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Biological Resources Report

Biological Resources Report for the Alta East Wind Project in Kern County, California

Prepared for

Alta Windpower Development, LLC

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Prepared by

CH2MHILL

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Executive Summary

The proposed Alta East Project is proposed to be located on the northern and southern sides of State Route (SR) 58 in southeastern Kern County, California. The proposed development is a wind energy facility, consisting of up to 300 megawatts of wind turbine generation, ancillary facilities, and supporting infrastructure. The proposed wind turbine generators would be located on land managed by Kern County and the Bureau of Land Management. Construction is anticipated to commence in the spring of 2012 or earlier, if all required permits and authorizations have been secured.

This Biological Resources Report presents the results of biological investigations in support of the proposed project including: vegetation community/wildlife habitat mapping, wetlands and waters delineation, other special-status species surveys, and Mohave ground squirrel habitat assessment. Survey reports for other resources including avian use, raptor nests, bat use, desert tortoise, and rare plants will be submitted separately.

The project site boundary supports eight distinct vegetation communities. Of these eight communities, the California Department of Fish and Game considers two to have special status: Joshua Tree Woodland and Scalebroom Scrub. Three wildlife habitat types were identified.

Two special-status species were identified during the surveys conducted for this report: American badger and loggerhead shrike.

Thirty-three potentially jurisdictional Waters of the State were identified during the surveys. No wetlands or Waters of the U.S. were identified.

1.0 Introduction

The purpose of this Biological Resources Report is to present the results of biological investigations in support of the proposed Alta East Wind Project (project). A Biological Survey Plan, which detailed the proposed field survey methods, was submitted to the California Department of Fish and Game (CDFG), the U.S. Fish and Wildlife Service (USFWS), and the Bureau of Land Management (BLM) on June 9, 2010. Minor comments from CDFG were received on August 18, 2010 (Sloan pers. comm., 2010). No comments were received from USFWS or the BLM.

summarized in this report include: vegetation community/wildlife habitat mapping, wetlands and waters delineation, other special-status species surveys, and Mohave ground squirrel habitat assessment. Survey reports for other resources including avian use, raptor nests, bat use, desert tortoise, and rare plants will be submitted separately. Following is a brief description of the proposed project and the location.

1.1 Project Description

The proposed development is a wind energy facility, consisting of up to 300 megawatts of wind turbine generation, ancillary facilities, and supporting infrastructure. Up to 120 wind turbine generators (WTGs) would be located on approximately 3,660 acres of land managed by Kern County and the BLM. Construction is anticipated to commence in the spring of 2012 or earlier, if all required permits and authorizations have been secured.

1.2 Project Location

The Project is proposed to be located on the northern and southern sides of State Route (SR) 58 in southeastern Kern County, California (Figure 1). The site boundary is approximately 3 miles northwest of the town of Mojave and approximately 11 miles east of the city of Tehachapi. The region is characterized by rolling hills supporting several wind farms. The elevation of the site ranges from approximately 3,200 above mean sea level (msl) in the southeastern portion of the site to 4,400 feet msl in the western portion of the site. Major transportation corridors in the region include Highway 14 (north-south) and Highway 58 (east-west), which intersect approximately 2.8 miles northeast of the site in the unincorporated town of Mojave. Larger cities in the region include Lancaster, approximately 27 miles to the southeast, and Palmdale, approximately 35 miles to the southeast. This region is known as the Tehachapi Wind Resource Area and has some of the best wind resources in California. Several wind farms already exist in this area and many more are currently undergoing the regulatory review process.

1.3 Project Setting

The site is located within the Mojave Desert Ecoregion (Miles and Goudy, 1997). The Mojave Desert Ecoregion is characterized by widely separated short mountain ranges in wide planes with isolated mountains, plateaus, alluvial fans, playas, basins, and dunes (Miles and

Goudy, 1997). Rainfall ranges from 4 to 9 inches annually and the mean annual temperature ranges from 60° F to 66° F. Runoff is rapid from mountains and alluvial fans and slow from basin-fill. All drainage is internal to closed basins in the Mojave Desert (Miles and Goudy, 1997). Streams are dry most of each year.

2.0 Pre-Field Investigation Literature Review

Prior to the field investigation, a review of existing databases, technical reports, and other resources was conducted to identify information about special-status species, habitats, and documented wetlands. The USFWS species list for eastern Kern County (USFWS, 2010) was reviewed for federally listed, candidate, and proposed species with potential to occur in the site boundary. The California Natural Diversity Database (CNDDB, 2010) was queried for information about specific occurrences of state and federally listed, candidate, proposed, and sensitive species within the vicinity of the site boundary. In addition, the California Native Plant Society On-line Inventory (CNPS, 2010) was queried for special-status plants that could occur on the site. The West Mojave Plan (BLM, 2005) was also reviewed for BLM species of concern. In addition, National Wetland Inventory (NWI, 2010) maps were reviewed for locations of potential wetlands. The review identified a number of special-status species, which are listed in Table 1. Locations of CNDDB records within a 10-mile radius of the site boundary are shown on Figure 2. No NWI-mapped wetlands were identified.

TABLE 1
Special-Status Species with Potential to Occur in the Site Boundary

Species	Federal Status[1]	State Status[2]/ CNPS List[3]
Mammals		
American badger *Taxidea taxus*	--	SC
Mohave ground squirrel *Spermophilus mohavensis*	--	T
Yellow-eared pocket mouse *Perognathus xanthonotus*	BLM	--
San Joaquin pocket mouse *Perognathus inornatus inornatus*	BLM	--
Tulare grasshopper mouse *Onychomys torridus tularensis*	BLM	SC
Pallid bat *Antrozous pallidus*	BLM	SC
Townsend's big-eared bat *Corynorhinus townsendii*	BLM	SC
California myotis *Myotis californicus*	BLM	--
California leaf-nosed bat *Macrotus californicus*	BLM	SC
Big brown bat *Eptesicus fuscus*	BLM	--

TABLE 1
Special-Status Species with Potential to Occur in the Site Boundary

Species	Federal Status[1]	State Status[2] / CNPS List[3]
Western pipistrelle *Pipistrellus hesperus*	BLM	--
Birds		
California condor *Gymnogyps californianus*	E	E, FP
Ferruginous hawk *Buteo regalis*	BLM	WL
Prairie falcon *Falco mexicanus*	BLM	WL
Burrowing owl *Athene cunicularia*	BLM	SC
Long-eared owl *Asio otus*	BLM	SC
Least Bell's vireo *Vireo bellii pusillus*	E	E
Loggerhead shrike *Lanius ludovicianus*	--	SC
Willow flycatcher *Empidonax traillii*	--	T
Southwestern willow flycatcher *Empidonax traillii extimus*	E	--
Amphibians and Reptiles		
Desert tortoise *Gopherus agassizii*	T	T
Coast horned lizard *Phrynosoma coronatum*	BLM	SC
Tehachapi slender salamander *Batrachoseps stebbinsi*	BLM / C	T
Plants		
Spanish needle onion *Allium shevockii*	BLM	--/1B
Darwin Mesa milk-vetch *Astragalus atratus*	BLM	--/1B
Geyer's milk-vetch *Astragalus geyeri*	BLM	--/1B
Curved-pod milk-vetch *Astragalus mohavensis var. hemigyrus*	BLM-	--/1A
Alkali mariposa lily *Calochortus striatus*	BLM	--/1B.2

TABLE 1
Special-Status Species with Potential to Occur in the Site Boundary

Species	Federal Status[1]	State Status[2]/ CNPS List[3]
White pygmy-poppy *Canbya candida*	--	--/4.2
Muir's raillardella [=tarplant] *Carlquistia muirii*	BLM	--/1B.3
Desert cymopterus *Cymopterus deserticola*	BLM	--/1B.2
Ripley's cymopterus *Cymopterus ripleyi* var. *saniculoides*	BLM	--/1B.2
July gold *Dedeckera eurekensis*	BLM	R/1B.3
Mojave tarplant *Deinandra mohavensis*	BLM	E/1B.3
Panamint daisy *Enciliopsis covillei*	BLM	--/1B.2
Hall's daisy *Erigeron aequifolius*	BLM	--/1B.3
Kern buckwheat *Eriogonum kennedyi* var. *pinicola*	BLM	--/1B.1
Reveal's buckwheat *Eriogonum contiguum*	BLM	--/2.3
Barstow woolly sunflower *Eriophyllum mohavense*	BLM	--/1B.2
Red Rock poppy *Eschscholzia minutiflora* ssp. *twisselmannii*	BLM	--/1B.2
Red Rock tarplant *Hemizonia arida*	BLM	R / 1B2
Owens Peak lomatium *Lomatium shevockii*	BLM	--/1B.3
Panamint Mountains lupine *Lupinus magnificus* ssp*. magnificus*	BLM	--/1B.2
Kelso Creek monkeyflower *Mimulus shevockii*	BLM	--/1B.2
Sweet-smelling monardella *Monardella beneolens*	BLM	--/1B.3
Flax-like (=Tehachapi) monardella *Monardella linoides* ssp. *oblonga*	BLM	--/1B.3
Bakersfield cactus *Opuntia basilaris* var. *treleasei*	E	E
Death Valley sandpaper plant *Petalonyx thurberi* ssp. *gilmanii*	BLM	--/1B.3

TABLE 1
Special-Status Species with Potential to Occur in the Site Boundary

Species	Federal Status[1]	State Status[2] / CNPS List[3]
Round-leaved phacelia *Phacelia mustelina*	BLM	--/1B.3
Charlotte's phacelia *Phacelia nashiana*	BLM	--/1B.2
Nine Mile Canyon phacelia *Phacelia novenmillensis*	BLM	--/1B.2
Piute Mountains jewel-flower *Streptanthus cordatus* ssp. *piutensis*	BLM	--/1B.2
Golden violet *Viola aurea*	--	--/2.2

Notes:

-- = No status

Regulatory Status

[1]Federal Status:

T Listed as Threatened by the USFWS
E Listed as Endangered by the USFWS
C Listed as being a Candidate Species by the USFWS
BLM Designated as BLM Sensitive

[2]State Status:

E Listed as Endangered by the CDFG
T Listed as Threatened by the CDFG
SC CDFG Species of Special Concern
SR CDFG Rare
FP CDFG Fully Protected Species
WL CDFG Watch List Species

[3]California Native Plant Society (CNPS) List:

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

3.0 Vegetation

CH2M HILL biologists conducted a survey of the vegetation communities within the project boundary from May 26 to 28, 2009 and June 21 to 25, 2010. Plants observed during the surveys are listed in Table 2.

TABLE 2
Plants Observed in the Site Boundary

Common Name	Scientific Name
Indian ricegrass	*Achnatherum hymenoides*
Desert needlegrass	*Achnatherum speciosum*
White bursage	*Ambrosia dumosa*
Fiddleneck	*Amsinckia tessellata*
Prickly poppy	*Argemone corymbosa*
Common saltbush	*Atriplex polycarpa*
Bractscale	*Atriplex serenana*
Red brome	*Bromus madritensis* ssp. *rubens*
Cheat grass	*Bromus tectorum*
Mojave suncup	*Camissonia brevipes*
Brown-eyed primrose	*Camissonia claviformis*
Brittlebush	*Encelia farinosa*
California ephedra	*Ephedra californica*
Interior goldenbush	*Ericameria linearifolia*
Rubber rabbitbrush	*Ericameria nauseosa*
Skeleton weed	*Eriogonum deflexum*
California buckwheat	*Eriogonum fasciculatum*
Desert trumpet	*Eriogonum inflatum*
Redstem filaree	*Erodium cicutarium*
Rattlesnake weed	*Euphorbia albomarginata*
Gilia	*Gilia* sp.
Hopsage	*Grayia spinosa*
Cheesebush	*Hymenoclea salsola*
Bladderpod	*Isomeris arborea*
California juniper	*Juniperus californica*
Utah juniper	*Juniperus osteosperma*

TABLE 2
Plants Observed in the Site Boundary

Common Name	Scientific Name
Creosote bush	*Larrea tridentata*
Desert alyssum	*Lepidium fremontii*
Scalebroom	*Lepidospartum squamatum*
Wolfberry	*Lycium andersonii*
Peach thorn	*Lycium cooperi*
Mojave aster	*Machaeranthera tortifolia*
Blazing star	*Mentzelia involucrata*
Beavertail cactus	*Opuntia basilaris*
Silver cholla	*Opuntia echinocarpa*
Penstemon	*Penstemon* sp.
Sandpaper plant	*Petalonyx thurberi*
Phacelia	*Phacelia* sp.
Desert bitterbrush	*Purshia tridentata* var. *glandulosa*
Big galletta	*Pleuraphis rigida*
Desert bitterbrush	*Purshia tridentata* var. *glandulosa*
Paper bag bush	*Salazaria mexicana*
Chia	*Salvia columbariae*
Purple sage	*Salvia dorrii*
Desert mallow	*Sphaeralcea ambigua*
Prince's plume	*Stanleya pinnata*
Tamarisk	*Tamarix* spp.
Mojave cottonthorn	*Tetradymia stenolepis*
Joshua tree	*Yucca brevifolia*
Mojave yucca	*Yucca schidigera*

Classification of the vegetation communities in the project study area are based on the Terrestrial Natural Community Types used by CDFG's Vegetation Classification and Mapping Program and Natural Diversity Database (CDFG, 2003). Descriptions of these types included observations from the field surveys as well as information from the Preliminary List of Terrestrial Natural Communities of California (Holland, 1986) and A Manual of California Vegetation (Sawyer and Keeler-Wolf, 1995).

CH2M HILL biologists identified eight general community types on the site: creosote bush scrub, brittlebush scrub, rabbitbrush scrub, California buckwheat scrub, scalebroom scrub,

desert almond scrub, California juniper woodland, and Joshua tree woodland. Substantial overlap in species composition occurs among the community types and the boundaries are generally diffused with gradual transitions between the mapped community types. Therefore, the vegetation boundaries shown on Figure 3 are intended to show the general distribution of the community types and provide approximate acreages of each type within the project study area (Table 3). The following sections provide a general description of the community types.

TABLE 3
Vegetation Communities and Approximate Acreage in the Site Boundary

Vegetation Community Type	Approximate Acreage
Creosote bush scrub	738
Brittlebush scrub	698
Rabbitbrush scrub	63
California buckwheat scrub	319
Scalebroom scrub	51
Desert almond scrub	10
California juniper woodland	558
Joshua tree woodland	736

3.1 Creosote Bush Scrub

Creosote bush scrub is a common and widespread community found throughout the Mojave Desert and is often the dominant plant community at elevations below 4,000 feet. This community is characterized by creosote bush (*Larrea tridentata*). Creosote bushes are generally widely spaced and range in height from 2 to 10 feet. Ground cover and associated species between the shrubs are highly variable depending on seasonal and local conditions such as moisture availability, soils, and level of disturbance.

In the project study area, this community is widespread along the eastern part of the site boundary, south of Cache Creek, on gentle slopes, and in low lying areas with relatively deep, sandy soils (Figure 3). Creosote shrubs are relatively dense in the central and southern areas and become more scattered to the north and east. Joshua trees (*Yucca brevifolia*) are relatively common but widely spaced and provide relatively low total cover. Diversity and abundance of associated species is variable across the project study area. Relatively common associated shrubs include California buckwheat (*Eriogonum fasciculatum*), California ephedra (*Ephedra californica*), box thorn (*Lyceum* spp.) and narrow-leaf goldenbush (*Ericameria linearifolia*). Disturbance tolerant species such as rubber rabbitbrush (*Ericameria nauseosa*), fiddleneck (*Amsinckia tessellata*), cheat grass (*Bromus tectorum*), red brome (*B. madritensis* ssp. *rubens*) and red-stem filaree (*Erodium cicutarium*) are common in many areas of this community. Despite the relatively high degree of disturbance, native forbs including penstemons (*Penstemon* spp.), desert trumpet (*Eriogonum inflatum*), primrose (*Camissonia*

spp.), purple sage (*Salvia dorrii*), and brittle spineflower (*Chorizanthe brevicornu*) are also present in many of the open areas between the shrubs. This community is similar to the Mojave Mixed Woody Scrub (34210) described by Holland (1986) and most closely resembles the Bladderpod-California ephedra-narrowleaf goldenbush series described by Sawyer and Keeler-Wolf (1995).

3.2 Brittlebush Series

The brittlebush series occurs over large areas within the site boundary (Figure 3). In this series, shrubs are typically less than 10 feet tall, habitat is more-or-less open, and scattered trees of less than 16 feet tall are present in some areas. In many areas, brittlebush is codominant with California buckwheat (*Eriogonum faciculatum*) and/or California ephedra (*Ephedra californica*). Other associated species on the site include California juniper (*Juniperus californica*), white bursage (*Ambrosia dumosa*), silver cholla (*Cylindropuntia echinocarpa*), and Mojave horsebrush (*Tetradymia stenolepis*). Native forbs present include penstemons, desert trumpet, primrose, and desert needlegrass (*Achnatherum speciosum*). Disturbance tolerant species such as those described above (creosote bush scrub) are common in some areas of this community. Soils are well drained and often quite rocky. This community is typically found on alluvial fans, bajadas, upland slopes, and in small washes. The virtual absence of creosote bush in the overstory may be attributable to the disturbance history of the stand (Thomas et al., 2004). It may also be attributable to the steep, rocky nature of the stand. Brittlebush rapidly colonizes burns and other disturbances, both in the south coastal scrub and desert vegetation (Abella, 2010).

3.3 Rabbitbrush Scrub

Small areas of the project site are covered by open stands of rubber rabbitbrush. The shrubs are generally small (less than about 3 feet tall) and well spaced, with a variety of native and non-native herbs covering the ground layer. Rubber rabbitbrush is the dominant shrub, but other shrubs and subshrubs, including interior goldenbush, occur at lower cover values. The associated herbaceous layer is dominated by non-native annual grasses (e.g., cheat grass and red brome) and red-stem filaree. Rabbitbrush scrub on the project site has relatively low (20 to 40 percent) shrub cover overall, with high cover consisting of grasses and herbs. Even so, rabbitbrush is the most visually dominant species, and it makes up the bulk of biomass in the mapped rabbitbrush scrub. Because of its open shrub structure and high herb cover, rabbitbrush scrub on the project site would be expected to support large numbers and diverse populations of reptiles, small mammals, and shrub land or grassland birds and, as a result, to be productive foraging habitat for raptors and mammalian mesopredators.

3.4 California Buckwheat Scrub

The California buckwheat scrub community is characterized by near complete dominance by California buckwheat and California ephedra (Figure 3). This community is found in a single patch along the western side of the site, in an area with shallow, rocky soils. Other low shrubs are present but occur much more widely scattered than in the mixed woody scrub type. Creosote bush (*Larrea tridentata*) and Joshua tree (*Yucca brevifolia*) are very uncommon to nearly absent. Common herbaceous species include Mojave aster (*Xylorhiza tortifolia*), gilia (*Gilia* sp.) and phacelia (*Phacelia* spp.). This community type most closely

resembles the Upper Sonoran subshrub scrub described by Holland (1986) and the California buckwheat series as described by Sawyer and Keeler-Wolf (1995).

3.5 Scalebroom Scrub

Scalebroom scrub is a shrub-dominated community restricted to floodplain habitats. Within the site, this community is found along ephemeral stream channels (Figure 3). Dominant species include scalebroom (*Lepidospartum squamatum*), cheesebush (*Hymenoclea salsola*), rubber rabbitbrush, and California buckwheat. Occasional Joshua trees or California junipers are found in this habitat. The adjacent alluvial benches grade into upland habitats. Scalebroom scrub is a special-status community (CDFG, 2003).

3.6 Desert Almond Scrub

A few small patches of desert transition shrub land along Cache Creek are dominated by spiny shrubs such as desert almond (*Prunus fasciculata*) and peach thorn (*Lycium cooperi*). Other characteristic species in these stands are rubber rabbitbrush and non-native cheat grass. Shrub cover is relatively high, and herb diversity is comparable to that of rabbitbrush scrub. On the project site, desert almond scrub stands seem to be tied to localized soil conditions.

3.7 California Juniper Woodland

California juniper occurs in large patches within the site, generally at the higher elevations (Figure 3). This open community consists of scattered California juniper and Utah juniper (*Juniperus osteosperma*) mixed with a low understory of California buckwheat scrub or brittlebush scrub. Occasional creosote bush shrubs are also present. Understory shrubs provide low to moderate cover.

3.8 Joshua Tree Woodland Classification

Joshua trees occur regularly throughout the site boundary. Within the proposed meteorological tower site, stands of Joshua tree woodland occur in a single patch in the northwestern portion of the site. In this area, Joshua trees are visually dominant, but the understory is composed of moderately dense, low-growing shrubs including white bursage, California buckwheat, California ephedra, brittlebush, and others. Joshua tree woodland is a special-status community (CDFG, 2003).

4.0 Wildlife Habitat

CH2M HILL biologists conducted wildlife habitat surveys on the site concurrently with vegetation community mapping, from May 26 to 28 and June 21 to 25, 2010. All wildlife species documented during the surveys are listed in Table 4. Wildlife habitat types are described below. Classification of the habitat types in the project study area was based on California Department of Forestry's A Guide to Wildlife Habitats of California (Mayer and Laudenslayer, 1998). Based on this classification system, the site boundary consists of three wildlife habitat types: desert scrub, juniper, and Joshua tree.

TABLE 4
Wildlife Species Identified in the Site Boundary

Common name	Scientific name	Observation type
Mammals		
Mule deer	*Odocoileus hemionus*	Scat
Coyote	*Canis latrans*	Scat, den
Fox	*Vulpes velox* / *Urocyon cinereoargenteus*	Den
American badger	*Taxidea taxus*	Den
Black-tailed jackrabbit	*Lepus californicus*	Direct, scat
Desert woodrat	*Neotoma lepida*	Nest
White-tailed antelope ground squirrel	*Ammospermophilus leucurus*	Direct, scat
Grasshopper mouse	*Onychomys* sp.	Burrows, tail drag marks
Birds		
American kestrel	*Falco sparverius*	Direct
Mourning dove	*Zenaida macroura*	Direct, nest
Hummingbird (unknown, female)	*Calypte spp.*	Direct
Western kingbird	*Tyrannus verticalis*	Direct
Loggerhead shrike	*Lanius ludovicianus*	Direct
Western scrub-jay	*Aphelocoma californica*	Direct
Horned lark	*Eremophila alpestris*	Direct
Cliff swallow	*Hirundo pyrrhonota*	Direct
Rock wren	*Salpinctes obsoletus*	Direct
Cactus wren	*Campylorhynchus brunneicapillus*	Direct
Western bluebird	*Sialia mexicana*	Direct

TABLE 4
Wildlife Species Identified in the Site Boundary

Common name	Scientific name	Observation type
Western tanager	*Piranga ludoviciana*	Direct
Northern mockingbird	*Mimus polyglottos*	Direct
Sage sparrow	*Amphispiza belli*	Direct
Lark sparrow	*Chondestes grammacus*	Direct
Black-throated sparrow	*Amphispiza bilineata*	Direct
European starling	*Sturnus vulgaris*	Direct
Scott's oriole	*Icterus parisorum*	Direct
Western meadowlark	*Sturnella neglecta*	Direct
House finch	*Carpodacus mexicanus*	Direct
Reptiles		
Southern Pacific rattlesnake	*Crotalus oreganus helleri*	Carcass
Side-blotched lizard	*Uta stansburiana*	Direct
Zebra-tailed lizard	*Callisaurus draconoides*	Direct
Sagebrush lizard	*Sceloporus graciosus*	Direct
Western whiptail lizard	*Aspidoscelis tigris*	Direct

4.1 Desert Scrub

Within the site, desert scrub habitat is frequently dominated by brittlebush with a variety of other scrubby species including California ephedra, white bursage, narrow-leaf goldenbush, and rabbitbrush. In disturbed examples of this habitat, the herbaceous layer is frequently dominated by fiddleneck, filaree, red brome, and cheat grass. Because of its open shrub structure and high herb cover, desert scrub on the site is expected to support large numbers and diverse populations of reptiles, small mammals, and shrub land or grassland birds and, as a result, to be productive foraging habitat for raptors and mammalian mesopredators. Wildlife observed in this habitat include black-tailed jackrabbit (*Lepus californicus*), American badger (*Taxidea taxus*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), mourning dove (*Zenaida macroura*), cactus wren (*Campylorhynchus brunneicapillus*), sage sparrow (*Amphispiza belli*), California horned lark (*Eremophila alpestris actia*), western meadowlark (*Sturnella neglecta*), western whiptail (*Cnemidophorous tigris*), and side-blotched lizard (*Uta stansburiana*).

4.2 Juniper

Juniper habitat occurs in the upper elevations of the site where it is generally open with patches of sometime dense trees (Figure 3). Typical species include California juniper, Utah juniper, brittlebush, California buckwheat, California ephedra, narrow-leaf goldenbush,

Cooper's boxthorn, and frequently, non-native weedy species such as cheat grass and red-stem filaree in the herbaceous layer. Habitat structure is similar in many respects to the underlying shrub communities. However, the added structure in this habitat provides additional nesting, roosting, and cover opportunities for wildlife. Juniper berries are an important winter food source for numerous bird species, and several mammal species feed on juniper foliage or berries, also in winter (Chambers et al., 1999). Wildlife observed in this habitat include fox (*Vulpes velox* or *Urocyon cinereoargenteus*), mourning dove (*Zenaida macroura*), sage sparrow (*Amphispiza belli*), California horned lark (*Eremophila alpestris actia*), western meadowlark (*Sturnella neglecta*), and western whiptail (*Cnemidophorous tigris*).

4.3 Joshua Tree

Joshua tree habitat exhibits a patchy distribution in the middle to lower elevations of the site, with an understory of desert scrub (Figure 3). Typical species include Joshua tree, Mojave yucca, brittlebush, California ephedra, narrow-leaf goldenbush, rubber rabbitbrush, creosote bush, and frequently, non-native weedy species such as cheat grass and red-stem filaree in the herbaceous layer. Joshua trees provide vertical habitat structure used as perch and nest sites for a variety of birds, and the sharp leaves offer shelter for smaller mammal, bird, and lizard species. Wildlife observed in this habitat include black-tailed jackrabbit (*Lepus californicus*), white-tailed antelope squirrel (*Ammospermophilus leucurus*), mourning dove (*Zenaida macroura*), cactus wren (*Campylorhynchus brunneicapillus*), sage sparrow (*Amphispiza belli*), California horned lark (*Eremophila alpestris actia*), western whiptail (*Cnemidophorous tigris*), and side-blotched lizard (*Uta stansburiana*).

5.0 Special-status Wildlife and Plant Surveys

5.1 Protocol Surveys

The following biological resource surveys are ongoing or have been completed. The complete results of these surveys will be provided to the BLM as attachments to the Plan of Development.

- Desert tortoise protocol surveys – Five live desert tortoise and one set of remains were identified in the eastern portion of the site boundary during surveys conducted in 2009 (Sundance, 2009).
- Burrowing owl protocol surveys – Two inactive burrowing owl burrows were documented in the eastern portion of the site boundary; no burrowing owls or signs of their presence were observed in the western portion of the site boundary (Phoenix, 2010a; 2010b).
- Avian use surveys – Overall, low use (WEST, 2010a)
- Aerial raptor nest surveys – Two active (one unsuccessful) golden eagle nests located within 10 miles of site boundary (WEST, 2010a).
- Acoustic bat surveys – Overall low use, no areas of concentration (WEST, 2010b).
- Rare plant surveys – Two special-status plants identified: Bakersfield cactus and Adobe yampah (GANDA, 2010; Sycamore, 2010).

5.2 Other Special-status Wildlife Surveys

5.2.1 Mohave Ground Squirrel, Yellow-eared Pocket Mouse, San Joaquin Pocket Mouse, and Tulare Grasshopper Mouse

5.2.1.1 Mohave ground squirrel

The Mohave ground squirrel is a state threatened species. Mohave ground squirrels occur in desert scrub habitats. Activity periods for this species vary, and little is known about their reproduction (Ingles, 1979). Their diet consists of seeds and vegetative parts of desert plants, including fruits of the Joshua tree. Because of the aridity and high temperatures of its environment, the Mohave ground squirrel is a diurnal species spending up to seven months underground (Vanherweg, 2010).

In 2006, Vanherweg conducted protocol trapping for Mohave ground squirrels in the eastern portion of the Alta East site boundary (Vanherweg, 2006). No ground squirrels were documented during the trapping surveys. The CNDDB reported three Mohave ground squirrel occurrences within 10 miles of the site boundary. The nearest of these is approximately 0.9 miles northeast of the project and dates from 1987 (CNDDB, 2010).

5.2.1.2 Yellow-eared pocket mouse

The yellow-eared pocket mouse is a California species of special concern. This species has been found in Joshua tree woodland, desert scrub, pinyon-juniper, mixed and montane chaparral, sagebrush, and bunchgrass habitats (Grinnell, 1912 and Williams et al., 1993). It occurs primarily in sandy soils with sparse to moderate shrub cover (Zeiner et al., 1990). Little is known about the ecology of the yellow-eared pocket mouse, but it is expected to be similar to the closely related Great Basin pocket mouse. The Great Basin pocket mouse generally reproduces between March and September, normally producing a single litter each year. The Great Basin pocket mouse forages on seeds and fruit of a variety of grasses, annuals, forbs, and shrubs. Other members of the species group hibernate during the winter, and it is presumed that this species does also (Zeiner et al., 1990).

The CNDDB had no records of this species within 10 miles of the site boundary (CNDDB, 2010).

5.2.1.3 San Joaquin pocket mouse

The San Joaquin pocket mouse is a California species of special concern. This nocturnal species occurs in dry, open grasslands or scrub areas (Grinnel, 1933) on fine-textured soils in the Central and Salinas valleys. San Joaquin pocket mice feed on seeds but also eat green vegetation and soft-bodied insects. They dig burrows for cover. The breeding season for the San Joaquin pocket mouse is from March to July, and the females have at least two litters of four to six young per litter (CDFG, 1995).

The CNDDB had no records of this species within 10 miles of the site boundary, and based on the typical range, this species is not expected to occur within or around the site boundary.

5.2.1.4 Tehachapi pocket mouse

The Tehachapi pocket mouse is a California species of special concern. The Tehachapi pocket mouse typically occupies native and non-native grasslands, Joshua tree woodland, pinyon-juniper woodland, yellow pine woodland, and oak savannah (Williams et al., 1993). It has also been captured in open pine forests at higher elevations (Huey, 1926), in chaparral and coastal sage communities at lower elevations (Best, 1994), and on rangeland and fallow grain fields (Sulentich, 1983). It constructs burrows in loose, sandy soils (Zeiner et al., 1990). Little information is available concerning the ecology of the Tehachapi pocket mouse. Other members of the species group are nocturnal granivores, foraging primarily on seeds of grasses, forbs, and annuals but also on leafy plant material and insects (Verts and Kirkland, 1988). Most other members of the genus exhibit seasonal hibernation (Verts and Kirkland, 1988), and it is expected that the Tehachapi subspecies does also.

The CNDDB had one of this species located approximately 2.6 miles from the site boundary and dating from 1960 (CNDDB, 2010).

5.2.1.5 Tulare grasshopper mouse

The Tulare grasshopper mouse is a California species of special concern. This species typically inhabits arid shrub land communities in hot, arid grassland and shrub land associations (Williams and Kilburn, 1992).The Tulare grasshopper mouse appears to be primarily nocturnal and is active year-round (Williams unpubl. observ. as cited in Bolster,

ed. 1998). Typical prey includes grasshoppers, crickets, caterpillars, moths, scorpions, and beetles (Bailey and Sperry, 1929), but other foods such as seeds, a variety of insects and spiders, reptiles, and salamanders may also be eaten (Horner et al., 1964 and McCarty, 1975). Although grasshopper mice may construct nests in burrows that they excavate, they typically build nests in burrows that have been abandoned by other rodents (Bailey and Sperry, 1929). Currently, Tulare grasshopper mice are known to occur along the western margin of the Tulare Basin, including western Kern County, Carrizo Plain Natural Area, along the Cuyama Valley side of the Caliente Mountains, San Luis Obispo County, and the Ciervo-Panoche Region in Fresno and San Benito Counties (Williams and Kilburn, 1992 and D.F. Williams unpubl. data as cited in Williams et al., 1998).

The CNDDB had one member of this species located approximately 2.6 miles from the site boundary and dating from 1973 (CNDDB, 2010).

A habitat assessment to determine suitability for Mohave ground squirrel, yellow-eared pocket mouse, San Joaquin pocket mouse, and Tulare grasshopper mouse was conducted of the Alta East site boundary on May 19, 2010 (Vanherweg, 2010). The assessment consisted of driving through the site boundary while recording areas with suitable habitat characteristics including geology, soils, and vegetation. It was concluded that the entire site boundary is suitable for these species.

Protocol surveys for special-status small mammals are planned for spring and summer 2011.

5.2.2 American Badger, Loggerhead Shrike, Tehachapi Slender Salamander, Coast Horned Lizard

General surveys for special-status species identified in Table 1, which were not already addressed by focused protocol surveys, were conducted concurrently with vegetation community, wildlife habitat, and the wetland/waters investigation from June 21 to 25, 2010. Biologists walked approximately 100-foot-wide transects of suitable habitats in search of these species, their nests/burrows, and other signs of their presence. Following are species' life history descriptions and occurrence information within and around the site boundary.

5.2.2.1 American badger

The American badger is a California species of special concern. The American badger is an uncommon, carnivorous mammal that occurs in open habitats with herbaceous or dry shrubs (Ahlborn, 2005). Badgers mainly feed on ground squirrels and pocket gophers but also eat other small mammals, eggs, and carrion (Ahlborn, 2005).

The site boundary contains potential habitat for the badger. One den attributed to this species was identified in the southwestern corner of the site boundary during the June 2010 surveys. No individual badgers, scat, tracks, or other signs were observed.

The CNDDB had one record of this species that overlaps the western portion of the site boundary.

5.2.2.2 Loggerhead shrike

The loggerhead shrike is a California species of special concern. This species inhabits open habitats where it uses shrubs, trees, posts, fences, and low utility lines for perches (Ehrlich et al., 1988).

The site boundary contains suitable habitat for this species. Five loggerhead shrikes were documented in the site boundary during the June 2010 surveys. One of the observations was of a pair, indicating the likely location of a breeding territory. No nests for this species were observed.

The CNDDB had two records of this species within 10 miles of the site boundary. The closest record is approximately 8.7 miles southeast of the site boundary.

5.2.2.3 Coast horned lizard

The California coast horned lizard is a California species of special concern that may occur in the site boundary. Horned lizards may be found in a variety of habitats, which include scrub land, grassland, coniferous forests, and broadleaf woodlands (Stebbins, 2003).

The site boundary contains suitable habitat for this species. One individual was documented during the June 2010 surveys in the eastern part of the site boundary in creosote bush habitat.

CNDDB had one record of this species located approximately 5.2 miles northwest of the site boundary (CNDDB, 2010).

5.2.2.4 Tehachapi slender salamander

The Tehachapi slender salamander is California state listed as threatened and occurs in the Piute and Tehachapi mountains in Kern County and in the Sequoia National Forest in Tulare County (BLM, n.d.). This species is typically found at elevations of 2,000 to 4,600 feet and occurs in moist canyons, ravines, and north-facing talus slopes in oak and mixed pine-oak woodlands (Zeiner et al., 1988 and Stebbins, 2003). Because Tehachapi slender salamanders require year-round moisture, they are often found under rocks and beneath rotting logs, especially in areas with considerable leaf litter (Stebbins, 2003).

No suitable habitat for the Tehachapi slender salamander exists in the site boundary, and this species was not observed.

The CNDDB had no record of this species within 10 miles of the site boundary (CNDDB, 2010).

6.0 Wetlands and Waters

An assessment of waters of the U.S. and the State was conducted concurrently with vegetation community and special-status species surveys from June 21 to 25, 2010. All drainages and washes considered potentially jurisdictional by CDFG, the California Regional Water Quality Control Board, and/or the U.S. Army Corps of Engineers (Corps) were identified. Methods followed those described in the Corp's 1987 Wetland Delineation Manual (Environmental Laboratory, 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Corps, 2008). Recorded data included UTM coordinates, bed width and substrate, channel depth, vegetation, and flow direction. Points were taken at 40 locations where ephemeral features were noted that may fall under CDFG's jurisdiction. Streams on the north side of Highway 58 flow into Cache Creek, which eventually flows into Koehn Lake, a playa, located approximately 20 miles northeast of the site boundary. Streams on the south side of Highway 58 generally flow from northwest to southeast across the site, eventually terminating on the eastern side of Highway 14. No streams or wetlands under the jurisdiction of the Corps were identified. Descriptions of each sampled stream location are provided below. Stream locations are depicted on Figure 3. Photos of each stream location are included as Appendix A.

6.1 ST-1 and ST-2

Points ST-1 and ST-2 represent an ephemeral feature shown as a blue line on the U.S. Geological Service (USGS) topographic quadrangle (quad). The bed of this channel is 5 to 10 feet wide and 3 to 6 feet deep, with a sandy substrate and one well-defined terrace in the center of the bed. The banks are steep but highly eroded in areas. Vegetation at the top of the bank is scalebroom scrub. Some annuals and shrubs have become established on the terraces, but there is no vegetation in the bed. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.2 ST-3

Point ST-3 was taken at an ephemeral feature. The bed of this channel is 3 to 5 feet wide and 4 to 6 feet deep, with a sandy substrate. The banks are well defined but sloping. Vegetation at the top of the bank is California juniper woodland. Some annuals and shrubs have become established at the edge of the bed, suggesting that this feature conveys very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.3 ST-4

Point ST-4 was taken at an ephemeral feature. The bed of this channel is 3 feet wide and 6 to 9 feet deep, with a silty/sandy/gravelly substrate. The banks are fairly unconsolidated and sloping. Vegetation at the top of the bank is California juniper woodland. Some annuals and shrubs have become established at the bottom of the bank. This feature appears to convey

very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.4 ST-5

Point ST-5 was taken at an ephemeral feature. The bed of this channel is 1 to 5 feet wide and 1.5 to 3 feet deep, with a sandy/gravelly/bedrock substrate. The banks are well-defined and v-shaped. Vegetation at the top of the bank is California juniper woodland. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.5 ST-6

Point ST-6 represents an ephemeral feature shown as a blue line on the USGS quad. The bed of this channel is 4 to 6 feet wide and 0.5 to 3 feet deep, with a sandy substrate. The banks are well-defined but sloping. Vegetation at the top of the bank is scalebroom scrub. Some annuals and shrubs have become established at the edge of the bed. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.6 ST-7

Point ST-7 represents an ephemeral feature shown as a blue line on the USGS quad. The bed of this channel is 6 to 10 feet wide and 3 to 4 inches deep, with a sandy/gravelly substrate and a few shallow terraces. The banks are well defined and sloping in places. Vegetation at the top of the bank is brittlebush scrub. Some annuals and shrubs have become established on the terraces, but otherwise the bed is devoid of vegetation. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.7 ST-8

Point ST-8 represents a narrow, incised, ephemeral feature. The bed of this channel is 2 to 3 feet wide and 5 to 6 feet deep, with a gravelly substrate. The banks are well defined and sloping in places. Vegetation at the top of the bank is California buckwheat scrub. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.8 ST-9

Point ST-9 represents a narrow, ephemeral feature shown as a blue line on the USGS quad. The bed of this channel is 2 to 4 feet wide and 1 to 3 feet deep, with a sandy/gravelly/bedrock substrate. The sloped banks are quite steep in places where granitic outcrops become bedrock. Vegetation at the top of the bank is California buckwheat scrub. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.9 ST-10

Point ST-10 is a large, ephemeral drainage in the northern part of the site boundary (Figure 3). This feature is shown as a blue line on the USGS quad. The bed of this channel is 60 feet wide and 5 to 8 feet deep and has a sandy/gravelly/cobbled substrate with several defined terraces. The banks are well defined but sloping. Vegetation at the top of the bank is primarily creosote bush scrub with scalebroom scrub on the terraces. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.10 ST-11

Point ST-11 is an ephemeral feature in the northern part of the site boundary. The bed of this feature is 5 to 8 feet wide and 1 foot deep and has a gravelly substrate supporting shrubs and herbaceous species. The banks are weakly defined. Vegetation at the top of the bank is California buckwheat scrub. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.11 ST-12

Point ST-12 is a shallow, ephemeral feature in the northern part of the site boundary. The bed of this feature is 10 to 15 feet wide and 4 to 6 inches deep, with terraces and a gravelly/cobbled substrate. Shrubs and herbaceous species are growing on the terraces. The banks are weakly defined. Vegetation at the top of the bank is California buckwheat scrub. No riparian vegetation is present.

6.12 ST-13

Point ST-13 is a shallow, ephemeral feature in the northern part of the site boundary. The bed of this feature is 10 to 15 feet wide and 4 to 6 inches deep, with terraces and a gravelly/cobbled substrate. Shrubs and herbaceous species are growing on the terraces. The banks are weakly defined. Vegetation at the top of the bank is California buckwheat scrub. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.13 ST-14

Point ST-14 is a generally narrow, ephemeral feature shown as a blue line on the USGS quad and is in the northern part of the site boundary. The bed of this feature is 1 to 7 feet wide and 1 to 4 feet deep, with terraces and a gravelly/cobbled substrate. The banks are steep, incised, and undercut in places. No vegetation is present in the bed. This feature appears to convey infrequent, flashy flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is scalebroom scrub. No riparian vegetation is present.

6.14 ST-15

Point ST-15 is an ephemeral feature in the northern part of the site boundary. The bed of this feature is 1to 7 feet wide and 1 to 4 feet deep, with a gravelly/cobbled substrate. The banks are steep, incised, and undercut in places. Vegetation at the top of the bank is scalebroom scrub. No vegetation exists in the bed. This feature appears to convey infrequent, flashy flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.15 ST-17

Point ST-17 is a shallow, ephemeral feature in the northern part of the site boundary. The bed of this feature is 7 to 12 feet wide and 2 to 4 feet deep, with terraces and a sandy/gravelly substrate. Shrubs and herbaceous species are growing on the terraces. The banks are sloped. Vegetation at the top of the bank is creosote bush scrub. Some annuals are growing in the bed. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.16 ST-18

Point ST-18 is an ephemeral feature in the northern part of the site boundary. The bed of this feature is 6 to 10 feet wide and 1 to 3 feet deep, with terraces and a sandy/gravelly substrate. Shrubs and herbaceous species are growing on the terraces. The banks are weakly defined and sloping. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is creosote bush scrub. No riparian vegetation is present.

6.17 ST-19

Point ST-19 is a wide, braided, ephemeral feature in the eastern portion of the site boundary shown as a blue line on the USGS quad. The bed of this feature is 40 to 50 feet wide and 4 to 6 feet deep, with terraces and a sandy/gravelly substrate. Shrubs and herbaceous species are growing on the terraces. This feature is used as a road, as evidenced by the presence of tire tracks in the bed. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is Joshua tree woodland with a creosote bush scrub understory. No riparian vegetation is present.

6.18 ST-20

Point ST-20 is a meandering, ephemeral feature in the eastern portion of the site boundary. The bed of this feature is 2 to 5 feet wide and 1 to 4 feet deep, with terraces and a silty substrate. Annuals are growing on the terraces. The banks are weakly defined. No vegetation is in the bed. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is creosote bush scrub. No riparian vegetation is present.

6.19 ST-21

Point ST-21 is a narrow, ephemeral feature shown as a blue line on the USGS quad and is in the southeastern part of the site boundary. The bed of this feature is 1to 3 feet wide and 1 to 5 feet deep and has a silty/gravelly substrate. The banks are incised with undercutting in places. Vegetation at the top of the bank is creosote bush scrub. No vegetation is in the bed. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.20 ST-22

Point ST-22 is an ephemeral feature in the eastern part of the site boundary. The bed of this feature is 2 to 4 feet wide and 1 to 5 feet deep and has a silty/gravelly substrate. Shrubs and herbaceous species are growing on the terraces. The banks range from very steep to deeply eroded. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is creosote bush scrub. No riparian vegetation is present.

6.21 ST-23

Point ST-23 is a shallow, ephemeral feature shown as a blue line on the USGS quad. The bed of this feature is 10 to 15 feet wide and 2 to 4 feet deep, with well developed terraces and a sandy/gravelly substrate. The banks are sloped. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is creosote bush scrub. No riparian vegetation is present. This feature is used as a road, as evidenced by tire tracks in the bed.

6.22 ST-24

Point ST-24 is an ephemeral feature in the eastern part of the site boundary. The bed of this feature is 5 to 10 feet wide and 0 to 8 feet deep, with terraces and a sandy/gravelly substrate. The terraces are vegetated with *Bromus* sp. The banks are steep and eroded. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank consists of non-native weedy species. No riparian vegetation is present. This feature is extensively disturbed by recreational off-road vehicle use.

6.23 ST-25

Point ST-25 is a narrow, shallow, ephemeral feature shown as a blue line on the USGS quad and is in the eastern part of the site boundary. The bed of this feature is 1 to 3 feet wide and 6 inches to 3 feet deep and has a sandy/gravelly substrate. The banks are weakly defined. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is Joshua tree woodland with a creosote bush scrub understory. No riparian vegetation is present.

6.24 ST-26

Point ST-26 is a shallow, ephemeral feature shown as a blue line on the USGS quad and is in the eastern part of the site boundary. The bed of this feature is 10 to 15 feet wide and 1 to 2 feet deep and has a gravelly/cobbled substrate. The banks are weakly defined. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is creosote bush scrub. No riparian vegetation is present.

6.25 ST-27

Point ST-27 is a very shallow, ephemeral feature shown as a blue line on the USGS quad. The bed of this feature is 10 to 15 feet wide and 0 to 3 feet deep and has a sandy/gravelly substrate. Annual and perennial herbs are growing in the bed. The banks are weakly defined. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is scalebroom scrub. No riparian vegetation is present.

6.26 ST-28

Point T-28 represents an ephemeral feature in the western part of the site boundary. The bed of this feature is 2 to 3 feet wide and 3 to 12 feet deep, with terraces and a sandy/gravelly/cobbled substrate. Shrubs and herbaceous species are growing on the terraces. The banks are steep and deeply incised. This feature appears to convey infrequent, flashy flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is scalebroom scrub. No riparian vegetation is present.

6.27 ST-29

Point ST-29 is an ephemeral feature shown as a blue line on the USGS quad. The bed of this feature is 12 to 20 feet wide and 2 to 5 feet deep, with a sandy/gravelly substrate and defined terraces. The banks are steep on the western side and highly eroded on the eastern side. Vegetation at the top of the bank is scalebroom scrub. Some annuals and shrubs have become established on the terraces, but there is no vegetation in the bed. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.28 ST-30

Point ST-30 is a narrow, ephemeral feature in the western part of the site boundary. The bed of this feature is 2 to 3 feet wide and 5 to 6 feet deep, with terraces and a gravelly/cobbled substrate. Annual herbs are growing on the terraces. The banks are deeply incised with sloping in places. This feature appears to convey infrequent, flashy flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is scalebroom scrub. No riparian vegetation is present.

6.29 ST-31

Point ST-31 is an ephemeral feature that is a tributary to ST-32 (described below). The bed of this feature is 2 to 5 feet wide and 3 to 7 feet deep, with terraces and a gravelly/cobbled substrate. Shrubs and herbaceous species are growing on the terraces. The banks are very steep and incised with sloping in places. This feature appears to convey very infrequent, flashy flow. Annual and perennial herbs are established in the bed. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is California buckwheat scrub. No riparian vegetation is present.

6.30 ST-32

Point ST-32 is an ephemeral feature shown as a blue line on the USGS quad in the western portion of the site boundary. The bed of this feature is 2 to 4 feet wide and 3 to 5 feet deep, with a sandy/gravelly/cobbled substrate. The banks are very steep and incised in places and deeply eroded in others. This feature appears to convey infrequent, flashy flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is scalebroom scrub. No riparian vegetation is present.

6.31 ST-33

Point ST-33 is a narrow, ephemeral feature in the western part of the site boundary. The bed of this feature is 1 to 1.5 feet wide and 3 to 7 feet deep and has a gravelly/cobbled substrate. The banks are deeply incised. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is scalebroom scrub. No riparian vegetation is present.

6.32 ST-35

Point ST-35 is an ephemeral feature in the western part of the site boundary. The bed of this feature is 2 to 4 feet wide and 1 to 3 feet deep and has a sandy/gravelly substrate. A few annual herbs are growing along the edge of the bed. The sandy banks are weakly defined and sloping. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is California buckwheat scrub. No riparian vegetation present.

6.33 ST-36

Point ST-36 is a shallow, ephemeral feature in the western part of the site boundary. The bed of this feature is 3 to 8 feet wide and has a silty/gravelly/cobbled substrate. The bed is devoid of vegetation. The banks are weakly defined, measuring only 0 to 1 foot high. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is California juniper woodland with a California buckwheat scrub understory. No riparian vegetation is present.

6.34 ST-37

Point ST-37 is a shallow, ephemeral feature in the western part of the site boundary. The bed of this feature is 1 to 4 feet wide and 1 to 3 feet deep and has a gravelly/cobbled substrate. A few annual herbs are growing in the bed. The banks are eroded and sloping. This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. Vegetation at the top of the bank is California juniper woodland with a California buckwheat scrub understory. No riparian vegetation is present.

6.35 ST-38

Point ST-38 is an ephemeral feature shown as a blue line on the USGS quad. The bed width is 2 to 4 feet with a silty/gravelly substrate. The bank height varies from 1 to 5 feet. The banks are sloped and eroded with some undercutting. Vegetation on the banks consists of Juniper woodland with a California buckwheat scrub understory. No vegetation is in the bed. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.36 ST-39

Point ST-39 is an ephemeral feature shown as a blue line on the USGS quad. The bed width is 3 to 4 feet with a sandy/gravelly substrate. The banks are shallow, measuring 12 to 18 inches high, which is consistent with the eroded, sloping profile. Vegetation at the top of the bank is scalebroom scrub, which grades into California juniper woodland and California buckwheat scrub. Terraces in the bed support perennial herbs and shrubs, but the bed is free of vegetation. This feature appears to convey infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.37 ST-40

Point ST-40 is an ephemeral feature shown as a blue line on the USGS quad and is in the southwestern part of the site boundary. The bed width is 5 to 7 feet with a sandy/gravelly substrate. The bank height varies from 1 to 9 feet. The banks are generally sloped and eroded but quite steep in some areas. Vegetation on the banks consists of brittlebush scrub. Extensive vegetation is in the bed of the channel (i.e., brittlebush and cheat grass). This feature appears to convey very infrequent flow. During heavy rain events, flow is from the northwest to the southeast. No riparian vegetation is present.

6.38 ST-41

Point ST-41 represents Cache Creek, a very wide, shallow, and ephemeral stream shown as a blue line on the USGS quad and paralleling Highway 58. The bed of this feature is approximately 110 feet wide and 10 feet deep, with terraces and a sandy/gravelly substrate. Despite the size of this feature, it is not a tributary to a perennial stream. Shrubs and herbaceous species are established on the terraces. The banks tend to be quite steep on the southern side and deeply eroded and sloping on the northern side. This feature appears to convey infrequent flow. During heavy rain events, flow is from the east to the west. Vegetation at the top of the bank is scalebroom scrub. No riparian vegetation is present.

Cache Creek flows east along Highway 58 and north past California Valley before apparently flowing into Koehn Lake, a playa, in the Fremont Valley.

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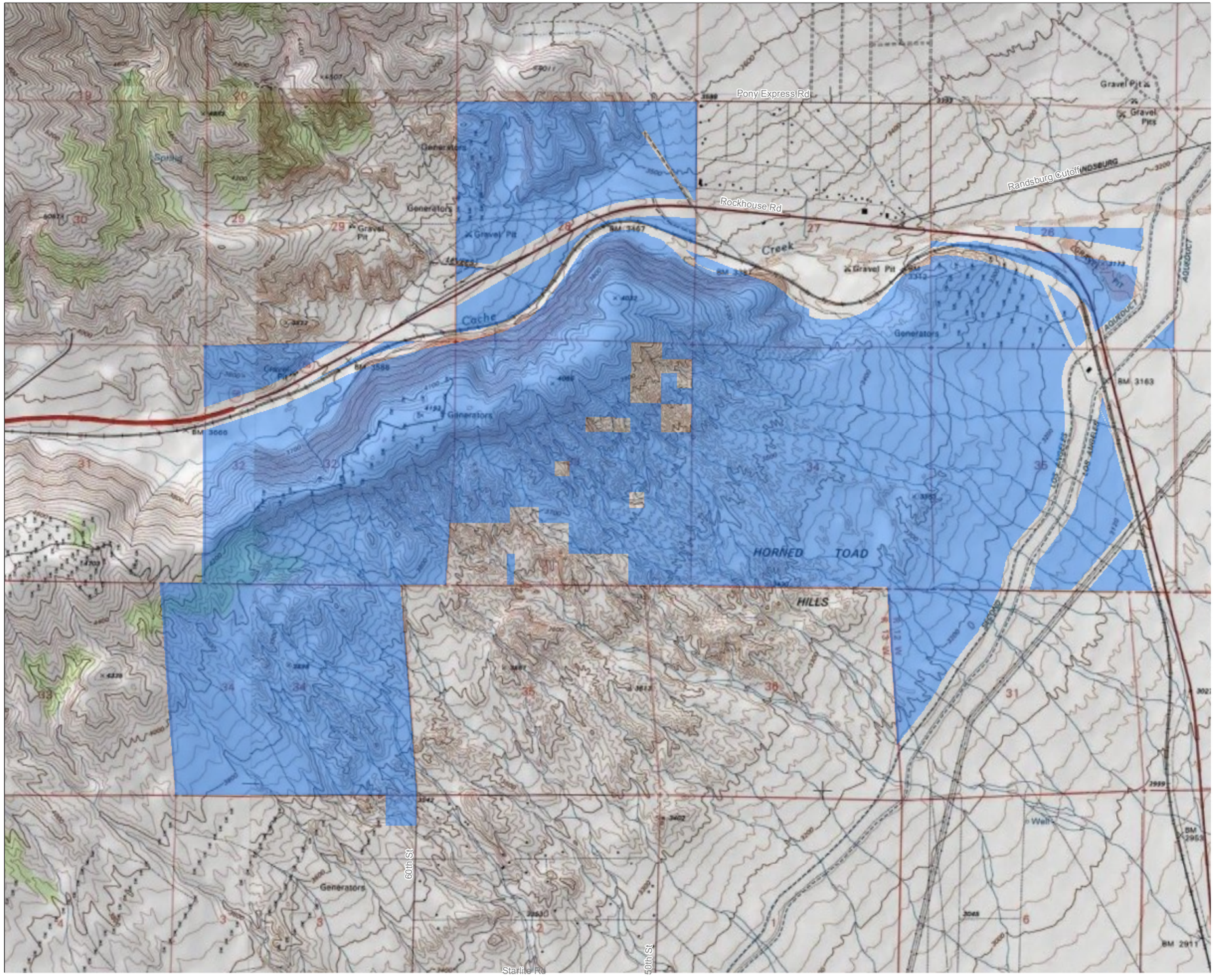
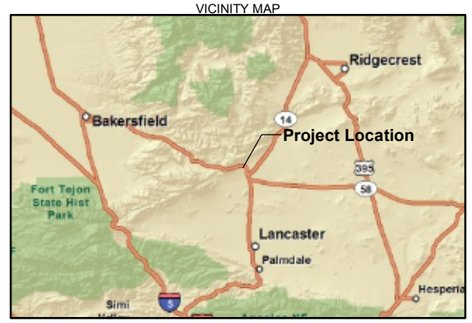
Figures



VICINITY MAP



LEGEND

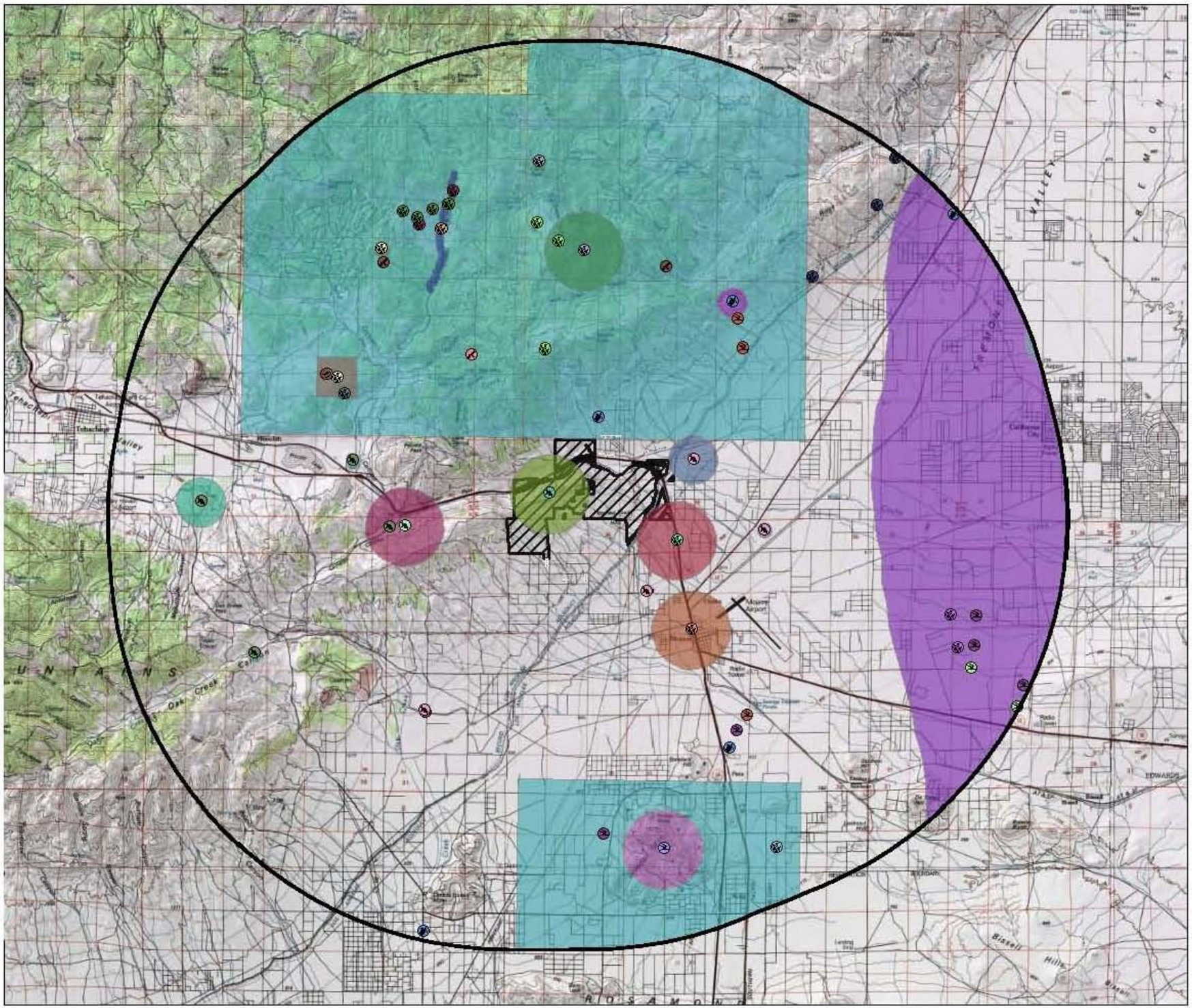
Project Area

N

0 1,000 2,000

Feet

FIGURE 1
Site Overview
Biological Resource Study
Alta East Wind Project
Alta Wind Energy Center Project



LEGEND

Project Area

10-Mile

CNDDB OCCURRENCES

Plants

- Barstow woolly sunflower
- Charlotte's phacelia
- Kern buckwheat
- Palmer's mariposa-lily
- Piute Mountains jewel-flower
- Spanish Needle onion
- Sjut's bristle moss
- calico monkeyflower
- golden violet
- pale-yellow layia
- sagebrush loeflingia
- white pygmy-poppy

Wildlife

- American badger
- California horned lark
- Mohave ground squirrel
- San Joaquin pocket mouse
- Tehachapi pocket mouse
- Townsend's big-eared bat
- Tulare grasshopper mouse
- burrowing owl
- coast horned lizard
- desert tortoise
- golden eagle
- loggerhead shrike
- prairie falcon

Plants

- Piute Mountains jewel-flower
- Sjut's bristle moss
- alkali mariposa-lily
- golden violet
- pale-yellow layia
- white pygmy-poppy

Wildlife

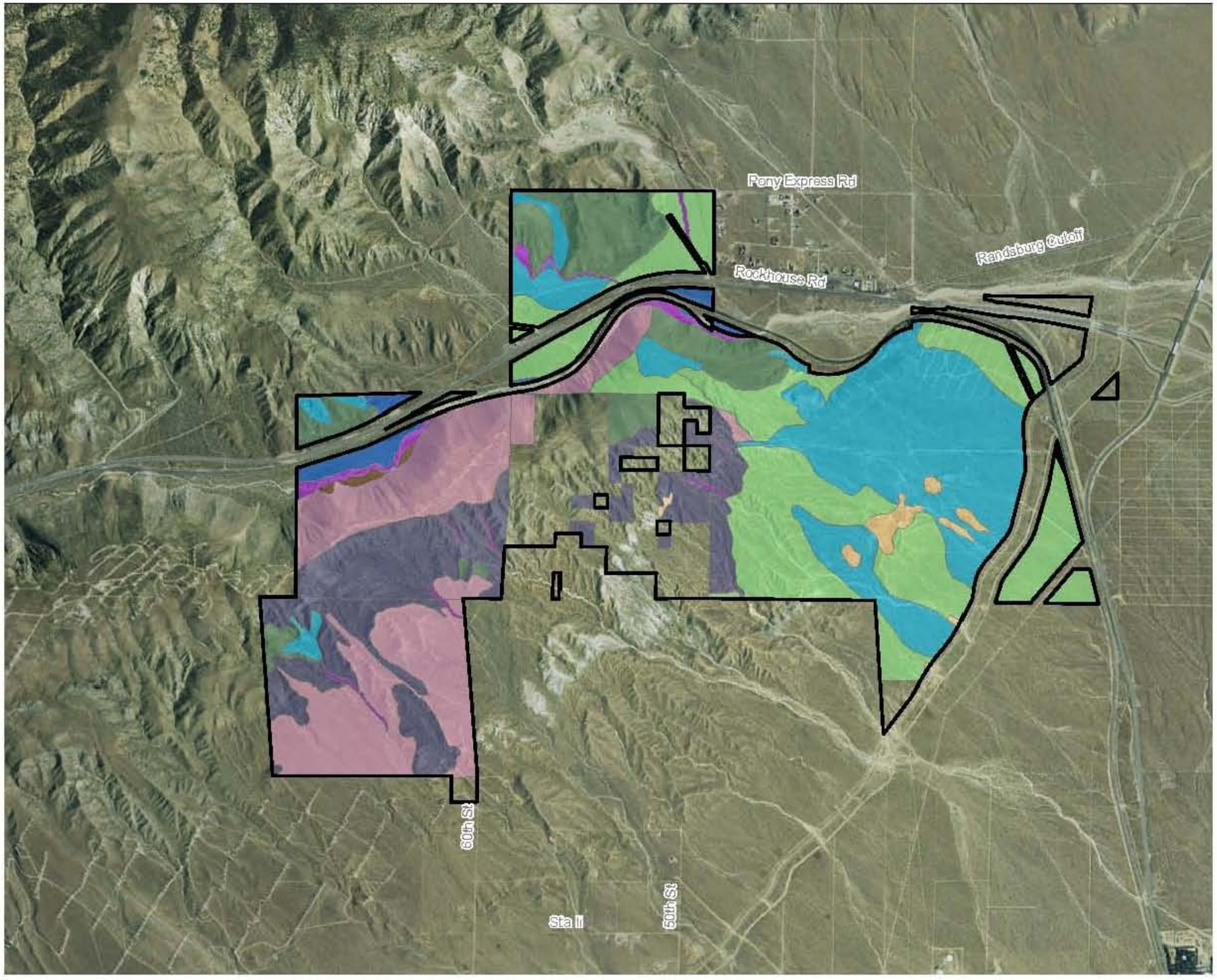
- American badger
- Mohave ground squirrel
- San Joaquin pocket mouse
- Tehachapi pocket mouse
- Townsend's big-eared bat
- Tulare grasshopper mouse
- desert tortoise
- prairie falcon

N

0 5,000 10,000 20,000 30,000

Feet

FIGURE 2
California Natural Diversity Database (CNDDB)
Biological Resource Study
Alta East Wind Project
Alta Wind Energy Center Project



LEGEND

Project Area

Vegetation Type

- Brittlebush Scrub (698.4 acres)
- California Buckwheat Scrub (319.2 acres)
- California Juniper Woodland (557.7 acres)
- Creosote Brush Scrub (737.9 acres)
- Desert Almond Scrub (9.6 acres)
- Disturbed/Ruderal (47.9 acres)
- Joshua Tree Woodland (736.2 acres)
- Rabbitbrush Scrub (62.5 acres)
- Scalebroom Scrub (51.4 acres)

N

0 750 1,500 3,000 4,500
Feet

FIGURE 3
Vegetation Communities
Biological Resource Study
Alta East Wind Project
Alta Wind Energy Center Project

CH2MHILL

V:\ZINFANDEL\PROJ\TERRAGENPOWER LLC\357639\ALTAWINDCENTER\2_GENERAL\GIS\357639ALTAWINDCENTER\MAPFILES\SUNCREEK20100VEG_COMS.MXD BKAHLER 5/20/2010 15:43:43

Appendix A
Site Photographs

Photo 1 Point ST-1 looking upstream (northwest).

Photo 2 Point St-3 looking downstream (southeast).

Photo 3 Point ST-4 looking downstream (southeast).

Photo 4 Point ST-5 looking downstream (SE).

Photo 5 Point ST-6 Looking downstream (SE).

Photo 6 Point ST-7 looking downstream (SE).

Photo 7 Point ST-8 looking downstream (SE).

Photo 8 Point ST-9 looking downstream (SE).

Photo 9 Point ST-10 looking downstream (SE).

Photo 10 Point ST-11 looking downstream (SE).

Photo 11 Point ST-12 looking downstream (SE).

Photo 12. Point ST-13 looking downstream (SE).

Photo 13. Point ST-14 looking downstream (SE).

Photo 14. Point ST15 looking downstream (SE).

Photo 15. Point ST-17 looking downstream (SE).

Photo 16. Point ST-18 looking downstream (SE).

Photo 17. Point ST-19 looking downstream (SE).

Photo 18. Point ST-20 looking downstream (SE).

Photo 19. Point ST-21 looking downstream (SE).

Photo 20. Point ST-22 looking downstream (SE).

Photo 21. Point ST-23 looking downstream (SE).

Photo 22. Point ST-24 looking downstream (SW).Z

Photo 23. Point ST-25 looking downstream (SE).

Photo 24. Point ST-26 looking downstream (SE).

Photo 25. Point ST-27 looking downstream (SE).

Photo 26. Point ST-28 looking downstream (SE).

Photo 27. Point ST-29 looking downstream (SE).

Photo 28. Point ST-30 looking downstream (SE).

Photo 29. Point ST-31 looking downstream (SE).

Photo 30. Point ST-32 looking downstream (SE).

Photo 31. Point ST-33 looking downstream (SE).

Photo 32. Point ST-35 looking downstream (SE).

Photo 33. Point ST-36 looking downstream (SE).

Photo 34. Point ST-37 looking downstream (SE).

Photo 35. Point ST-38 looking downstream (SE).

Photo 36. Point ST-39 looking downstream (SE).

Photo 37. Point ST-40 looking upstream (NW).

Photo 38. Point ST-41 (Cache Creek) looking downstream (east).