

Appendix D-25

Botanical Survey Report Late
Blooming Species 2010

Sun Creek Wind Project
Botanical Survey Report:

Late-Blooming Species
and
Bakersfield Cactus

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1.0 Executive Summary

Late-season botanical surveys of the approximately 1,424-acre Sun Creek Wind Project were conducted from June 29–July 2 and from July 20–23 and July 27, 2010. These surveys supplemented the spring 2010 surveys of the Project area conducted by Sycamore Environmental Consultants. Together, the two rounds of surveys fulfill the requirements for protocol-level botanical surveys according to the guidelines of the California Department of Fish and Game (CDFG 2009), the U.S. Fish and Wildlife Service (USFWS 1996a), and the California Native Plant Society (CNPS 2001).

Pre-field research was conducted to select special-status plant species with potential to be found within the Project site. The list of potentially occurring late season special-status plants was derived from several sources including U.S. Geological Survey 7.5' quadrangle-based searches of the California Natural Diversity Database (CNDDDB), the CNPS on-line Inventory, and other sources. Sixteen late season special-status plant species were determined to have potential to occur within the Project site based on habitat preferences, blooming period and known distribution.

Two special-status plant species were observed within the Project site:

- Bakersfield cactus (*Opuntia basilaris* var. *treleasei*; FE, SE, CNPS List 1.B1)
- Adobe yampah (*Perideridia pringlei*; CNPS List 4.3)

363 sites, each with a single Bakersfield cactus, were mapped within the Project area. Six sites with an estimated total of 23 individuals of adobe yampah were also mapped.

2.0 Introduction

Garcia and Associates (GANDA), as a subcontractor to CH2M Hill, Inc. (CH2M HILL), was tasked with conducting late season botanical surveys for the Sun Creek Wind Project and to utilize more recent identification criteria for Bakersfield cactus to evaluate Sycamore's conclusion that no Bakersfield cactus were present on the project site. The purpose of the surveys was to detect the presence of potentially-occurring late season special-status plant species, and to supplement the findings presented in the Botanical Inventory Report prepared by Sycamore Environmental Consultants (2010). During the surveys completed by GANDA and described in this report, all *Opuntia basilaris* individuals were mapped and identified as either the Federal and State-listed Bakersfield cactus (*O. b. var. treleasei*) or the common beavertail cactus (*O. b. var. basilaris*) according to guidance provided by the California Department of Fish and Game (CDFG; Ellen Cypher personal communication; Bowen, 1986).

2.1 Project Description

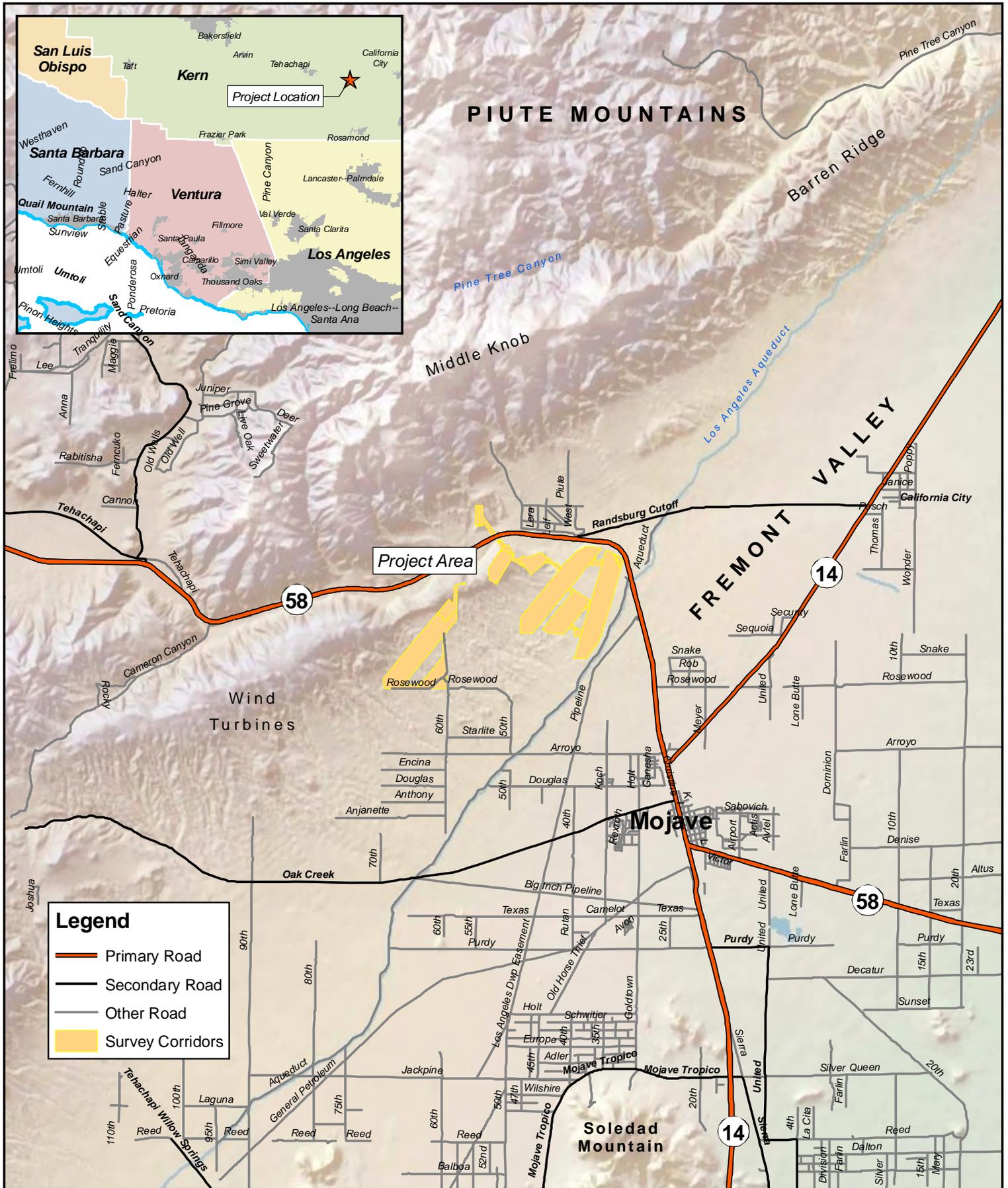
Alta Windpower Development, LLC proposes to construct the Sun Creek Wind Project (the Project) in southeastern Kern County, California (Figure 1). The proposed Project includes approximately 1,424 acres in the western Mojave Desert.

2.2 Project Area

The Project is located in the northern Antelope Valley in the western Mojave Desert and foothills of the Tehachapi Mountains in Kern County, California. The Project site is located approximately 3 miles northwest of the developed City of Mojave, 11 miles southeast of the City of Tehachapi and on both sides of Highway 58 (Figure 1). The terrain of the Project site varies between gently sloping bajadas to steep ridges and drainages in the foothills. Elevations within the Project site range from approximately 3,150 to 4,180 feet.

The Project is located on private and public lands administered by the Bureau of Land Management (BLM) within the Mojave and Monolith 7.5' U.S. Geological Survey (USGS) quadrangles. The Project is accessible by Oak Creek Road and Business Route CA-58. The Project is bordered on the eastern edge by the California Aqueduct.

Rainfall in the vicinity of the Project area preceding the 2010 botanical surveys was above average. The historic (1982 to present) average precipitation in Tehachapi for the period between October and April is 9.67 inches (CDWR 2010). From October 2009 through April 2010, the Tehachapi Airport gauge received approximately 11.7 inches of rain (CDWR 2010). The Tehachapi Airport gauge is located approximately 11 miles west of the Project area.



USGS 7.5' Quads:
 MOJAVE (1973), MONOLITH (1995)

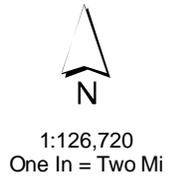


Figure 1
Project Location
Sun Creek Wind Project
 Kern County, CA
 August, 2010

3.0 Methods

3.1 Special-status plants

3.1.1 *Pre-field research and literature review*

Prior to the botanical surveys, research was conducted to identify late-blooming special-status plant species with potential to occur on the Project site. For each potentially occurring species, information was compiled on conservation status, distribution, habitat characteristics, blooming time, presence in the Project region, and characteristics used in field identification.

A plant was 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 1996b, 2006, 2010; CDFG 2009, CNPS 2010); or
- Designated by the BLM Ridgecrest office as a Special-Status plant, or Plant of Interest; or
- Special Plant as defined by the California Natural Diversity Database (CNDDB 2010); or
- Designated by the California Native Plant Society (CNPS) in its *Inventory of Rare and Endangered Plants of California* (CNPS 2010)

For the purpose of this assessment, only late-blooming special-status species were considered. Late-blooming species include plants with typical blooming periods in mid to late summer or fall. A late-blooming 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 vicinity of the Project area, and if its known or expected habitat is found within or near the Project area. For this Project, the vicinity includes the western Mojave Desert, Tehachapi Mountains, and southern Sierra Nevada Mountains.

A preliminary list of potentially occurring special-status plants was derived from several sources. Quadrangle-based searches of the CNPS Inventory (2010) and the CNDDB RareFind3 database (2010) were used to identify potentially occurring special-status plants. The two 7.5' USGS quadrangles containing the Project area (Mojave and Monolith), and the surrounding 10 USGS 7.5' quadrangles (Cache Peak, Tehachapi NE, Tehachapi North, Soledad Mountain, Tehachapi South, Tylerhorse Canyon, Willow Springs, Mojave NE, Sanborn, and Bissell) were included in the searches. CNPS List 4 species with the potential to occur in the vicinity of the Project were identified by searching the CNPS Inventory for all Kern County species occurring in habitats identified as occurring in the Project area. The searched habitat types included: Mojave Desert Scrub, Great Basin Scrub, Chenopod Scrub, Chaparral, Valley and Foothill Grasslands, Pinyon and Juniper Woodland, and Joshua Tree Woodland.

Species whose known distribution, habitat, or elevational range precluded their possible occurrence in the vicinity of the Project were not further considered. Table 1 summarizes information on 16 late season special-status plants determined to have the potential to occur on the Project site. The table includes information on flowering time, conservation status, habitat preferences, geographic distribution, elevation, and known locations in the vicinity of the Project area.

Table 1. Late season special-status plant species with the potential to occur on the Sun Creek Wind Project.

Taxon	Status¹ FWS / DFG / BLM / CNPS	Blooming period	Habitat and elevation	Potential for occurrence²
<i>Chamaesyce vallis-mortae</i> Death Valley sandmat	-- / -- / PI / 4.2	May-Oct	Mojavean desert scrub (sandy or gravelly). 760 to 4,800 ft.	Absent. The species was not observed in surveys conducted during the flowering period. The species is known to occur south of Red Rock Canyon, 20 mi NE of the project area.
<i>Chorizanthe spinosa</i> Mojave spineflower	-- / -- / -- / 4.2	Mar-Jul	Chenopod Scrub, Joshua Tree Woodland, Mojavean Desert Scrub. 20 to 4,290 ft.	Absent. The species was not observed in surveys conducted during the flowering period. The nearest known location is 6 mi E of the project area.
<i>Cordylanthus rigidus</i> ssp. <i>brevibracteatus</i> short-bracted bird's-beak	-- / -- / -- / 4.3	Jul-Aug	Chaparral, Lower Montane Coniferous Forest, Pinyon and Juniper Woodland, Upper Montane Coniferous Forest/openings, granitic. 3,000 and 7,000 ft.	Absent. The species was not observed in surveys conducted during the flowering period. The nearest known location is 12 mi W of the project area.
<i>Deinandra arida</i> Red Rock tarplant	-- / SR / S / 1B.2	Apr-Nov	Mojavean Desert Scrub clay soil; dry to moist sites where water has collected along ephemeral streams, & along road edges. 900 to 3,160 ft.	Absent. The species was not observed in surveys conducted during the flowering period. Known only from the Red Rock Canyon area 20 mi N of the project area. Only a limited amount of suitable habitat is present in project area.
<i>Deinandra mohavensis</i> Mojave tarplant	-- / SE / S / 1B.3	Jun-Oct (Jan)	Riparian Scrub, Chaparral - low sand bars in river bed; mostly in riparian areas or in ephemeral grassy areas. 1,800 and 4,000 ft.	Absent. The species was not observed in surveys conducted during the flowering period. The nearest known location is 20 mi N of the project area near Jawbone Canyon.
<i>Dudleya calcicola</i> limestone dudleya	-- / -- / -- / 4.3	Apr-Aug	Chaparral, Pinyon and Juniper Woodland. - rocky places on limestone. 1,640 to 8,528 ft.	Absent. The species was not observed in surveys conducted during the flowering period. Only a limited amount of suitable habitat is present in project area.
<i>Eriastrum brandegeae</i> Brandegee's Eriastrum	-- / -- / S / 1B.2	Apr-Aug	Chaparral, Cismontane Woodland. - on barren volcanic soils; often in open areas. 1,000-3,380 ft.	Absent. The species was not observed in surveys conducted during the flowering period, and is restricted to northern California. Collections from the vicinity of Piute Mtn are likely <i>E. tracyi</i> , which is listed as a synonym of <i>E. brandegeae</i> in Hickman (1993).

Taxon	Status ¹ FWS / DFG / BLM / CNPS	Blooming period	Habitat and elevation	Potential for occurrence ²
<i>Eriastrum tracyi</i> Tracy's eriastrum	-- / SR / S / 1B.2	Jun-Jul	Chaparral, Cismontane Woodland. - gravelly shale or clay; often in open areas. 1,040 to 3,220 ft.	Absent. The species was not observed in surveys conducted during the flowering period. The nearest known location is 10 miles W of the Project area.
<i>Fritillaria pinetorum</i> pine fritillary	-- / -- / PI / 4.3	May-Jul (Sep)	Chaparral, Lower Montane Coniferous Forest, Pinyon and Juniper Woodland, Subalpine Coniferous. Forest, Upper Montane Coniferous Forest. - granite or metamorphics. 5,906 to 10,827 ft.	Absent. The species was not observed in surveys conducted during the flowering period. The nearest known location on Tehachapi Mtn. 5 mi W of the project area.
<i>Goodmania luteola</i> golden goodmania	-- / -- / -- / 4.2	Apr-Aug	Meadows, Mojavean Desert Scrub, Playas, Valley and Foothill Grassland. - in the central valley from Madera County to Kern County. 65 to 7,216 ft.	Absent. The species was not observed in surveys conducted during the flowering period. The nearest known location is Edwards Air Force Base 20 mi E of the project area.
<i>Monardella linooides</i> ssp. <i>oblonga</i> Tehachapi monardella	-- / -- / S / 1B.3	Jun-Aug	Lower Montane Coniferous Forest, Upper Montane Coniferous Forest, Pinyon and Juniper Woodland. - on dry slopes of yellow pine forest, decomposed granitic soils; also in roadside disturbed areas. 5,560 and 8,100 ft.	Absent. The species was not observed in surveys conducted during the flowering period. There are four recent occurrences approx. 7 mi W of the project area.
<i>Navarretia setiloba</i> Piute Mtns. Navarretia	-- / -- / S / 1B.1	Apr-Jul	Cismontane Woodland, Pinyon and Juniper Woodland, Valley and Foothill Grassland. - red clay soils, other clay soils, or on gravelly loam. 1,000 to 6,930 ft.	Absent. The species was not observed in surveys conducted during the flowering period. There are records of this species within the Monolith quad which contains the project area.
<i>Opuntia basilaris</i> var. <i>treleasei</i> Bakersfield cactus	FE / SE / S / 1B.1	Apr-May	Chenopod Scrub, Valley and Foothill Grassland, Cismontane Woodland. - coarse or cobbly well-drained granitic sand on bluffs. 460 to 1,800 ft.	Present. 363 individuals were mapped throughout the project site.
<i>Perideridia pringlei</i> adobe yampah	-- / -- / -- / 4.3	Apr-Jun (Jul)	Chaparral, Cismontane woodland, Coastal scrub, Pinyon and juniper woodland/serpentinite, often clay. 985 to 5,900 ft.	Present. Six sites with approximately 23 individuals were observed
<i>Sclerocactus polyancistrus</i> Mojave fish-hook cactus	-- / -- / -- / 4.2	Apr-Jul	Joshua Tree Woodland, Mojavean Desert Scrub. - well-drained soil, on rocky gravelly mesas, slopes & outcrops; sometimes on limestone. 1,800 and 7,500 ft.	Absent. The species was not observed in surveys conducted during the flowering period. Known from a single collection record in Kern County.

Taxon	Status ¹ FWS / DFG / BLM / CNPS	Blooming period	Habitat and elevation	Potential for occurrence ²
<i>Streptanthus cordatus</i> var. <i>piutensis</i> Piute Mountains jewel- flower	-- / -- / S / 1B.2	May-Jul	Broadleafed Upland Forests, Closed-Cone Coniferous Forest, Pinyon and Juniper Woodland. - along roadbanks and cliffs, metamorphic-red clay soils. 3,600 to 5,725 feet.	Absent. The species was not observed in surveys conducted during the flowering period. The nearest known location is near Cache Peak 10 mi N of the project area.

Sources:

California Native Plant Society. 2010; California Natural Diversity Database. 2010; Jepson Online Interchange. 2010; Consortium of California Herbaria 2010.

¹ Conservation status abbreviations:

U.S. Fish and Wildlife Service designations:

- FE Endangered: Any species in danger of extinction throughout all or a significant portion of its range.
- FT Threatened: Any species likely to become endangered within the foreseeable future.

California Department of Fish and Game designations:

- SE Endangered: Any species in danger of extinction throughout all or a significant portion of its range.
- ST Threatened: Any species likely to become endangered within the foreseeable future.
- SR Rare: Any species not currently threatened with extinction, but in such small numbers throughout its range that it may become endangered if its present environment worsens.

Bureau of Land Management designations:

- S Special-Status
- PI Plants of Interest

California Native Plant Society designations:

- 1B Plants rare, threatened or endangered in California and elsewhere.
- 2 Plants rare, threatened or endangered in California, but more common elsewhere.
- 3 Plants for which more information is needed – a review list.
- 4 Plants of limited distribution – a watch list.

California Native Plant Society threat categories:

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

² Occurrence potential definitions:

- Present: Species or sign of their presence observed on the site.
- Likely: Species or sign not observed on the site, but reasonably certain to occur on the site.
- Possible: Species or sign not observed on the site, but conditions suitable for occurrence.
- Unlikely: Species or sign not observed on the site, conditions marginal for occurrence.
- Absent: Species or sign not observed on the site during protocol-level surveys.

3.1.2 Reference Site Visits

A reference site visit was conducted for one special-status plant with potential to occur on the Project site:

Mohave tarplant (*Deinandra mohavensis*): Several hundred plants in early flowering condition (50% in flower) were observed in and adjacent to Cutterbank Spring (CNDDDB occurrence number 19), south of Jawbone Canyon on June 24, 2010.

3.1.3 Late-season surveys

Transect-based botanical surveys were conducted from June 29–July 2 and from July 20–23 and July 27, 2010. Surveys were conducted by GANDA botanists Onkar Singh, Theresa Johnson, Morgan King, and Eliza Shepard. The goal of the surveys was to census, map, and record all special-status plant locations within the Project area. Surveys were floristic in scope, meaning that all plants found in identifiable condition were identified to the level necessary to determine their rarity or listing status.

Trimble GeoXH global positioning systems (GPS) with sub-meter accuracy were used to map special-status plant species and Bakersfield cactus. The GPS units were equipped with Project-specific data files and data dictionaries for navigation and data collection. The data files included parallel transect lines spaced at 50-foot intervals that covered the Project corridors, and were used to record special-status species locations and the actual or estimated number of individuals observed. Initial surveys were conducted at 50-foot intervals, but transitioned to 100-foot intervals on June 30, 2010 after it was determined that 100-foot transect spacing was suitable for detecting special-status species and cacti due to the low diversity of habitat and low density of cacti. A small area of extremely steep slopes in the northwestern portion of the Project was not surveyed due to safety concerns (Figure 1). Close-up and habitat photographs of the special-status species encountered were taken at representative localities.

The ability of surveyors to detect and identify plants rapidly and accurately in the field was enhanced by a field review of the common plant species at the Project site prior to beginning the surveys. All surveyors were provided with photo guides of targeted special-status plants and preliminary species lists compiled prior to the field surveys.

3.1.4 Bakersfield cactus mapping and identification

In surveys of separate portions of the greater Alta-Oak Creek Mojave Project (AOCM) area conducted during the early spring of 2010, GANDA botanists observed *Opuntia basilaris* individuals identifiable as beavertail cactus (*O. b. var. basilaris*), individuals identifiable as the Federal and State-listed Bakersfield cactus (*O. b. var. treleasei*), and individuals morphologically intermediate between the two varieties.

In a meeting at the AOCM site on April, 8, 2010, Dr. Ellen Cypher of the CDFG indicated that all individual cacti bearing any characteristics of Bakersfield cactus should be identified as that variety, and should receive full protection under the California Endangered Species Act. Dr. Cypher discussed the diagnostic morphological characters for the identification of Bakersfield cactus and supplied some additional literature useful for distinguishing between the varieties. Following the discussion, GANDA botanists consulted a number of published floras and other materials including the Jepson manual (Hickman 1993), A Flora of Southern California (Munz 1974), The Illustrated Flora of the Pacific States (Abrams 1960), the Flora of North America (FNA 1993), an unpublished manuscript provided by CDFG (Bowen 1986), and the original description of the variety (Coulter 1896), in order to determine the most reliable morphological characters for identifying Bakersfield cactus in the field. After experimenting with recording data for a number of morphological features, three characters were chosen as the most repeatable and reliable for the identification of Bakersfield cactus by crews in the field: the presence or

absence of spines, the depression or elevation of the areoles on the stems, and the vestiture of the stem surface. The character states indicative of each variety are presented in Table 2.

Table 2. Morphological characters used to distinguish between Bakersfield and beavertail cactus.

Variety	Spines	Areoles	Stem (pad) vestiture
Bakersfield cactus	At least one spine	Flush or raised	None
Beavertail cactus	No spines	Depressed	Minutely puberulent

During the botanical surveys, the position of every *Opuntia basilaris* plant occurring within the Project area was recorded with a Trimble GeoXH GPS unit. Data for each of the three diagnostic morphological characters were recorded for each mapped individual directly into data dictionaries on the GPS units. Following the surveys, the mapped cacti were assigned an identity based on their morphological characteristics. Cacti displaying any one, or combination, of the three diagnostic characters were considered to be Bakersfield cactus. It should be noted that the criteria used for the identification of Bakersfield cactus in this report were developed specifically to meet the requirements of CDFG, and that these criteria are conservative, meaning that they are more likely to identify a plant as Bakersfield cactus than the criteria contained in the keys and descriptions of the standard floras such as the Jepson Manual (Hickman 1993), A Flora of Southern California (Munz 1974), and the Flora of North America (FNA 1993).

3.2 California Desert Native Plants Act

Several species that occur on the Sun Creek Wind Project site are protected under the California Desert Native Plants Act (CDNPA): Joshua tree (*Yucca brevifolia*), beavertail cactus, Bakersfield cactus, and silver cholla (*Opuntia echinocarpa*). All Bakersfield and beavertail cactus were mapped with a Trimble GeoXH GPS unit, as described above. Other species covered under the CDNPA were not mapped pending finalization of the project design, as directed by CH2M Hill.

4.0 Results

4.1 Special-status plants observed on the Project site

Two special-status plant species were observed within the Project site: Bakersfield cactus and adobe yampah (*Perideridia pringlei*). A summary of each species' status, the number of sites mapped, and the number of individuals observed is presented in Table 3. Each species is discussed in detail in the sections below. A list of all late-season species observed within the Project area that were not included in Sycamore's report is presented in Appendix A.

Table 3. Special-status plants observed on the Sun Creek Wind Project site.

Species observed	Federal status	State status	CNPS status	No. Sites	No. Obs.
<i>Opuntia basilaris</i> var. <i>treleasei</i> Bakersfield cactus	Endangered	Endangered	1B.1	363	363
<i>Perideridia pringlei</i> Adobe yampah	--	--	4.3	6	23

4.1.1 Bakersfield cactus (*Opuntia basilaris* var. *treleasei*)

Bakersfield cactus is a perennial low-growing stem succulent in the Cactus family (Cactaceae) that typically spreads to form extensive thickets. The stems form fleshy, flattened green pads up to 18 cm long by 1 to 1.5 cm thick. The flowers are magenta and usually appear in May (ESRP 2006). Bakersfield cactus is State and Federally endangered and is included on CNPS List 1B.1.

The distribution of Bakersfield cactus has been described in a recent USFWS Recovery Plan (USFWS 1998) as restricted to a limited area of central Kern County near Bakersfield at elevations from approximately 460 to 1,800 feet. Previously, extensive colonies existed around Bakersfield, along the bluffs of the Kern River, along the Caliente Creek drainage and nearby in the foothills of the western Tehachapi Mountains, and south to the Tejon Hills. Twisselmann (1967) describes a very large population in the Sand Ridge area near Arvin that eventually was protected by The Nature Conservancy within the Sand Ridge Preserve (USFWS 1998). The current distribution of Bakersfield cactus in the Bakersfield area is fragmented and much reduced (ESRP 2006). Specimen records from the Consortium of California Herbaria (CCH 2010) include three specimens from the Mojave Desert near the town of Mojave. These specimens are from the 1930s, and the occurrences in this report and others from the greater AOCM project area represent the most recent records of Bakersfield cactus in the Mojave Desert proper. Approximately one-third of the historical occurrences of Bakersfield cactus have been extirpated and the remaining populations are highly fragmented (USFWS 1998, ESRP 2006).

A total of 363 Bakersfield cacti were observed onsite (Figure 2). Each of these cacti meet one or more of the criteria described in the methods section of this report to distinguish common beavertail cactus from Bakersfield cactus. Appendix B presents a table with the geographic coordinates of each Bakersfield cactus mapped within the Sun Creek Wind Project area. A representative photo of the variety is included in Appendix D.

4.1.2 Adobe yampah (*Perideridia pringlei*)

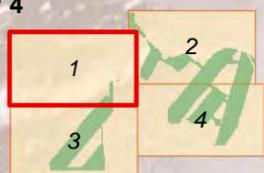
Adobe yampah is a perennial herb in the Carrot family (Apiaceae) found in Chaparral, Cismontane Woodland, Coastal Scrub, and Pinyon and Juniper Woodland at elevations from 985 to 5,900 feet (CNPS 2010). It has no State or Federal listing status, but is included on CNPS List 4.3, a watch list.

In California, adobe yampah is known from Kern, Los Angeles, Monterey, Santa Barbara, San Luis Obispo, Tulare, and Ventura counties (CNPS 2010). No CNDDDB records exist for this species, but there are many collections reported for Kern County (CCH 2010). The closest record is from Tomo-Kahni (Creation Cave) State Historical Park, northeast of Monolith and Tehachapi, about seven miles north of the Project area.

Sycamore Environmental Consultants' survey of the Sun Creek Wind Project area found a population of 30-40 individuals of adobe yampah in the southwest corner of the Project area (Sycamore 2010). Additional populations of Adobe yampah were observed within the Project area during late season botanical surveys conducted by GANDA. The plants were past fruiting condition but were identifiable. A total of approximately 23 adobe yampah individuals were observed at six locations in the western portion of the Sun Creek Wind Project area (Figure 3). Appendix C presents a table with the geographic coordinates of each adobe yampah population mapped by GANDA within the Sun Creek Wind Project area. A representative photo of this species is included in Appendix D.



Map 1 of 4



- OPBA Occurrence
- Corridor Surveyed
- Corridor Not Surveyed
- Access Route
- Primary Road
- Secondary Road
- Other Road
- Railroad



USGS 7.5' Quad: MOJAVE (1973), MONOLITH (1995)
T32S R35E Sec 32, 33

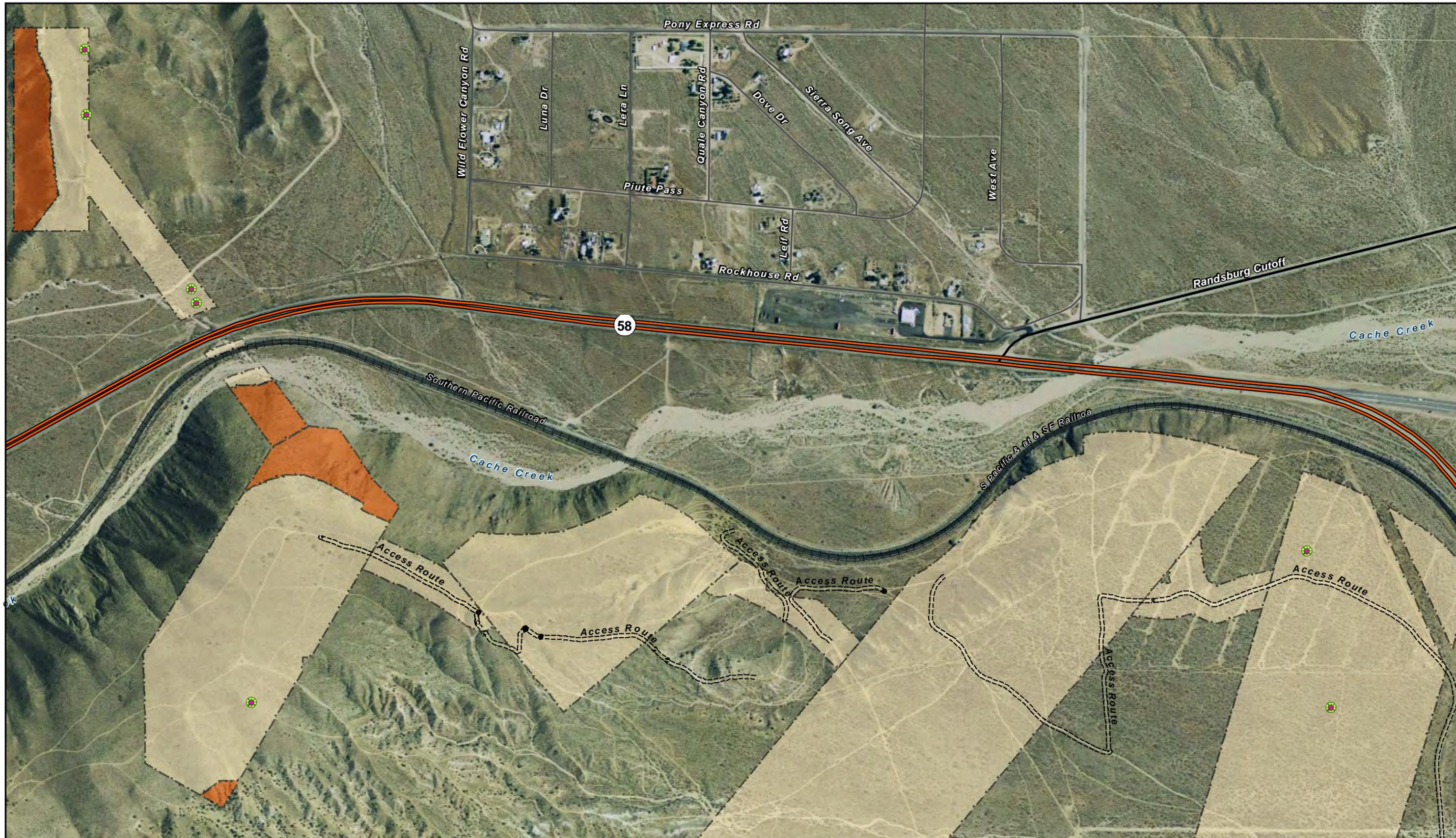


1:9,000
One In = 750 Ft

Figure 2
Bakersfield Cactus Occurrences
Sun Creek Wind Project

Map 1 of 4

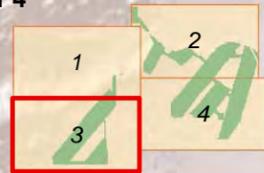
Kern County, California
August, 2010



	<p>Project Location</p>	<p>Map 2 of 4</p>	<ul style="list-style-type: none"> OPBA Occurrence Corridor Surveyed Corridor Not Surveyed Access Route 	<ul style="list-style-type: none"> Primary Road Secondary Road Other Road Railroad 	<p>USGS 7.5' Quad: MOJAVE (1973) T32S R35E Sec 26-28, 33-35</p>	<p>1:9,000 One In = 750 Ft</p>	<p>Figure 2 Bakersfield Cactus Occurrences Sun Creek Wind Project</p> <p>Map 2 of 4</p> <p>Kern County, California August, 2010</p>
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Map 3 of 4



-  OPBA Occurrence
-  Corridor Surveyed
-  Corridor Not Surveyed
-  Access Route
-  Primary Road
-  Secondary Road
-  Other Road
-  Railroad



USGS 7.5' Quad: MOJAVE (1973), MONOLITH (1995)
T32S R35E Sec 32; T12N R13W Sec 34

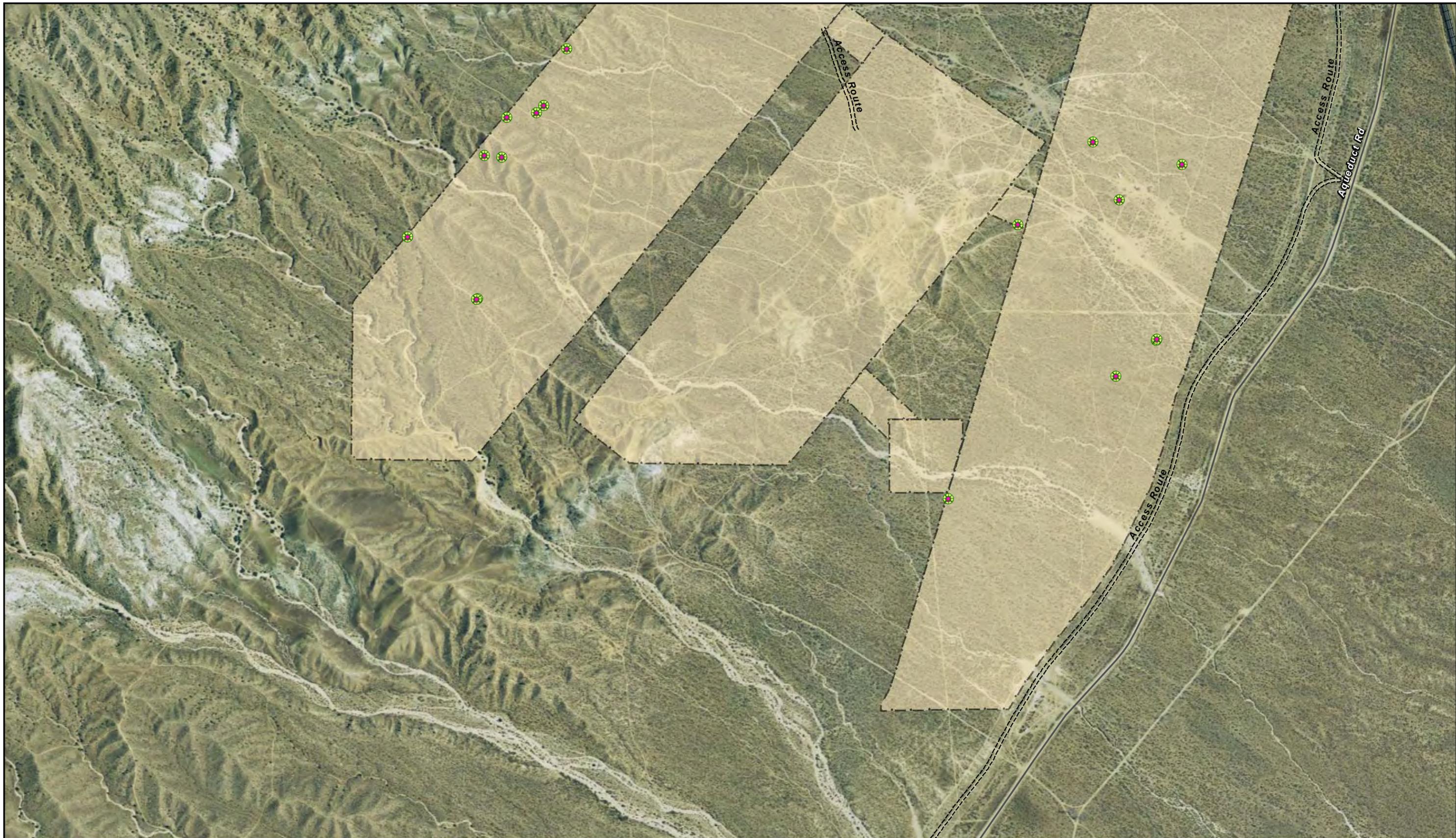


1:9,000
One In = 750 Ft

Figure 2
Bakersfield Cactus Occurrences
Sun Creek Wind Project

Map 3 of 4

Kern County, California
August, 2010



Map 4 of 4



-  OPBA Occurrence
-  Corridor Surveyed
-  Corridor Not Surveyed
-  Access Route
-  Primary Road
-  Secondary Road
-  Other Road
-  Railroad



USGS 7.5' Quad: MOJAVE (1973)
T32S R35E Sec 34, 35; T12N R12W Sec 31



1:9,000
One In = 750 Ft

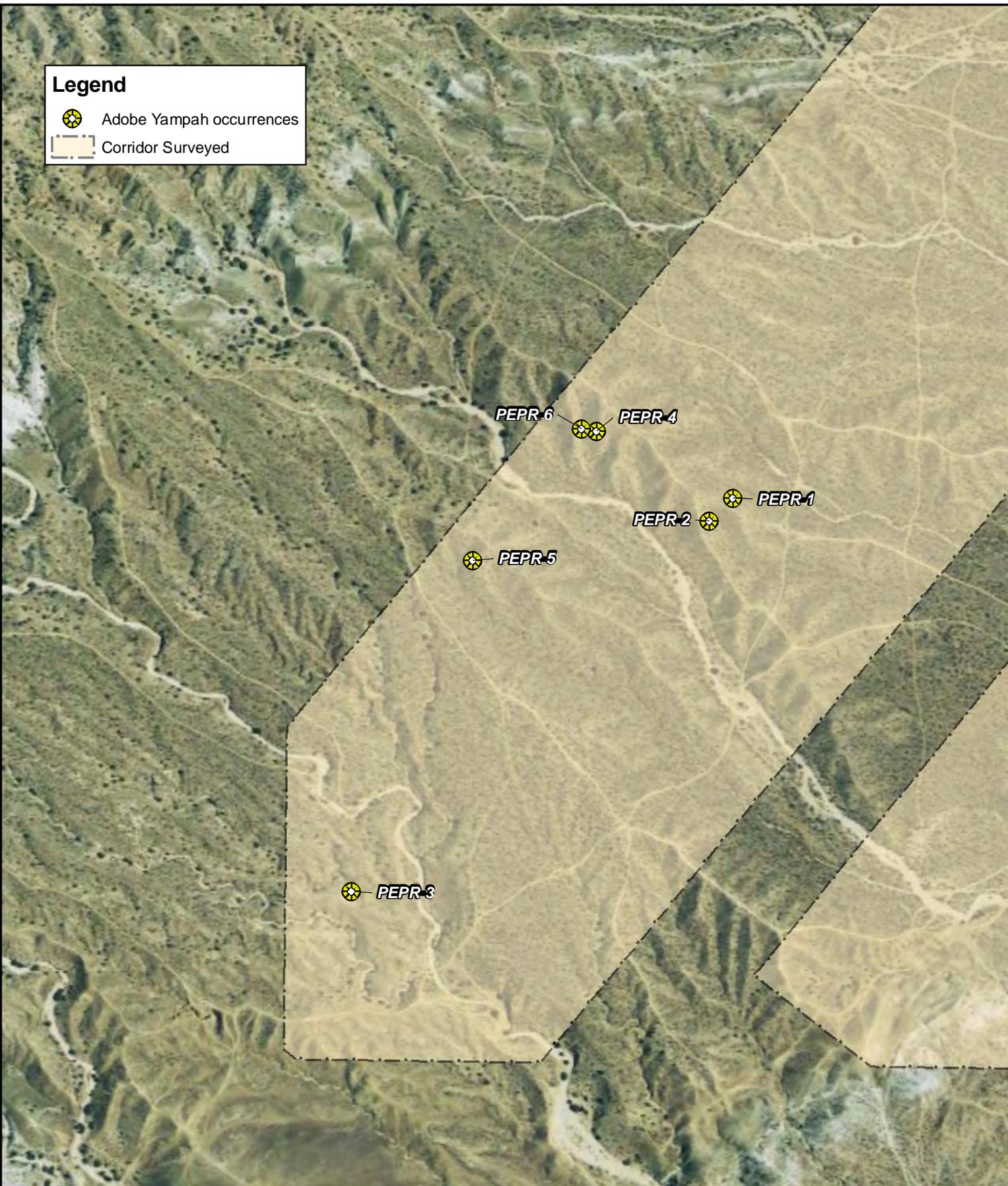
Figure 2
Bakersfield Cactus Occurrences
Sun Creek Wind Project

Map 4 of 4

Kern County, California
August, 2010

Legend

-  Adobe Yampah occurrences
-  Corridor Surveyed



USGS 7.5' Quad: MOJAVE (1973)
Legal Description: T32S R35E Sec 34



1:6,000
One In = 500 Ft

Figure 3
Adobe Yampah Occurrences
Sun Creek Wind Project

Kern County, California
August, 2010

4.2 Special-status plants not observed, but with the potential to occur on the Project site

Death Valley sandmat (*Chamaesyce vallis-mortae*)

Death Valley sandmat is a perennial prostrate herb in the Spurge family (Euphorbiaceae). It is typically found in Mojavean Desert Scrub habitats on sandy or gravelly substrates (CNPS 2010). Known occurrences range in elevation from 760 to 4,800 feet. It has no State or Federal listing status, but is considered a Plant of Interest by BLM and is included on CNPS List 4.2, a watch list.

In California, Death Valley sandmat is known from Inyo, Kern, and San Bernardino counties in the Mojave Desert (CNPS 2010). The closest known location to the Project area is Red Rock Canyon 20 miles northeast of the Project area. (CCH 2010).

Although suitable habitat for Death Valley sandmat occurs in the Project area within Creosote Bush Scrub, botanical surveys conducted by GANDA during the blooming period of Death Valley sandmat (May to October), did not detect the species within the Project area. Only the common species whitemargin sandmat (*Chamaesyce albomarginata*) was observed.

Mojave spineflower (*Chorizanthe spinosa*)

Mojave spineflower is an annual herb in the Knotweed family (Polygonaceae) that has inconspicuous flowers that are only 3 mm (0.12 in) long. There are generally five bracts per flower, with one bract much longer than the others. It is typically found in Chenopod Scrub, Joshua Tree Woodland, and Mojavean Desert Scrub habitat (CNPS 2010). Known occurrences range in elevation from 20 to 4,290 feet.

In California, Mojave spineflower is endemic to the west Mojave Desert within Kern, Los Angeles, and San Bernardino counties (CNPS 2010). The closest known location to the Project area is 6 miles east in the Antelope Valley (CCH 2010). It has no State or Federal listing status, but is included on CNPS List 4.2, a watch list.

Marginal habitat for Mojave spineflower occurs in the Project area within Creosote Bush Scrub and Joshua Tree Woodland. Botanical surveys conducted by GANDA during the blooming period of Mojave spineflower, March to July, did not detect the species within the Project area.

Short-bracted bird's-beak (*Cordylanthus rigidus* ssp. *brevibracteatus*)

Short-bracted bird's-beak is a many branched annual species in the Figwort family (Schropulariaceae) that is found in the southern Sierra Nevada floristic province (Hickman 1993). It occurs in the understory and in granitic openings within Chaparral, Lower and Upper Montane Coniferous Forest, and Pinyon and Juniper Woodland vegetation communities at elevations between 3,000 and 7,000 feet (CNPS 2010). It has no State or Federal listing status, but is included on CNPS List 4.3, a watch list.

Short-bracted bird's beak is endemic to California. It has been reported to occur in Kern, Tulare, Fresno and Mariposa counties. The closest reported occurrence of short-bracted bird's beak is approximately 12 miles west from the Project area in Antelope Canyon, south of Highway 58 (CCH 2010).

Marginal habitat for short-bracted bird's beak is present in the higher elevations of the Project area. Botanical surveys conducted by GANDA during the blooming period of short-bracted bird's beak, July to August, did not detect the subspecies within the Project area. No species of this genus were observed.

Red Rock tarplant (*Deinandra arida*)

Red Rock tarplant is an annual tarplant in the Sunflower family (Asteraceae) with showy pale yellow flowers that grows to a height of approximately 40 inches. It is typically found in Mojave Desert Scrub on clay soils and/or volcanic tuff (CNPS 2010). It is sometimes associated with drainages but has also been found on hill slopes. Known occurrences range in elevation from 900 feet to 3,160 feet. It is State listed as Rare, has no Federal listing status, is considered a Special-Status plant by BLM, and is included on CNPS List 1B.2, indicating that it is rare, threatened or endangered in California and elsewhere, and fairly endangered in California.

Red Rock tar plant is only known to occur in California. All but one known occurrence of this plant are in Red Rock Canyon, Kern County, over 20 miles north of the Project area (CCH 2010). The other occurrence is farther to the north in Fresno County.

There is only marginally suitable habitat for Red Rock tarplant in the Project area. Botanical surveys conducted by GANDA during the blooming period for Red Rock tar plant, April to November, did not detect any tar plants (*Deinandra* spp. or *Hemizonia* spp.) on the Project area.

Mojave tarplant (*Deinandra mohavensis*)

Mojave tarplant is an annual tarplant in the Sunflower family with sessile clusters of small yellow flowers. It grows to a height of approximately 36 inches tall, and is typically found in Chaparral, Coastal Scrub, Riparian Scrub and mesic community types, in washes or around springs at elevations between 1,800 and 4,000 feet (CNPS 2010). It is State listed and Endangered, has no Federal listing status, is considered a Special-Status plant by BLM, and is included on CNPS List 1B.3, indicating that it is rare, threatened or endangered in California and elsewhere, but not very endangered in California.

In California, Mojave tarplant is known to occur in Kern, San Bernardino, Riverside, and San Diego counties. The closest known occurrence of Mojave tar plant is over 20 miles north of the Project area near a spring on Mount Cross in Jawbone Canyon (CCH 2010). There are other known occurrences in Kelso Valley, over 20 miles north of the Project area. These occurrences were found in drainages and on low hillslopes near drainages on granitic substrate within a recent burn (CCH 2010).

Suitable habitat for this species occurs on the Project area in washes and/or drainages. Botanical surveys conducted by GANDA during the blooming period for Mojave tarplant, June to October, did not detect any species of the genus on the Project area.

Limestone dudleya (*Dudleya calcicola*)

Limestone dudleya is a perennial herb in the Stonecrop family (Crassulaceae) with fleshy leaves in a basal rosette. It is typically found in Chaparral and Pinyon and Juniper Woodland on carbonate substrates (CNPS 2010). Known occurrences range in elevation from 1,640 to 8,528 feet. It has no State or Federal listing status, but is included on CNPS List 4.3, a watch list.

Limestone dudleya is endemic to California and has been found in Inyo, Kern, and Tulare counties (CNPS 2010). The nearest known location to the Project area is in the southern Paiute Mountains, approximately twenty miles north of the Project area (CCH 2010).

Only a limited amount of suitable habitat for this species is present in the western portion of the Project area. Botanical surveys conducted by GANDA during the blooming period of limestone dudleya, April to August, did not detect the species within the Project area. No species of this genus were observed.

Brandegee's Eriastrum (*Eriastrum brandegeae*)

Brandegee's eriastrum is an annual species in the Phlox family (Polemoniaceae) that is between 2 and 8 inches in height with small, generally blue flowers. It is primarily known to occur in the inland coastal ranges of central and northern California. In the coastal ranges it has often been found on volcanic soils in open rocky areas within the Chaparral and Cismontane vegetation types, at elevations between 1,000-3,380 feet (CNPS 2010). It has no State or Federal listing status, but is considered a Special-Status plant by BLM and is included on CNPS List 1B.2, indicating that it is rare, threatened or endangered in California and elsewhere, and fairly endangered in California.

Brandegee's eriastrum has only been reported at two locations in Kern County. Both of these occurrences are about 15 miles north of Project area. A population of 10 plants was reported on an east facing slope off Jawbone Canyon road, just 2 miles east of the intersection with Kelso Valley road, and a second occurrence of 2 plants was reported approximately ½ a mile east of Kelso Valley Road, 1 mile north of the junction with Jawbone Canyon Road (CCH 2010). Neither record is currently included in CNDDDB or CNPS records. It is likely that these occurrences are actually Tracy's eriastrum (*Eriastrum tracyi*), a species which was omitted from Hickman (1993), see below.

Botanical surveys conducted by GANDA during the blooming period of Brandegee's eriastrum, April to August, did not detect the species within the Project area. Only the more common species *E. densifolium*, *E. diffusum*, and *E. sapphirinum* were observed. Brandegee's Eriastrum is distinguished from these similar species by its anthers that do not extend beyond the corolla sinus, by the length of the filaments relative to the anthers and by the relative length of the corolla lobes (Gowen 2008).

Tracy's eriastrum (*Eriastrum tracyi*)

Tracy's eriastrum is an annual species in the Phlox family that is up to 8 inches in height with small, generally blue flowers. It is primarily known to occur in Chaparral and Cismontane vegetation types, at elevations between 1,040 to 3,220 feet (CNPS 2010). Tracy's eriastrum has recently been resurrected as a species (Gowen 2008). It was first described by Mason (1945), and later combined with Brandegee's eriastrum in the Jepson manual (Hickman 1993). It is State listed as rare, has no Federal listing status, is considered a Special-Status plant by BLM, and is included on CNPS List 1B.2, indicating that it is rare, threatened or endangered in California and elsewhere, and fairly endangered in California.

Recent investigations of herbarium records have determined that six records of Great Basin woollystar (*E. sparsiflorum*) within Kern County are actually Tracy's eriastrum. The closest reported occurrence of this species is along highway 58 near Tehachapi, about 10 miles west of the Project area.

Suitable habitat for Tracy's eriastrum occurs in the Project area. Botanical surveys conducted by GANDA during the blooming period of Tracy's eriastrum, June to July, did not detect the species within the Project area. Only the more common species *E. densifolium*, *E. diffusum*, and *E. sapphirinum* were observed. Tracy's Eriastrum is distinguished from these similar species by its anthers that do not extend beyond the corolla sinus, by the length of the filaments relative to the anthers and by the relative length of the corolla lobes (Gowen 2008). It can be distinguished from Brandegee's eriastrum by its wider corolla lobes and shorter stamens (Gowen 2008).

Pine fritillary (*Fritillaria pinetorum*)

Pine fritillary is a bulbiferous herb in the Lily family (Liliaceae) with spreading, mottled purple-yellow/green flowers. It is typically found in Chaparral, Lower Montane Coniferous Forest, Pinyon and Juniper Woodland, Subalpine Coniferous Forest, and Upper Montane Coniferous Forest in shady sites on granitic or metamorphic substrates (CNPS 2010). Known occurrences range in elevation from 5,906 to

10,827 feet. It has no State or Federal listing status, but is considered a Plant of Interest by BLM and is included on CNPS List 4.3, a watch list.

In California, pine fritillary has been found in Fresno, Kern, Los Angeles, Mono, Santa Barbara, San Bernardino, Tulare, and Ventura counties (CNPS 2010; CCH 2010). The closest known location to the Project area on Tehachapi Mountain, approximately five miles west of the Project area (CCH 2010).

Although limited suitable habitat is present in the Project area within California Juniper Woodland and Joshua Tree Woodland, botanical surveys conducted by GANDA during the blooming period of pine fritillary, May to July, did not detect the species within the Project area. No species of this genus were observed..

Golden goodmania (*Goodmania luteola*)

Golden goodmania is a small, spreading annual herb in the Knotweed family that is thinly hairy throughout and has small yellow flowers. It is typically found in Mojavean Desert Scrub, Meadows and Seeps, Playas, and Valley and Foothill Grassland on alkaline or clay substrates (CNPS 2010). Known occurrences range in elevation from 65 to 7,216 feet. It has no State or Federal listing status, but is included on CNPS List 4.2, a watch list.

In California, golden goodmania has been found in Fresno, Inyo, Kern, Los Angeles, Madera, Mono, and Tulare counties (CNPS 2010). The nearest known location to the Project area is from Edwards Air Force Base, approximately 20 miles east of the Project area (CCH 2010).

Marginal habitat for golden goodmania occurs in the Project area, but botanical surveys conducted by GANDA during the blooming period of golden goodmania, April to August, did not detect the species within the Project area. No similar species were observed.

Tehachapi monardella (*Monardella linoides ssp. oblonga*)

Tehachapi monardella is a perennial herb in the Mint family (Lamiaceae) with bracted heads of whitish, lavender, or pale purple flowers. Its typical habitats include Lower Montane Coniferous Forest, Upper Montane Coniferous Forest, and Pinyon and Juniper Woodland, where it is found on dry slopes with decomposed granitic soils, and in roadside disturbed areas at elevations between 5,560 and 8,100 feet (CNDDDB 2010). Tehachapi monardella has no State or Federal listing status, but is considered a Special-Status plant by BLM and is included on CNPS List 1B.3, indicating that it is rare, threatened or endangered in California and elsewhere, but is not very endangered in California (CNPS 2010).

In California, Tehachapi monardella has been found in Kern, Tulare, and Ventura counties (CNPS 2010). There are no records for this species on the Mojave or Monolith quads and the closest CNDDDB record is from 1889, approximately 10.4 mi west of the Project area on the Tehachapi South quad. GANDA botanists recently recorded this species on an adjacent AOCM Project, 7 mi W of the Sun Creek Project area (GANDA 2010).

Although some suitable habitat is present in the Project area, botanical surveys conducted by GANDA during the blooming period of Tehachapi Monardella, June to August, did not detect the species within the Project area. No species of this genus were observed.

Piute Mountains navarretia (*Navarretia setiloba*)

Piute Mountains navarretia is an annual herb in the Phlox family. It is typically found in Cismontane Woodland, Pinyon and Juniper Woodland, and Valley and Foothill Grassland vegetation communities in clay or gravelly loam substrates (CNPS 2010). Known occurrences range in elevation from 1,000 to

6,930 feet. It has no State or Federal listing status, but is considered a special-status plant by BLM and is included on CNPS List 1B.1, indicating that it is rare, threatened or endangered in California and elsewhere, and seriously endangered in California.

In California, Piute Mountains *navarretia* is endemic to Kern, Los Angeles, and Tulare counties (CNPS 2010). There are records of this species within the Monolith quadrangle which contains the Project area (CNPS 2010).

Although suitable habitat is present in the Project area, botanical surveys conducted by GANDA during the blooming period of Piute Mountains *navarretia*, April to July, did not detect the species. No species of this genus were observed.

Mojave fish-hook cactus (*Sclerocactus polyancistrus*)

Mojave fish-hook cactus is a small cylindrical (4-12 inches tall by 2-3 inches wide), unbranched, cactus with clusters of 9-11 hooked spines and rose to magenta colored flowers (Hickman 1993). It is typically found in Joshua Tree Woodland, Great Basin Scrub, and Mojavean Desert Scrub plant community types on well-drained soil, rocky gravelly mesas, slopes and outcrops, often of calcareous substrate (CNPS 2010). It has been reported to occur at elevations between 1,800 and 7,500 feet. It has no State or Federal listing status, but is included on CNPS List 4.2, a watch list.

Mojave fish-hook cactus has been reported in California in the following counties; Inyo, Kern, and San Bernardino (CNPS 2010). There is only one occurrence on record for Kern County, which is over 25 miles north of the Project area in Red Rock Canyon (CCH 2010).

Although suitable habitat for this species is present in the Project area within Creosote Bush Scrub and Joshua Tree Woodland, the species was not observed during botanical surveys conducted by GANDA during the flowering period, April to July. No species of this genus were observed during the surveys.

Piute Mountains jewel-flower (*Streptanthus cordatus* var. *piutensis*)

Piute Mountains jewel-flower is a 6-inch to 2.5-foot tall perennial herbaceous plant in the Mustard family (Brassicaceae) with clusters of thick obovate basal leaves, and clasping lanceolate upper leaves with few to many stalks of ½-inch long purple flowers that can have green or yellow sepals (Hickman 1993). Piute Mountains jewel-flower is known to occur in Broadleafed Upland Forests, Closed-Cone Coniferous Forest, and Pinyon and Juniper Woodland plant community types along roadbanks, cliffs, rock outcrops, and sometimes on metamorphic-red clay soils. Known occurrences range in elevation from 3,600 to 5,725 feet (CNPS 2010). It has no State or Federal listing status, but is considered a special-status plant by BLM and is included on CNPS List 1B.2, indicating that it is rare, threatened or endangered in California and elsewhere, and fairly endangered in California.

Piute Mountains jewel-flower is endemic to California and has only been reported in Kern County. The closest occurrence of Piute Mountains jewel-flower to the Project area is near Cache Peak 10 miles north of the Project area.

Limited suitable habitat for this species is present in the Project area within California Juniper Woodland. Piute Mountains jewel-flower was not observed during botanical surveys conducted by GANDA during the flowering period, May to July. No species of this genus were observed during the surveys.

4.3 California Desert Native Plants Act

Opuntia basilaris is covered under the CDNPA. Of the total 1094 *Opuntia basilaris* present onsite, 731 individuals were identified as common beavertail cactus, and 363 were identified as the State and Federal

listed Bakersfield cactus. Each cactus was mapped with a Trimble GeoXH GPS unit, but only the positions of Bakersfield cactus are presented in Figure 2.

The CDNPA-covered species, Joshua tree and silver cholla, occur throughout the site, but were not mapped pending finalization of the Project design. At the time of the surveys, the Project boundaries consisted of large continuous blocks of land, but the final Project will disturb only relatively narrow turbine corridors and access roads. Since permits and mitigation under the CDNPA will only be required for individual plants that are actually removed by the Project, CH2M HILL made the decision to restrict the mapping of the species covered under the act to the areas where actual disturbance will take place.

5.0 References

- Abrams, L. 1960. *Illustrated Flora of the Pacific States*. Stanford University Press, Palo Alto, California.
- Bowen, C.L. 1986. Segregation of *Opuntia treleasei* and *Opuntia treleasei* var. *kernii* from *Opuntia basilaris* var. *treleasei* (Cactaceae). Unpublished draft manuscript, 9 pp.
- California Department of Fish and Game (CDFG). Nov. 2009. Protocol for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. Sacramento, CA. <http://www.dfg.ca.gov/bdb/pdfs/guideplt.pdf>.
- California Department of Water Resources (CDWR). 2010. Precipitation/ Snow information for Tehachapi, CA (THH). Division of Flood Management. Available at: <http://cdec.water.ca.gov/cgiprogs/profile?s=THH&type=precip>
- California Native Plant Society (CNPS). 2001. Botanical survey guidelines of the California Native Plant Society. 9 December 1983 / Revised 2 June 2001.
- California Native Plant Society (CNPS). 2010. Inventory of rare and endangered plants of California (online edition, version 7.07c). Accessed at: <http://www.cnps.org/inventory>
- California Natural Diversity Database (CNDDB). 2010. RareFind3, version 3.0.5. Electronic database. Sacramento, California.
- Consortium of California Herbaria (CCH). Accessed June 2010. Accession results for various species. <http://ucjeps.berkeley.edu/consortium/>.
- Coulter, J.M. 1896. Preliminary revision of the North American species of Echinocactus, Cereus, and Opuntia. Contributions of the U.S. National Herbarium
- Endangered Species Recovery Program (ESRP), California State University, Stanislaus. 2006. Species account for *Opuntia basilaris* var. *treleasei*. Accessed March 5, 2010, at: <http://esrp.csustan.edu/speciesprofiles/profile.php?sp=opba>
- Flora of North America Editorial Committee, eds. 1993. Flora of North America North of Mexico. 15+ vols. New York and Oxford. Vol. 4. Accessed February 7, 2010 at: http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=242413847
- Garcia and Associates (GANDA). 2010. Alta Infill Wind Project Botanical Survey Report. July 2010.
- Gowen. 2008. New taxa following a reassessment of *Eriastrum sparsiflorum* (Polemoniaceae). Madroño Vol. 55: 82-87.

- Hickman, J., ed. 1993. The Jepson manual: Higher plants of California. University of California Press, Berkeley, CA.
- Mason, H. L. 1945. The genus *Eriastrum* and the influence of Bentham and Gray upon the problem of generic confusion in Polemoniaceae. *Madroño* 8:65-91.
- Munz, P. 1974. A flora of southern California. University of California Press, Berkeley, CA.
- Sycamore Environmental Consultants. 2010. Botanical Inventory Report for the Sun Creek Wind Project. July. In Draft.
- Twisselmann, E. C. 1967. A flora of Kern County, California. *The Waksman Journal of Biology* 25(1-2):1-395.
- U.S. Fish and Wildlife Service (USFWS). 1996a. Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants. USFWS, September 23, 1996. Available at: http://www.fws.gov/sacramento/es/documents/listed_plant_survey_guidelines.htm
- U.S. Fish and Wildlife Service (USFWS). 1996b. Endangered and Threatened Wildlife and Plants; Review of Plant and Animal Taxa that are Candidates for Listing as Endangered or Threatened Species; Notice of Review; Proposed Rule. *Federal Register* 61(40): 7596-7613.
- U.S. Fish and Wildlife Service (USFWS). 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Region 1, Portland, Oregon. Accessed March 10, 2010, at: http://ecos.fws.gov/docs/recovery_plans/1998/980930a.pdf
- U.S. Fish and Wildlife Service (USFWS). 2006. List of federal candidates for listing, available at: <http://ecos.fws.gov/endangered/candidates/index.html>
- U.S. Fish and Wildlife Service (USFWS). 2010. List of federally listed threatened & endangered species which may occur in Kern, Los Angeles, and San Bernardino counties, CA. USFWS, Ventura Fish and Wildlife Office, Ventura, CA, available at: <http://www.fws.gov/ventura/speciesinfo/>

Personal communications

- Cypher, E. California Department of Fish and Game. April, 8, 2010. Conversation with Ed Kentner and Susan Infalt regarding the identification of Bakersfield cactus.

Appendix A

Late-Season Vascular Plant Species Observed in the Sun Creek Wind Project Area

Scientific Name	Common Name
Dicots	
Asteraceae	Aster family
<i>Ambrosia acanthicarpa</i>	flatspine bur ragweed
<i>Artemisia dracunculus</i>	tarragon
<i>Chrysothamnus teretifolius</i>	needle leaved rabbitbrush
<i>Gutierrezia sarothrae</i>	broom snakeweed
<i>Lessingia filaginifolia</i>	California aster
<i>Stephanomeria pauciflora</i>	brownplume wirelettuce
Cactaceae	Cactus family
<i>Opuntia basilaris</i> var. <i>treleasei</i>	Bakersfield Cactus
Chenopodiaceae	Goosefoot family
<i>Salsola tragus</i>	prickly Russian thistle
Hydrophyllaceae	Waterleaf family
<i>Phacelia tanacetifolia</i>	lacy phacelia
Polemoniaceae	Phlox family
<i>Eriastrum sapphirinum</i>	sapphire woollystar
Polygonaceae	Buckwheat family
<i>Eriogonum baileyi</i> var. <i>baileyi</i>	Bailey's buckwheat
<i>Eriogonum brachyanthum</i>	shortflower buckwheat
<i>Eriogonum deflexum</i>	flatcrown buckwheat
<i>Eriogonum heermannii</i> var. <i>heermannii</i>	Heermann's buckwheat
<i>Eriogonum nidularium</i>	birdnest buckwheat
<i>Eriogonum plumatella</i>	yucca buckwheat
Scrophulariaceae	Figwort family
<i>Penstemon incertus</i>	Mojave beardtongue

Appendix B

Bakersfield Cactus Locations in the Sun Creek Wind Project Area

Label	Coordinates UTM NAD 83
OPBAT-1	11S 390941.748 3884614.614
OPBAT-2	11S 390942.972 3884617.494
OPBAT-3	11S 391007.491 3885061.185
OPBAT-4	11S 390838.689 3884523.231
OPBAT-5	11S 391120.775 3885795.779
OPBAT-6	11S 390847.104 3884971.215
OPBAT-7	11S 390779.722 3885118.273
OPBAT-8	11S 390411.746 3884211.733
OPBAT-9	11S 391059.31 3886193.711
OPBAT-10	11S 388371.916 3885808.608
OPBAT-11	11S 390589.225 3884908.798
OPBAT-12	11S 386974.589 3883920.276
OPBAT-13	11S 388218.705 3886859.229
OPBAT-14	11S 388231.63 3886823.61
OPBAT-15	11S 387951.569 3887302.033
OPBAT-16	11S 387947.814 3887467.173
OPBAT-17	11S 389211.651 3884720.159
OPBAT-18	11S 389209.165 3884718.84
OPBAT-19	11S 389380.628 3885210.953
OPBAT-20	11S 389360.716 3885192.02
OPBAT-21	11S 389228.123 3885084.465
OPBAT-22	11S 389273.304 3885079.612
OPBAT-23	11S 389438.074 3885354.988
OPBAT-24	11S 386872.443 3884208.433
OPBAT-25	11S 387000.167 3884373.834
OPBAT-26	11S 387055.038 3884412.307
OPBAT-27	11S 387242.83 3884714.659
OPBAT-28	11S 387252.675 3884735.765
OPBAT-29	11S 387006.134 3884467.994
OPBAT-30	11S 387005.456 3884465.11
OPBAT-31	11S 387000.626 3884449.587
OPBAT-32	11S 386940.996 3884428.894
OPBAT-33	11S 386902.27 3884347.466
OPBAT-34	11S 386914.532 3884336.219
OPBAT-35	11S 386882.481 3884346.551
OPBAT-36	11S 386879.213 3884361.213
OPBAT-37	11S 386878.525 3884366.239
OPBAT-38	11S 386663.298 3884282.393
OPBAT-39	11S 386806.508 3884440.146
OPBAT-40	11S 386809.164 3884445.054
OPBAT-41	11S 386801.426 3884484.559
OPBAT-42	11S 386809.748 3884470.626
OPBAT-43	11S 386811.856 3884458.356
OPBAT-44	11S 386817.346 3884454.983

Label	Coordinates UTM NAD 83
OPBAT-45	11S 386900.096 3884636.307
OPBAT-46	11S 386720.04 3884405.377
OPBAT-47	11S 386721.86 3884404.704
OPBAT-48	11S 386646.625 3884361.084
OPBAT-49	11S 386650.351 3884357.158
OPBAT-50	11S 386644.132 3884353.903
OPBAT-51	11S 386648.554 3884295.442
OPBAT-52	11S 386612.55 3884320.997
OPBAT-53	11S 386606.065 3884309.504
OPBAT-54	11S 386605.979 3884286.687
OPBAT-55	11S 386444.238 3884314.846
OPBAT-56	11S 386500.129 3884387.098
OPBAT-57	11S 386929.996 3883693.663
OPBAT-58	11S 386926.776 3883690.391
OPBAT-59	11S 386895.67 3883490.566
OPBAT-60	11S 386934.865 3883415.536
OPBAT-61	11S 386993.05 3883378.138
OPBAT-62	11S 386983.3 3883217.131
OPBAT-63	11S 386885.814 3883300.938
OPBAT-64	11S 386823.492 3883349.727
OPBAT-65	11S 386802.065 3883429.957
OPBAT-66	11S 386709.18 3883352.918
OPBAT-67	11S 386764.433 3883423.453
OPBAT-68	11S 386760.043 3883423.811
OPBAT-69	11S 386668.829 3883247.131
OPBAT-70	11S 386779.221 3883265.85
OPBAT-71	11S 386581.867 3883242.092
OPBAT-72	11S 386788.729 3883264.309
OPBAT-73	11S 386544.09 3883114.837
OPBAT-74	11S 386810.848 3883216.696
OPBAT-75	11S 386522.967 3883122.527
OPBAT-76	11S 386813.802 3883209.033
OPBAT-77	11S 386513.223 3883104.938
OPBAT-78	11S 386814.269 3883209.26
OPBAT-79	11S 386817.954 3883209.773
OPBAT-80	11S 386483.225 3883114.084
OPBAT-81	11S 386778.362 3883215.285
OPBAT-82	11S 386649.558 3883320.845
OPBAT-83	11S 386595.107 3883095.445
OPBAT-84	11S 386490.832 3883133.964
OPBAT-85	11S 386561.029 3883014.203
OPBAT-86	11S 386431.715 3882976.139
OPBAT-87	11S 386527.752 3883181.268
OPBAT-88	11S 386256.107 3882995.073

Label	Coordinates UTM NAD 83
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OPBAT-91	11S 386504.345 3883137.995
OPBAT-92	11S 386228.745 3882989.415
OPBAT-93	11S 386504.842 3883135.382
OPBAT-94	11S 386501.616 3883127.885
OPBAT-95	11S 386496.704 3883117.751
OPBAT-96	11S 386498.124 3883126.237
OPBAT-97	11S 386051.163 3882975.238
OPBAT-98	11S 386049.735 3883007.792
OPBAT-99	11S 386240.337 3882965.097
OPBAT-100	11S 386241.462 3882973.933
OPBAT-101	11S 386035.652 3883010.041
OPBAT-102	11S 386003.697 3883007.835
OPBAT-103	11S 385993.959 3882990.122
OPBAT-104	11S 385984.859 3882966.953
OPBAT-105	11S 386230.837 3883413.507
OPBAT-106	11S 386294.259 3883553.409
OPBAT-107	11S 386294.259 3883553.409
OPBAT-108	11S 386237.956 3883395.022
OPBAT-109	11S 386255.273 3883421.285
OPBAT-110	11S 386293.681 3883486.719
OPBAT-111	11S 386284.878 3883451.205
OPBAT-112	11S 386312.53 3883625.262
OPBAT-113	11S 386326.438 3883507.574
OPBAT-114	11S 386321.373 3883623.889
OPBAT-115	11S 386386.339 3883557.939
OPBAT-116	11S 386350.451 3883593.851
OPBAT-117	11S 386350.451 3883593.851
OPBAT-118	11S 386421.826 3883748.849
OPBAT-119	11S 386461.417 3883721.119
OPBAT-120	11S 386417.967 3883746.821
OPBAT-121	11S 386418.309 3883756.647
OPBAT-122	11S 386458.331 3883766.637
OPBAT-123	11S 386458.331 3883766.637
OPBAT-124	11S 386561.258 3883800.056
OPBAT-125	11S 386437.869 3883785.856
OPBAT-126	11S 386462.371 3883809.351
OPBAT-127	11S 386462.308 3883766.22
OPBAT-128	11S 386462.308 3883766.22
OPBAT-129	11S 386473.234 3883777.003
OPBAT-130	11S 386473.234 3883777.003
OPBAT-131	11S 386610.429 3883847.568
OPBAT-132	11S 386465.525 3883794.799

Label	Coordinates UTM NAD 83
OPBAT-133	11S 386465.525 3883794.799
OPBAT-134	11S 386462.734 3883797.752
OPBAT-135	11S 386462.734 3883797.752
OPBAT-136	11S 386626.444 3883836.495
OPBAT-137	11S 386593.364 3883860.635
OPBAT-138	11S 386482.262 3883807.886
OPBAT-139	11S 386482.262 3883807.886
OPBAT-140	11S 386631.649 3883839.567
OPBAT-141	11S 386485.294 3883812.677
OPBAT-142	11S 386485.294 3883812.677
OPBAT-143	11S 386633.279 3883839.094
OPBAT-144	11S 386474.911 3883839.208
OPBAT-145	11S 386498.627 3883815.469
OPBAT-146	11S 386498.627 3883815.469
OPBAT-147	11S 386687.579 3883958.265
OPBAT-148	11S 386496.438 3883811.215
OPBAT-149	11S 386496.438 3883811.215
OPBAT-150	11S 386570.873 3883895.044
OPBAT-151	11S 386570.873 3883895.044
OPBAT-152	11S 386707.831 3883957.645
OPBAT-153	11S 386571.771 3883897.992
OPBAT-154	11S 386571.771 3883897.992
OPBAT-155	11S 386588.846 3883900.662
OPBAT-156	11S 386588.846 3883900.662
OPBAT-157	11S 386643.832 3883962.17
OPBAT-158	11S 386643.832 3883962.17
OPBAT-159	11S 386676.305 3884024.7
OPBAT-160	11S 386676.305 3884024.7
OPBAT-161	11S 386766.641 3884063.011
OPBAT-162	11S 386677.398 3884048.71
OPBAT-163	11S 386791.886 3884108.101
OPBAT-164	11S 386779.301 3884053.065
OPBAT-165	11S 386842.524 3884094.074
OPBAT-166	11S 386744.262 3884109.196
OPBAT-167	11S 386744.461 3884107.938
OPBAT-168	11S 386848.156 3884129.186
OPBAT-169	11S 386804.928 3884152.703
OPBAT-170	11S 386862.699 3884132.674
OPBAT-171	11S 386810.194 3884159.723
OPBAT-172	11S 386798.371 3884180.387
OPBAT-173	11S 386798.371 3884180.387
OPBAT-174	11S 386728.195 3884132.172
OPBAT-175	11S 386676.32 3884233.22
OPBAT-176	11S 386724.346 3884229.114
OPBAT-177	11S 386724.346 3884229.114
OPBAT-178	11S 386657.848 3884187.287
OPBAT-179	11S 386773.091 3884193.106

Label	Coordinates UTM NAD 83
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OPBAT-181	11S 386722.225 3884174.604
OPBAT-182	11S 386656.662 3884134.747
OPBAT-183	11S 386656.662 3884134.747
OPBAT-184	11S 386581.316 3884092.394
OPBAT-185	11S 386629.576 3884136.32
OPBAT-186	11S 386629.576 3884136.32
OPBAT-187	11S 386591.089 3884057.351
OPBAT-188	11S 386591.089 3884057.351
OPBAT-189	11S 386549.44 3884076.414
OPBAT-190	11S 386683.607 3884130.743
OPBAT-191	11S 386560.529 3884043.933
OPBAT-192	11S 386560.529 3884043.933
OPBAT-193	11S 386684.434 3884102.337
OPBAT-194	11S 386574.092 3884016.817
OPBAT-195	11S 386607.79 3884162.265
OPBAT-196	11S 386388.152 3883881.081
OPBAT-197	11S 386375.391 3883842.227
OPBAT-198	11S 386490.698 3883879.707
OPBAT-199	11S 386378.504 3883811.178
OPBAT-200	11S 386378.504 3883811.178
OPBAT-201	11S 386355.863 3883770.259
OPBAT-202	11S 386355.863 3883770.259
OPBAT-203	11S 386488.252 3883867.495
OPBAT-204	11S 386490.084 3883864.51
OPBAT-205	11S 386557.755 3884137.02
OPBAT-206	11S 386466.861 3883850.374
OPBAT-207	11S 386276.713 3883690.014
OPBAT-208	11S 386455.807 3883837.486
OPBAT-209	11S 386042.787 3883626.939
OPBAT-210	11S 386042.787 3883626.939
OPBAT-211	11S 386533.829 3884098.519
OPBAT-212	11S 385988.746 3883532.751
OPBAT-213	11S 386367.237 3883738.166
OPBAT-214	11S 386527.221 3884108.191
OPBAT-215	11S 386047.578 3883633.131
OPBAT-216	11S 386047.578 3883633.131
OPBAT-217	11S 386037.763 3883558.072
OPBAT-218	11S 386051.025 3883624.093
OPBAT-219	11S 386051.025 3883624.093
OPBAT-220	11S 386045.264 3883569.226
OPBAT-221	11S 386511.71 3884050.453
OPBAT-222	11S 386050.486 3883619.432
OPBAT-223	11S 386050.486 3883619.432
OPBAT-224	11S 386036.212 3883580.904
OPBAT-225	11S 386263.967 3883627.745
OPBAT-226	11S 386053.89 3883623.716

Label	Coordinates UTM NAD 83
OPBAT-227	11S 386053.89 3883623.716
OPBAT-228	11S 386060.917 3883591.777
OPBAT-229	11S 386465.845 3883998.883
OPBAT-230	11S 386147.401 3883720.894
OPBAT-231	11S 386010.255 3883604.45
OPBAT-232	11S 386186.177 3883759.069
OPBAT-233	11S 386013.092 3883611.74
OPBAT-234	11S 386390.945 3883916.02
OPBAT-235	11S 386201.022 3883764.678
OPBAT-236	11S 386052.018 3883650.589
OPBAT-237	11S 386369.701 3883937.191
OPBAT-238	11S 386421.723 3884068.398
OPBAT-239	11S 386421.723 3884068.398
OPBAT-240	11S 386062.422 3883639.45
OPBAT-241	11S 386067.833 3883703.77
OPBAT-242	11S 386424.415 3884025.783
OPBAT-243	11S 386229.17 3883701.657
OPBAT-244	11S 386114.739 3883776.136
OPBAT-245	11S 386152.355 3883657.182
OPBAT-246	11S 386422.046 3884067.947
OPBAT-247	11S 386194.957 3883841.473
OPBAT-248	11S 386156.982 3883634.102
OPBAT-249	11S 386211.97 3883880.088
OPBAT-250	11S 386563 3884244.056
OPBAT-251	11S 386563 3884244.056
OPBAT-252	11S 386486.53 3884128.419
OPBAT-253	11S 386573.859 3884274.01
OPBAT-254	11S 386573.859 3884274.01
OPBAT-255	11S 386255.487 3883926.036
OPBAT-256	11S 386442.478 3884249.603
OPBAT-257	11S 386442.478 3884249.603
OPBAT-258	11S 386536.551 3884182.115
OPBAT-259	11S 386347.156 3884072.545
OPBAT-260	11S 386040.929 3883532.667
OPBAT-261	11S 386575.951 3884202.349
OPBAT-262	11S 386462.225 3884208.558
OPBAT-263	11S 386488.87 3884215.308
OPBAT-264	11S 386591.445 3884250.605
OPBAT-265	11S 386449.712 3884233.451
OPBAT-266	11S 386449.712 3884233.451
OPBAT-267	11S 386597.474 3884255.129
OPBAT-268	11S 386432.518 3884219.028
OPBAT-269	11S 386432.518 3884219.028
OPBAT-270	11S 386363.58 3884193.761
OPBAT-271	11S 386432.988 3884208.743
OPBAT-272	11S 386432.988 3884208.743
OPBAT-273	11S 386336.376 3884163.809

Label	Coordinates UTM NAD 83
OPBAT-274	11S 386422.506 3884176.493
OPBAT-275	11S 386048.052 3883541.327
OPBAT-276	11S 386117.269 3883946.029
OPBAT-277	11S 386129.061 3883642.565
OPBAT-278	11S 386331.56 3884103.67
OPBAT-279	11S 386331.56 3884103.67
OPBAT-280	11S 386366.324 3884097.432
OPBAT-281	11S 386125.526 3883649.474
OPBAT-282	11S 386004.881 3883765.209
OPBAT-283	11S 386286.944 3884038.002
OPBAT-284	11S 386151.68 3883656.72
OPBAT-285	11S 386009.382 3883751.635
OPBAT-286	11S 386012.373 3883725.508
OPBAT-287	11S 386012.373 3883725.508
OPBAT-288	11S 386290.372 3883998.07
OPBAT-289	11S 385986.454 3883723.166
OPBAT-290	11S 385986.454 3883723.166
OPBAT-291	11S 385985.163 3883718.076
OPBAT-292	11S 385985.163 3883718.076
OPBAT-293	11S 385960.663 3883754.92
OPBAT-294	11S 386207.41 3883733.131
OPBAT-295	11S 385996.337 3883702.927
OPBAT-296	11S 385996.337 3883702.927
OPBAT-297	11S 385956.22 3883752.689
OPBAT-298	11S 386033.493 3883739.402
OPBAT-299	11S 385957.803 3883629.751
OPBAT-300	11S 389032.604 3884877.036
OPBAT-301	11S 385741.669 3883227.897
OPBAT-302	11S 389285.668 3885180.759
OPBAT-303	11S 385588.42 3883034.054

Label	Coordinates UTM NAD 83
OPBAT-304	11S 385591.637 3882927.48
OPBAT-305	11S 385799.624 3883145.796
OPBAT-306	11S 386500.348 3884075.254
OPBAT-307	11S 386515.675 3884113.385
OPBAT-308	11S 386526.569 3884138.593
OPBAT-309	11S 386526.321 3884140.9
OPBAT-310	11S 385856.695 3883232.315
OPBAT-311	11S 386534.829 3884140.787
OPBAT-312	11S 386534.297 3884143.391
OPBAT-313	11S 386542.964 3884145.056
OPBAT-314	11S 386534.977 3884151.205
OPBAT-315	11S 386529.453 3884155.119
OPBAT-316	11S 385924.682 3883314.641
OPBAT-317	11S 385947.967 3883285.352
OPBAT-318	11S 386567.759 3884175.327
OPBAT-319	11S 385956.456 3883243.097
OPBAT-320	11S 386606.509 3884235.397
OPBAT-321	11S 386633.25 3884249.77
OPBAT-322	11S 385859.36 3883183.409
OPBAT-323	11S 385848.781 3883177.342
OPBAT-324	11S 386327.177 3884201.741
OPBAT-325	11S 385879.018 3883065.752
OPBAT-326	11S 385905.61 3883096.993
OPBAT-327	11S 385955.933 3883130.408
OPBAT-328	11S 385985.974 3883815.115
OPBAT-329	11S 385962.352 3883759.819
OPBAT-330	11S 385975.876 3883174.483
OPBAT-331	11S 385992.629 3883221.177
OPBAT-332	11S 386001.362 3883236.801
OPBAT-333	11S 385860.2 3883325.763

Label	Coordinates UTM NAD 83
OPBAT-334	11S 385934.757 3883076.368
OPBAT-335	11S 385787.38 3883265.329
OPBAT-336	11S 385683.41 3883113.044
OPBAT-337	11S 385592.296 3882937.928
OPBAT-338	11S 385594.767 3882941.343
OPBAT-339	11S 385589.763 3882956.429
OPBAT-340	11S 385605.456 3882962.248
OPBAT-341	11S 385728.762 3883133.944
OPBAT-342	11S 385781.372 3883159.679
OPBAT-343	11S 385852.301 3883251.94
OPBAT-344	11S 385853.323 3883270.778
OPBAT-345	11S 385855.36 3883303.241
OPBAT-346	11S 385971.952 3883274.319
OPBAT-347	11S 385963.434 3883259.044
OPBAT-348	11S 385932.889 3883237.67
OPBAT-349	11S 385804.298 3883101.57
OPBAT-350	11S 385886.407 3883115.325
OPBAT-351	11S 385903.534 3883113.928
OPBAT-352	11S 385918.931 3883145.359
OPBAT-353	11S 385913.702 3883150.592
OPBAT-354	11S 385914.059 3883179.872
OPBAT-355	11S 385960.803 3883218.374
OPBAT-356	11S 385978.191 3883233.076
OPBAT-357	11S 385992.592 3883243.981
OPBAT-358	11S 386017.456 3883274.944
OPBAT-359	11S 386022.463 3883278.846
OPBAT-360	11S 386067.522 3883200.23
OPBAT-361	11S 385983.224 3883058.361
OPBAT-362	11S 385926.856 3883029.507
OPBAT-363	11S 385996.749 3883095.024

Appendix C

Special-Status Plant Locations in the Sun Creek Wind Project Area

Map label	Common Name	Scientific name	Number observed	Coordinates UTM NAD 83
PEPR-1	Adobe yampah	<i>Perideridia pringlei</i>	10	11S 389430.994 3884989.162
PEPR-2	Adobe yampah	<i>Perideridia pringlei</i>	1	11S 389403.002 3884961.561
PEPR-3	Adobe yampah	<i>Perideridia pringlei</i>	5	11S 388970.277 3884514.502
PEPR-4	Adobe yampah	<i>Perideridia pringlei</i>	1	11S 389266.132 3885070.211
PEPR-5	Adobe yampah	<i>Perideridia pringlei</i>	1	11S 389116.312 3884914.368
PEPR-6	Adobe yampah	<i>Perideridia pringlei</i>	5	11S 389248.347 3885073.29

Appendix D

Representative Photos



Representative close-up photograph of spines on the Federally and State Endangered, CNPS List 1B.3 Bakersfield cactus (*Opuntia basilaris* var. *treleasei*).



Representative photograph of blooming *Opuntia basilaris*.



Representative close-up photograph of CNPS List 4.3 Adobe yampah (*Perideridia pringlei*).