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October 1, 2012

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Subject: Data Response, Set 2D-5
Hidden Hills Solar Electric Generating System (11-AFC-2)

Dear Mr. Monasmith:

On behalf of Hidden Hills Solar I, LLC; and Hidden Hills Solar II, LLC, please find attached an electronic copy of Data Response Set 2D-5, which responds to Staff's Data Request Set 2D filed on February 3, 2012.

This data response set is being filed electronically. Please call me if you have any questions.

Sincerely,
CH2M HILL

A handwritten signature in blue ink that reads "John L. Carrier".

John L. Carrier, J.D.
Program Manager

Encl.

c: POS List
Project file

Hidden Hills Solar Electric Generating System (HHSEGS)

(11-AFC-2)

**Data Response, Set 2D-5
(Response to Data Request 175)**

Submitted to the
California Energy Commission

Submitted by
**Hidden Hills Solar I, LLC; and
Hidden Hills Solar II, LLC**

October 1, 2012

With Assistance from
CH2MHILL
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Attachment

DR15-1 Technical Report: 2012 Onsite Focused Survey for Torrey’s Jointfir

Introduction

Attached is the Hidden Hills Solar I, LLC, and Hidden Hills Solar II, LLC (collectively, “Applicant”) response to the California Energy Commission (CEC) Staff’s Data Request Number 175 for the Hidden Hills Solar Electric Generating System (HHSEGS) Project (11-AFC-2). The CEC Staff served this data request on March 9, 2012. Data Request 175 requests the results of offsite and onsite spring 2012 special-status plant surveys for Torrey’s joint-fir.

Biological Resources (175)

BACKGROUND – Special Status Plants

During staff's review of the spring 2011 Offsite Surveys for Special-Status Plants (tn: 63486: AFC Supplement B; Data Response Set 1B-3, Attachment DR63-2, and Appendix Table C-1 of that Attachment, dated 1/31/2012: Plant Species Observed within the HHSEGS 1-mile Buffer in 2010 and 2011), staff noticed that the rare Torrey's joint-fir (*Ephedra torreyana*), a California Native Plant Society (CNPS) List 2.1 species, was observed within the one-mile buffer, as well as other common joint-fir species. Staff understands that this taxon was only recently added to the Online CNPS Inventory of Rare and Endangered Plants [8th ed.] on February 8, 2012 (CNPS 2012). Staff understands that because this rare species was not listed at the time of special-status plant surveys, field crew members would not have been directed to examine all joint-fir encountered to determine if the rare Torrey's joint-fir was present, and would have been over-looked. Staff must assess impacts to all special-status plant species potentially occurring on-site, as well as the potential for indirect effects to species occurring adjacent to the project site.

DATA REQUEST

175. Please provide the results of off-site and on-site spring 2012 special-status plant surveys for Torrey's joint-fir, as described above (in Data Response Set 1B-3, Attachment DR63-2), and include the results of the Torrey's joint-fir surveys in the spring 2012 Botanical Survey Report.

Response: A focused survey of the Hidden Hills Solar Electric Generating System (HHSEGS) site for the special-status plant species, Torrey's jointfir (*Ephedra torreyana*), was performed on May 1st through 4th, and 7th, 2012. The survey results are provided in Attachment DR175-1.

**Attachment DR175-1
Technical Report: 2012 Onsite Focused
Survey for Torrey's Jointfir**

Attachment DR175-1

**Technical Report: 2012 Onsite
Focused Survey for Torrey's
Jointfir (*Ephedra Torreyana*)
Hidden Hills Solar Electric
Generating System**

Prepared for
**Hidden Hills Solar I, LLC, and
Hidden Hills Solar II, LLC**

September 2012

Prepared by

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Executive Summary

A focused survey of the Hidden Hills Solar Electric Generating System (HHSEGS) site for the special-status plant species, Torrey's jointfir (*Ephedra torreyana*), was performed on May 1–4, and 7, 2012. The purpose of this survey was to identify, document, and map the presence of Torrey's jointfir within the HHSEGS site. The HHSEGS site is located in southeastern Inyo County, California.

Torrey's jointfir was first documented in California during the spring 2011 offsite surveys conducted in support of the HHSEGS project (Attachment DR63-2, Set 1B-3) (CH2M HILL, 2012a). During the 2011 surveys, Torrey's jointfir was mapped in California in several localities north and west of the HHSEGS site. In 2011, Torrey's jointfir was not identified on the HHSEGS site because the female cones needed for the correct identification of this species were not present at the time of the survey. Torrey's jointfir was designated as California Rare Plant Rank 2.1 in February 2012 (California Natural Diversity Database [CNDDDB], 2012; California Native Plant Society [CNPS], 2012).

The survey approach for the 2012 focused survey included focused protocol-level surveys onsite within each quarter-section or partial quarter-section that was determined to contain Torrey's jointfir. Survey results are presented in Section 3. The distribution of Torrey's jointfir is shown in Figure 3-1. Photographs of Torrey's jointfir are provided in Appendix A.

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SECTION 1

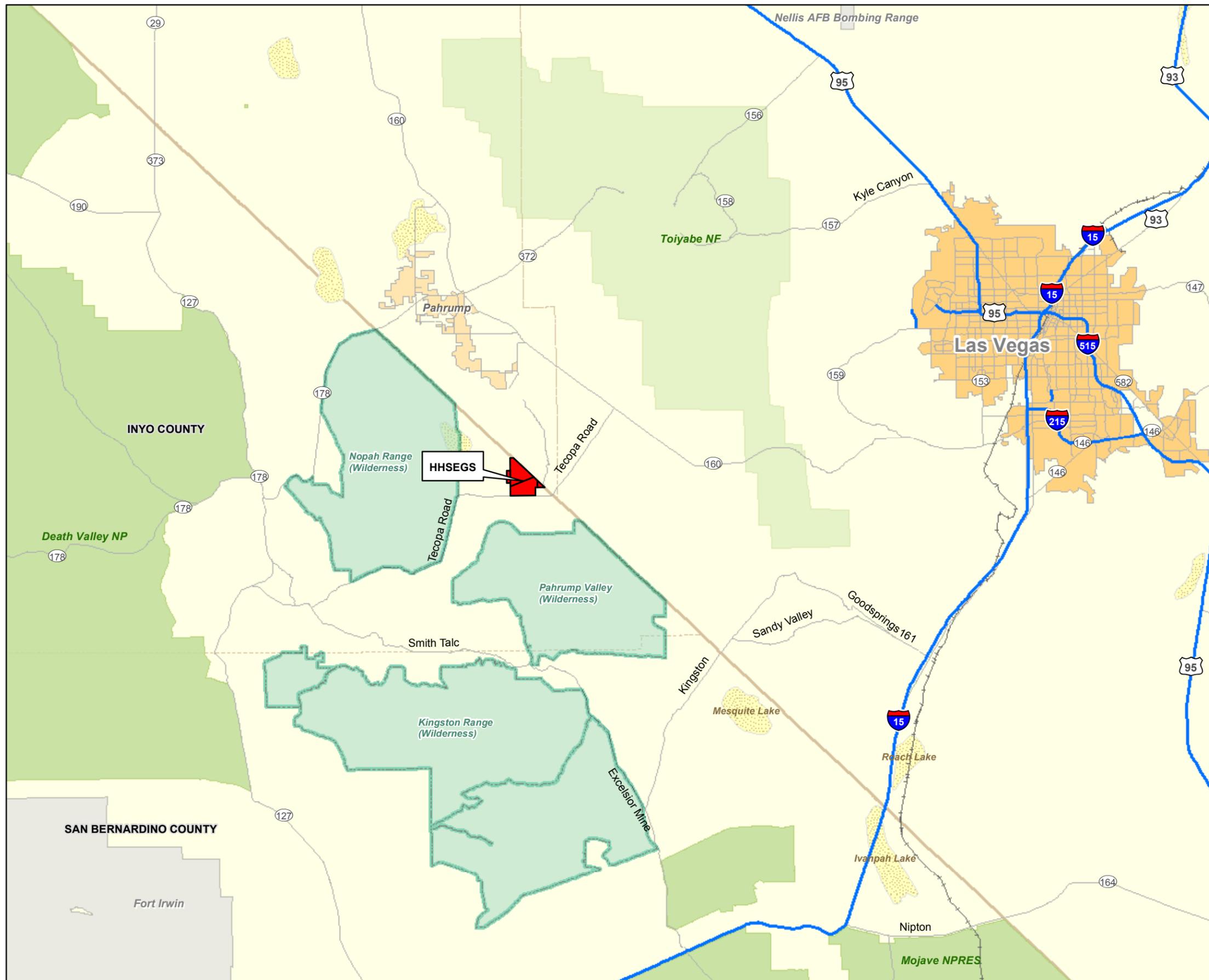
Introduction

A focused survey of the Hidden Hills Solar Electric Generating System (HHSEGS) site for the special-status plant species, Torrey's jointfir (*Ephedra torreyana*), was conducted on May 1–4 and May 7, 2012. The purpose of this survey was to identify, document, and map the presence of Torrey's jointfir within the HHSEGS site. The HHSEGS site is located in southeastern Inyo County, California. Figure 1-1 (figures are located at the end of each section) shows the location of the HHSEGS site.

Torrey's jointfir was first documented in California during the spring 2011 offsite surveys conducted in support of the HHSEGS project (Attachment DR63-2, Set 1B-3) (CH2M HILL, 2012a). During these surveys, Torrey's jointfir was mapped in several localities north and west of the HHSEGS site, within 0.6 to 1.0 mile of the site's western boundary.

In 2011, Torrey's jointfir was not identified on the HHSEGS site because the female cones needed for its identification were not present at the time of the survey. Torrey's jointfir was designated as California Rare Plant Rank 2.1 in February 2012 (California Natural Diversity Database [CNDDB], 2012; California Native Plant Society [CNPS], 2012).

Survey methods are described in Section 2. Results of the focused surveys are presented in Section 3. The distribution of Torrey's jointfir is shown in Figure 3-1. References used to develop this report are listed in Section 4. Photographs of Torrey's jointfir are provided in Appendix A.



- LEGEND**
- Major Freeways
 - Major Road
 - State Boundary
 - - - County Boundary
 - + Major Railroad Lines
 - National Parks/ Forests
 - Military Installation
 - Dry Lake
 - Urban Areas
 - Wilderness Area
 - HHSEGS Boundary

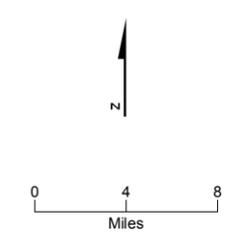


FIGURE 1-1
Vicinity Map
 Hidden Hills Solar Electric Generating System

SECTION 2

Methods

This section describes the methods for the spring 2012 focused survey for Torrey's jointfir within the HHSEGS site. This survey was conducted on May 1–4, and 7, 2012.

The 2012 vegetation response at the HHSEGS site and in the vicinity of the site during the spring season was typical of a very dry spring. In Pahrump, Nevada, 18 miles north of the site, and Las Vegas, Nevada, 45 miles east of the site, rainfall for the 2011–2012 season was less than 50 percent of average annual rainfall (National Oceanic and Atmospheric Administration (NOAA), 2012; Western Regional Climate Center (WRCC), 2012). Average annual rainfall for Pahrump is 4.73 inches, and for Las Vegas it is 4.19 inches (NOAA, 2012; WRCC, 2012). The drought condition for spring 2012 for the greater vicinity of the HHSEGS site was rated *Severe* by the National Weather Service (NOAA, 2012).

Due to the dry conditions, only six individual annual plants, all of one species, stickseed (*Lappula redowskii*), were observed by members of this team in the Pahrump Valley in March, April and May of 2012. Most perennial shrub species flowered sparingly, and many individual shrubs did not flower at all. Leaf growth on most shrubs was limited, and many individual shrubs produced no new leaves, and appeared dead, although they were likely just drought-deciduous and dormant. Prior to conducting the surveys, reference sites (known locations) of Torrey's jointfir were checked early in the season to confirm that the female cones needed for identification were present. Reference site visits are discussed in Section 2.2.1.

The botany team for the 2012 focused survey consisted of: GANDA senior botanist Ann Howald (field supervisor), GANDA biologist Chloe Scott (assistant field supervisor), UC Riverside herbarium curator Andrew Sanders (taxonomic expert); botanist Onkar Singh; and biologist William Clark. All 2012 survey team members worked on botanical surveys for the HHSEGS project in 2010 and 2011.

2.1 Pre-field Preparations

Pre-field preparations for the 2012 focused survey for Torrey's jointfir were minimal because the botany team that conducted the 2012 surveys had previously worked on the HHSEGS project surveys in 2010 and 2011 and were experienced with the special-status plants of the site and offsite areas. All team members had observed and mapped Torrey's jointfir in the Pahrump Valley during the 2011 offsite surveys, when it was first identified in California by Andrew Sanders, an expert on the Mojave Desert flora.

All team members were familiar with the layout of the HHSEGS site, and the road network, from previous surveys. For the 2012 focused survey, paper maps showing the site, the road network with roads labeled by name, and quarter-sections labeled by number (e.g., 28 NE, etc.), were used by survey crews to assist with navigation. All of the sections within the California portion of the HHSEGS site are within Township 22 North, Range 10 East, on the Calvada Springs or Mound Spring U.S. Geological Survey (USGS) 7.5-minute quadrangle maps.

2.2 Field Survey Methods

The spring 2012 focused survey for Torrey's jointfir included several visits to known localities to check phenology (growth phase). The survey plan included protocol-level surveys of each quarter-section, or partial quarter-section, within the HHSEGS site that contained Torrey's jointfir. All localities of Torrey's jointfir were mapped as point data.

2.2.1 Reference Site Visits

Reference site visits were performed prior to the 2012 surveys to determine the phenology of Torrey's jointfir and determine the correct timing of the surveys. Early reconnaissance in March and April 2012 indicated that, in general, plant growth was very limited in the Pahrump Valley and elsewhere, compared to what was seen in 2011, a wetter year. The survey team checked several known offsite localities within 1 mile of the HHSEGS site that had been mapped in 2011 (CH2M HILL, 2012a) to determine the progress of female cone formation on Torrey's jointfir shrubs. Mature female cones are required to identify this large woody shrub, and especially to distinguish it from a similar species, Death Valley jointfir (*Ephedra funerea*). The latter is common on rocky hillsides in the greater vicinity of Death Valley, and elsewhere in the northeastern Mojave Desert (Jepson Online Interchange, 2012). Visits to known localities of Torrey's jointfir in the Pahrump Valley were made in March and April. During the visit on April 13, 2012, the survey team observed young female cones on some *Ephedra* individuals. This confirmed that the HHSEGS site survey for Torrey's jointfir, scheduled for early May, was properly timed to coincide with the presence of mature female cones.

2.2.2 Identification of Torrey's Jointfir

Three species of *Ephedra* occur onsite: 1) Death Valley jointfir (*Ephedra funerea*), 2) Torrey's jointfir (*Ephedra torreyana*) and 3) Nevada ephedra (*Ephedra nevadensis*). Torrey's jointfir has three leaves per node (an *Ephedra* species with three leaves per node is referred to as a "three-leaved *Ephedra*"). Death Valley jointfir is also three-leaved, but this is a common species (meaning it does not have special-status). Nevada ephedra (*Ephedra nevadensis*), is a two-leaved species of *Ephedra* (with two leaves per node), and is also present onsite. Nevada ephedra is a common species (it does not have special-status).

It is difficult to correctly identify Torrey's jointfir and distinguish it from Death Valley jointfir, the other three-leaved *Ephedra* onsite, because these two species are very similar in appearance. *Ephedra* species produce both male and female cones. Correct identification of *Ephedra* depends on the number of leaves per node and the presence of mature female cones, which are produced on the female plants. As requested in DR 175, Section 3.2, Species Account, provides a detailed description of *Ephedra torreyana*, including information on the female cones of Torrey's and Death Valley jointfir. Male and vegetative three-leaved *Ephedra* shrubs of Torrey's and Death Valley jointfir both occur onsite and cannot be reliably separated in the field. Mature female cones of Torrey's and Death Valley jointfir are the only way to distinguish these species with certainty (Flora of North America (FNA), 2012).

The spring 2011 survey of the HHSEGS site was completed in April, and mature female cones were not present on *Ephedra* plants at that time. Torrey's jointfir had not been reported from California at the time the surveys were performed. Therefore, in 2011, the three-leaved *Ephedra* plants observed onsite were thought to be Death Valley jointfir, a species common in the greater Death Valley area. In early May 2011, during the time the offsite surveys were conducted, mature female cones had developed. Torrey's jointfir was identified in offsite locations, in shadscale scrub similar to that found on the HHSEGS site (CH2M HILL, 2012a; Jepson Online Interchange, 2012). The locations identified offsite in 2011 were the first Torrey's jointfir reports from California.

2.2.3 Focused Survey Methods

The first step in the survey approach was a reconnaissance-level survey to determine if Torrey's jointfir was present. The reconnaissance consisted of driving the perimeter of the quarter-section and walking into the quarter-section at intervals to search for Torrey's jointfir. If it was found to be present in a given quarter-section, then a protocol-level survey was completed. Protocol-level surveys consisted of two 2-

person crews walking meandering transects across the quarter-section. In addition, Andrew Sanders alternated between the two crews throughout the May 1-4 survey period.

Protocol-level surveys were completed within the westernmost parts of the HHSEGS site first. This was because the quarter-sections in these areas are located closest to the areas where Torrey's jointfir had been found and mapped offsite in 2011, and the soil and shadscale scrub are similar to that found in nearby offsite locations with Torrey's jointfir.

To find and identify Torrey's jointfir plants in the field, surveyors examined thousands of individual shrubs to determine whether each one was three-leaved or two-leaved. Two-leaved *Ephedra* shrubs on the HHSEGS site are a different species, Nevada ephedra (*Ephedra nevadensis*), which is a common and widespread species that was not counted or mapped. Three-leaved *Ephedra* shrubs were examined for the presence of female cones to determine if the plant was Torrey's or Death Valley jointfir. If mature female cones were found attached to, or immediately beneath the shrub, and the characteristics of these cones corresponded to those of Torrey's jointfir, then the individual was identified as a female Torrey's jointfir, and it was counted and mapped. Only plants of Torrey's jointfir with mature female cones were mapped. If no cones were found (vegetative individual without cones) or male cones were found (male individual), then these individual shrubs were counted as vegetative or male, and the numbers were recorded separately from those identified as female. Vegetative and male three-leaved *Ephedra* shrubs were not mapped because it was not possible to tell identify them to species.

Many additional three-leaved *Ephedra* shrubs that were vegetative or male were observed in the vicinity of the female Torrey's jointfir plants that were mapped. These were counted, and the number of male and vegetative Torrey's jointfir were recorded separately, but they were not mapped. These three-leaved vegetative and male shrubs are likely Torrey's jointfir.

Each female Torrey's jointfir locality was mapped as a point using a Trimble GeoXT or GeoXH global positioning system (GPS) unit. A unique code was assigned to each locality and entered into the GPS unit. Information on abundance, habitat, and location was also recorded. Backup data were recorded on paper data sheets. Recorded data included: unique code; scientific name; number of individuals; phenology (fruiting); substrate type; vegetation type; name of USGS 7.5-minute topographic quadrangle map; and township, range, section, and quarter-section. Data sheets were collected and reviewed daily by the field supervisor. Representative photographs were taken of Torrey's jointfir and its habitat and are provided in Appendix A.

A California Natural Diversity Database (CNDDDB) Field Survey Form was prepared and submitted to the CNDDDB, which contained summarized data for all of the Torrey's jointfir localities documented during the HHSEGS spring 2012 site survey. In addition, a spreadsheet containing location data for each mapped locality of female Torrey's jointfir individuals was submitted to the CNDDDB.

2.3 Global Positioning System/Geographic Information System Data Collection and Analysis, and Quality Assurance

Data collected in the field were recorded using Trimble GeoXH or GeoXT GPS units. Location data collected with these units is accurate to the sub-meter level after the data have been post-processed. GPS units were equipped with background files for navigation, and data dictionaries for data collection. Garmin GPS units with topographic map background files, and iPhone map tools, were used to assist with navigation in the field. A project-specific data dictionary was used in the field to increase data recording efficiency and data quality. Surveyors were proficient in the use of GPS units.

All data collected with GPS units was downloaded and backed up each night onto laptop computers, and emailed to the project's Geographic Information System (GIS) technician. GPS data were post-processed by the GIS technician and downloaded into a project GIS database. Location data were mapped onto aerial photography or USGS topographic map basemaps by the GIS technician. These draft figures were checked for accuracy by the field supervisor, using the backup data on the paper data sheets, and spreadsheets containing locality-specific information.

SECTION 3

Results

This section describes the results of the 2012 focused Torrey’s jointfir surveys of the HHSEGS site. The distribution of Torrey’s jointfir is described in Section 3.1 and is shown on Figure 3-1. A species account, with a detailed description of Torrey’s jointfir, is provided in Section 3.2. Representative photographs of Torrey’s jointfir are provided in Appendix A.

3.1 Distribution of Torrey’s Jointfir within the HHSEGS Site

Female Torrey’s jointfir shrubs (with mature female cones) were mapped in 87 localities containing a total of 329 individuals. The distribution of localities mapped within the HHSEGS site is shown in Figure 3-1. In addition, 550 male and 2,184 vegetative three-leaved *Ephedra* shrubs (without female cones) occurred in the vicinity of Torrey’s jointfir. These are likely to be Torrey’s jointfir and they were counted and the numbers recorded by quarter-section but were not mapped on Figure 3-1. The vegetative and male three-leaved *Ephedra* shrubs, can’t be identified with certainty without the female cones.

A total of 54 localities of Torrey’s jointfir were also found offsite elsewhere within the Pahrump Valley during offsite surveys performed in 2012. These finds are described in a separate offsite botanical survey report that is in preparation.

Table 3-1 summarizes the distribution of the field data collected in 2012 for Torrey’s jointfir within the HHSEGS site.

TABLE 3-1
Distribution of Field Data Collected in 2012 during Focused Surveys for Torrey’s Jointfir

| ¼ Section (all T22N R10E) | Female Plants | | Male Plants | Vegetative Plants | Habitat quality (HQ) for Torrey’s jointfir |
|------------------------------|--------------------------|---------------------------|---------------------------------|---------------------------------|---|
| | No. Mapped Localities | No. Mapped Individuals | No. Individuals (not mapped) | No. Individuals (not mapped) | |
| 16 NW ¼ | 0 | 0 | 0 | 0 | No habitat – MDS, burned, weeds |
| 16 NE ¼ (partial) | 0 | 0 | 0 | 0 | Very low HQ – MDS, sandy-gravelly soil |
| 16 SW ¼ | 0 | 0 | 0 | 0 | No habitat – burned, weeds |
| 16 SE ¼ | 0 | 0 | 0 | 0 | Very low HQ – MDS |
| 15 SW ¼ (partial) | 1 | 1 | 0 | 1 | Very low HQ – MDS |
| 20 NE ¼ (partial) | 3 | 3 | 0 | 40 | Moderate HQ – SS |
| 20 SE ¼ (partial) | 9 | 21 | 11 | 449 | High HQ – SS |
| 21 NW ¼ | 0 | 0 | 0 | 0 | No habitat – burned, weeds |
| 21 NE ¼ | 0 | 0 | 0 | 0 | No habitat – MDS, sandy-gravelly soil |

TABLE 3-1
Distribution of Field Data Collected in 2012 during Focused Surveys for Torrey's Jointfir

| ¼ Section (all T22N R10E) | Female Plants | | Male Plants | Vegetative Plants | Habitat quality (HQ) for Torrey's jointfir |
|------------------------------|--------------------------|---------------------------|---------------------------------|---------------------------------|--|
| | No. Mapped Localities | No. Mapped Individuals | No. Individuals (not mapped) | No. Individuals (not mapped) | |
| 21 SW ¼ | 9 | 20 | 37 | 436 | High HQ – SS |
| 21 SE ¼ | 1 | 1 | 2 | 6 | Mostly no habitat; pockets of very low HQ – SS, MDS |
| 22 NW ¼ | 0 | 0 | 0 | 3 | Low HQ – MDS |
| 22 NE ¼ (partial) | 2 | 2 | 0 | 6 | Low HQ on eastern edge - MDS; no habitat elsewhere |
| 22 SW ¼ | 2 | 5 | 4 | 30 | No habitat north half Low HQ south half |
| 22 SE ¼ | 1 | 2 | 0 | 1 | Low HQ - MDS |
| 23 SW ¼ (partial) | 0 | 0 | 0 | 0 | No habitat – MDS, sandy soil |
| 28 NW ¼ | 21 | 121 | 218 | 578 | High HQ – SS |
| 28 NE ¼ | 9 | 21 | 30 | 76 | High HQ south half – SS Very low HQ north half |
| 28 SW ¼ | 13 | 95 | 191 | 380 | High HQ – SS |
| 28 SE ¼ | 11 | 31 | 45 | 70 | Moderate HQ – SS |
| 27 NW ¼ | 4 | 5 | 12 | 103 | Moderate HQ in NW corner – SS No habitat elsewhere |
| 27 NE ¼ | 0 | 0 | 0 | 0 | No habitat – MDS, sandy-gravelly soil |
| 27 SW ¼ | 1 | 1 | 0 | 5 | Mostly no habitat – MDS, sandy- gravelly soil |
| 27 SE ¼ | 0 | 0 | 0 | 0 | No habitat – MDS, sandy-gravelly soil |
| 26 NW ¼ (partial) | 0 | 0 | 0 | 0 | No habitat – MDS, sandy-gravelly soil |
| 26 NE ¼ (partial) | 0 | 0 | 0 | 0 | No habitat – MDS, sandy-gravelly soil |
| TOTALS | 87 | 329 | 550 | 2,184 | |

Source: Data collected by surveyors from GANDA and Clark Biological Consulting, May 2012.

Notes: MDS = Mojave Desert scrub; SS = shadscale scrub

The distribution of Torrey's jointfir on the HHSEGS site roughly mirrors the distribution of shadscale scrub. A map showing the extent of the vegetation onsite was provided earlier with the 2011 Site Botany Report (CH2M HILL 2011b), and this figure is included as Figure 3-2. Nearly all of the female Torrey's jointfir plants that were mapped were located within shadscale scrub, in pale-colored silty soil, often with fine cracks and basalt or caliche microgravels. The dominant species are: shadscale (*Atriplex confertifolia*), boxthorn species (*Lycium* spp.), desert alyssum (*Lepidium fremontii*), and prince's plume

(*Stanleya pinnata*). Associated species include: burrobush (*Ambrosia dumosa*), winter fat (*Krascheninnikovia lanata*), and matchbush (*Gutierrezia* spp.). Torrey's jointfir was observed to be most abundant in areas where soil moisture is highest, such as localized depressions, and areas near unpaved roads, many of which are incised and serve as drainage channels for runoff. A few scattered female Torrey's jointfir shrubs were mapped along the eastern edge of the HHSEGS site, in Mojave Desert scrub dominated by creosote bush (*Larrea tridentata*) and burrobush. The three-leaved male and vegetative *Ephedra* shrubs that were counted but not mapped also had the same distribution pattern.

During the focused Torrey's jointfir surveys, two additional localities of Preuss' milkvetch (*Astragalus preussii* var. *preussii*) were identified and these are also shown on Figure 3-1. These incidental observations were not the focus of the survey effort and they are therefore not discussed in further detail.

3.2 Species Account for Torrey's Jointfir (*Ephedra torreyana*)

Torrey's jointfir is a much-branched, gray-green shrub in the Ephedra Family (*Ephedraceae*). Torrey's jointfir is three-leaved, meaning that there are three tiny leaves (2 to 5 mm long) at each node (joint of the stem). This species is a gymnosperm, not a flowering plant, so there are no flowers. The reproductive structures in *Ephedra* species are *strobili*, which are similar to small cones. Male and female cones are borne on different individuals. Female cones are composed of bracts and seeds. Mature female cones are required to distinguish Torrey's jointfir from similar three-leaved species, including Death Valley jointfir, which is common in the greater Death Valley region. Both Torrey's and Death Valley jointfir can grow in the same general area.

In Torrey's jointfir, the bracts surrounding the seeds are in many pairs, and are membranous, translucent, and minutely toothed and wavy on the margins; the mature seeds do not protrude beyond the outer edge of the bracts; and the seeds have a roughened surface (Kartesz, 1988; Ickert-Bond and Rydin, 2011; FNA, 2012). In Death Valley jointfir, the bracts surrounding the seeds are in 5 to 6 pairs, are not membranous, are not toothed or wavy; the mature seeds protrude about 0.2 inch beyond the outer edge of the bracts; and the seeds have a smooth surface (ibid.).

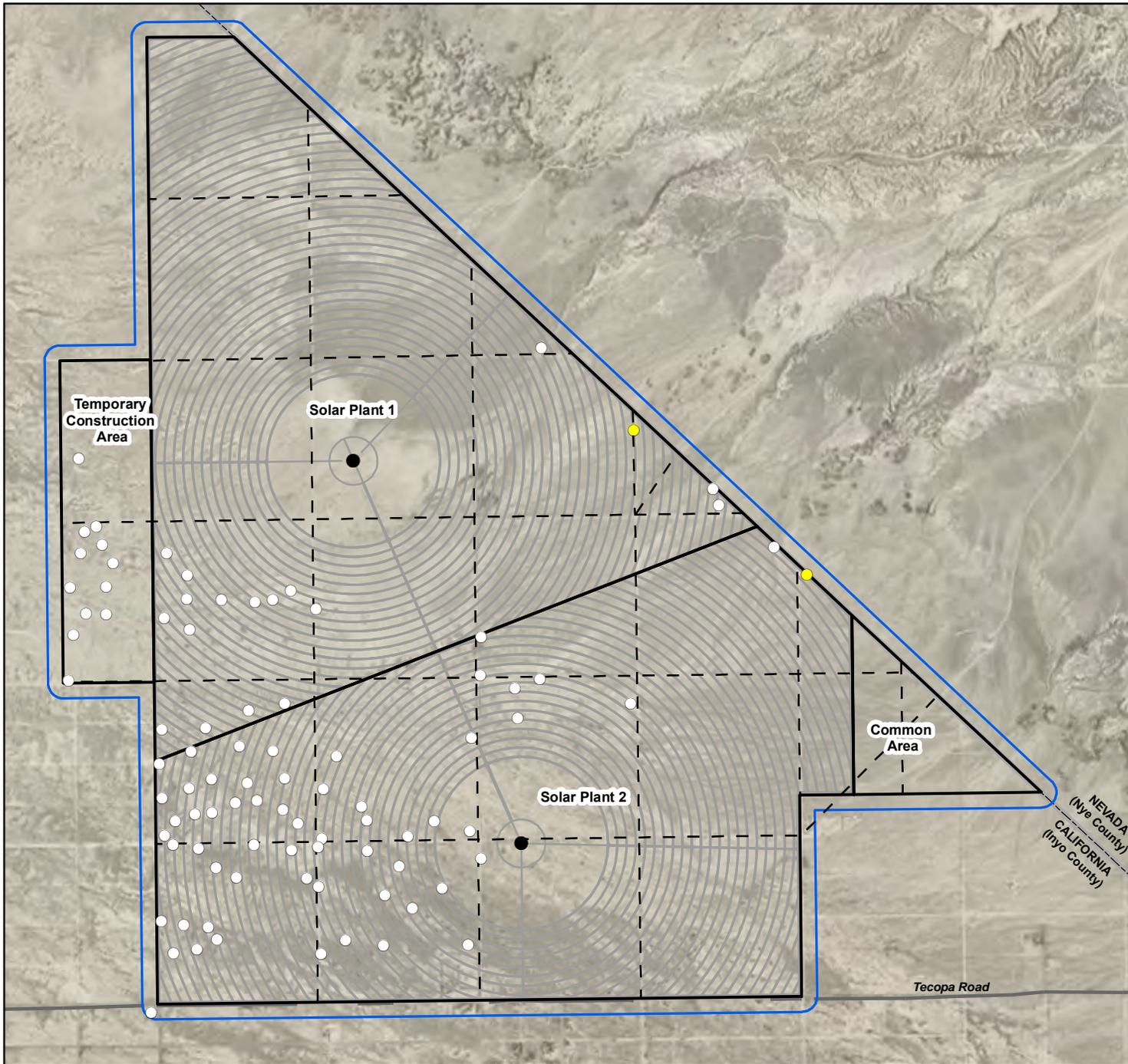
The habitat of Torrey's jointfir is described as dry rocky to sandy areas, from 1,500 to 6,500 feet in elevation (Cronquist et al., 1972; Kartesz, 1988; FNA, 2012). However, in California its habitat consists of valley bottom locations with pale-colored silty soil and shadscale scrub. Torrey's jointfir is known from California, Arizona, Nevada, Utah, Colorado, New Mexico and Texas (FNA, 2012; Jepson Online Interchange, 2012; CNDDDB, 2012).

Prior to surveys conducted for the HHSEGS project in 2011, there was a single specimen listed as Torrey's jointfir in the Consortium of California Herbaria. This specimen is NY70649, collected by Roxana S. Ferris in 1958, on the edge of sand dunes near Blythe, in Riverside County (Jepson Online Interchange, 2012). The specimen consists of vegetative material, and is now thought to be *Ephedra trifurca*, a three-leaved *Ephedra* common in the Sonoran Desert, rather than Torrey's jointfir (*Ephedra torreyana*) (Jepson Online Interchange, 2012; Sanders, 2012).

During the May 2011 offsite surveys conducted in support of the HHSEGS project, Torrey's jointfir was identified and mapped in Mojave Desert scrub and shadscale scrub in the Pahrump Valley, in California. These are the first definitive records of this species in California (Jepson Online Interchange, 2012). This species was not detected during protocol-level surveys of the HHSEGS site in 2011 because female cones needed for identification were not present at the time the 2011 survey was conducted in April. Focused surveys for Torrey's jointfir within the HHSEGS site in May 2012 documented this species in many

locations in addition to those mapped offsite in 2011 (Figure 3-1). A total of 54 localities of Torrey's jointfir were also found offsite elsewhere within the Pahrump Valley during offsite surveys performed in 2012. These finds are described in a separate report that is currently in preparation.

Torrey's jointfir is not state or federally listed. This species was designated as California Rare Plant Rank (CRPR) 2.1 in February 2012 (CNDDDB, 2012).



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

Data Source: GANDA Botanical Survey, 2012

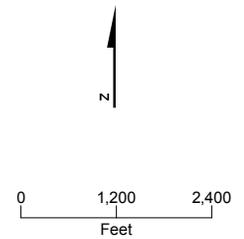
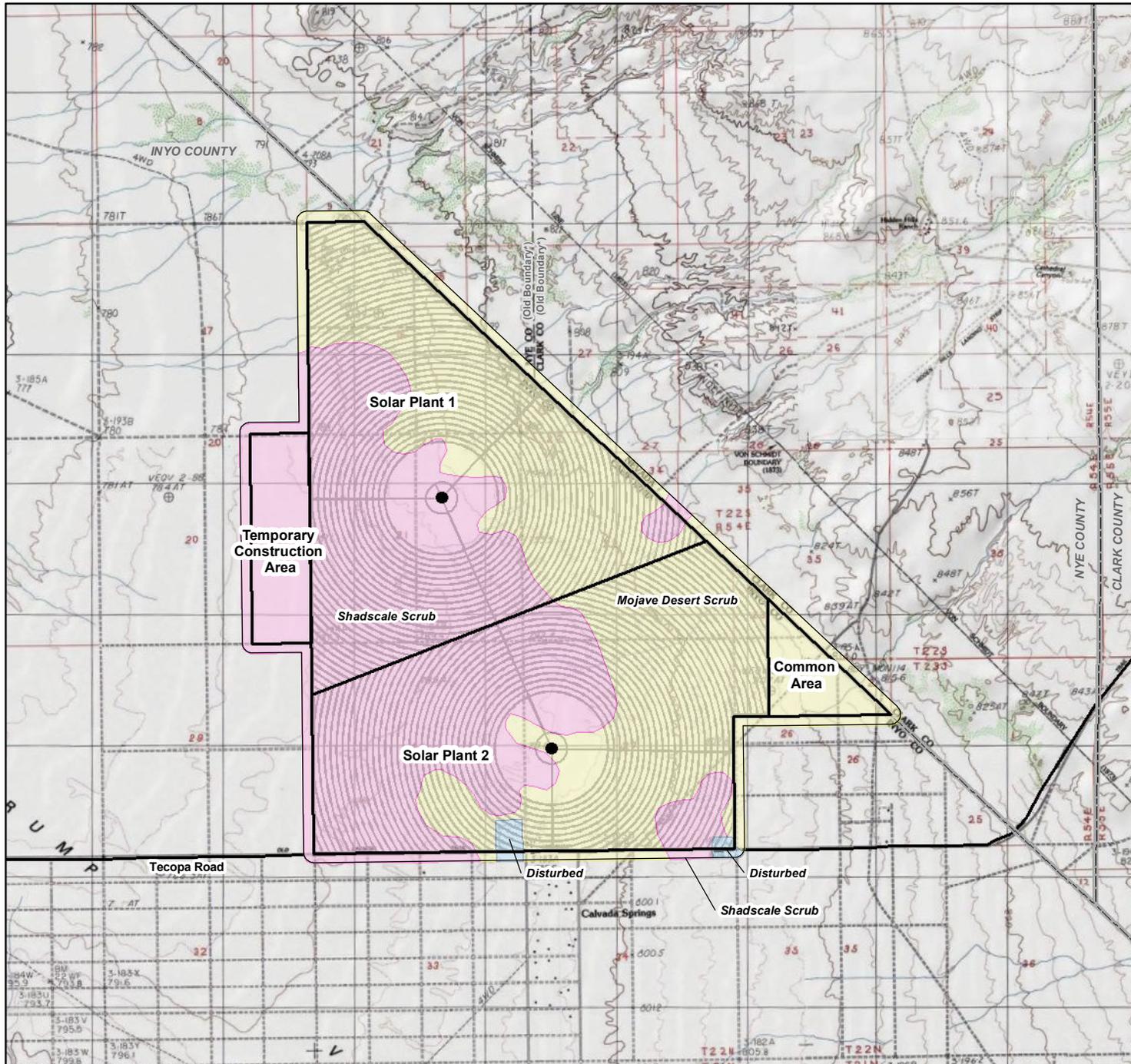


Figure 3-1
 Results of 2012 Special-status Plant Survey
 Hidden Hills Solar Electric Generating System



- LEGEND**
- Solar Power Tower
 - ▭ HHSEGS Boundary
 - ▭ 250-foot Buffer of HHSEGS
 - Vegetation Types**
 - ▭ Disturbed (excluding roads)
 - ▭ Shadscale Scrub
 - ▭ Mojave Desert Scrub

*County boundary moved due to annexation, 2001

Data Source:
GANDA Botanical Survey, 2011

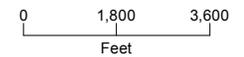


Figure 3-2
Vegetation Map
Hidden Hills Solar Electric Generating System

SECTION 4

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Appendix A
Representative Photographs



Torrey's jointfir (*Ephedra torreyana*), closeup of mature female cones. Photo by William Clark



Female shrub of Torrey's jointfir in front of surveyor, ¼ Section 21 SW, shadscale scrub. Photo by Ann Howald



High quality habitat for Torrey's jointfir, shadscale scrub, ¼ Section 28 SW, looking west toward Nopah Range. Photo by Ann Howald



High quality habitat for Torrey's jointfir, shadscale scrub, ¼ Section 28 SW, looking east toward Charleston Peak. Photo by Ann Howald



No habitat for Torrey's jointfir, $\frac{1}{4}$ Section 16 SW, burned, weeds, looking west toward Nopah Range. Photo by William Clark



No habitat for Torrey's jointfir, $\frac{1}{4}$ Section 21 NW, area invaded by the weed halogeton (*Halogeton glomeratus*) (brown plants). Photo by William Clark



No habitat for Torrey's jointfir, Mojave Desert scrub dominated by creosote bush (*Larrea tridentata*), ¼ Section 21 NE. Photo by William Clark



**BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT
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***APPLICATION FOR CERTIFICATION FOR THE
HIDDEN HILLS SOLAR ELECTRIC
GENERATING SYSTEM***

Docket No. 11-AFC-02

**PROOF OF SERVICE
(Revised 9/20/12)**

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DECLARATION OF SERVICE

I, Mary Finn, declare that on October 1, 2012, I served and filed copies of the attached Hidden Hills Data Response, Set 2D-5 dated October 1, 2012. This document is accompanied by the most recent Proof of Service list, located on the web page for this project at: www.energy.ca.gov/sitingcases/hiddenhills/index.html.

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit or Chief Counsel, as appropriate, in the following manner:

(Check all that Apply)

For service to all other parties:

- Served electronically to all e-mail addresses on the Proof of Service list;
- Served by delivering on this date, either personally, or for mailing with the U.S. Postal Service with first-class postage thereon fully prepaid, to the name and address of the person served, for mailing that same day in the ordinary course of business; that the envelope was sealed and placed for collection and mailing on that date to those addresses marked **"hard copy required"** or where no e-mail address is provided.

AND

For filing with the Docket Unit at the Energy Commission:

- by sending an electronic copy to the e-mail address below (preferred method); **OR**
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CALIFORNIA ENERGY COMMISSION – DOCKET UNIT
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1516 Ninth Street, MS-4
Sacramento, CA 95814-5512
docket@energy.ca.gov

OR, if filing a Petition for Reconsideration of Decision or Order pursuant to Title 20, § 1720:

- Served by delivering on this date one electronic copy by e-mail, and an original paper copy to the Chief Counsel at the following address, either personally, or for mailing with the U.S. Postal Service with first class postage thereon fully prepaid:

California Energy Commission
Michael J. Levy, Chief Counsel
1516 Ninth Street MS-14
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I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.



Mary Finn