Approved Jurisdictional Determination Report (2011)

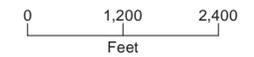


**FIGURE 5.2-11**  
**Streams Mapped in the Project Region**  
 Hidden Hills Solar Electric Generating System



- LEGEND**
- Solar Power Tower
  - Photographic Point
  - Solar Field Heliostat Arrays
  - Ephemeral Desert Wash
  - ▨ Pooling Area - Moist
  - ▨ Pooling Area
  - ▨ Sheet Flow Area
  - ▨ Anastomose Desert Wash
  - ▭ HHSEGS Boundary

Source:  
URS Approved Jurisdictional Determination report (2011)



**Figure 5.2-12**  
**Ephemeral Washes at the Project Site**  
*Hidden Hills Solar Electric Generating System*