

3.5 Biological Resources

This section of the Final Environmental Impact Report addresses potential impacts of the proposed Eagle Mountain Pumped Storage Hydroelectric Project (Project) on biological resources. Biological resources include plant communities, wildlife communities, fishery resources, and sensitive species and sensitive habitats. Information provided in this section has been based on field reconnaissance, resource agency consultation (as noted), and from other reports and information available in the literature (as referenced throughout this document). Where applicable, a mitigation program intended to avoid or reduce potentially significant adverse environmental impacts is identified.

Please note: The treatment of biological resources is discussed in both down into Section 3.5 Biological Resources and Section 3.6 Threatened and Endangered Species.

3.5.1 Regulatory Setting

The following federal, state, and local laws and policies apply to the protection of biological resources. The proposed Project will be constructed and operated in conformance with all applicable federal, state, and local laws, ordinances, regulations, and standards (LORS).

Portions of the Project site are located on private lands which are not subject to federal or state land management requirements. Other portions of the Project site are located on federal land which is managed by the Bureau of Land Management (BLM) and therefore subject to the biological LORS of the agency.

3.5.1.1 Federal

The **Federal Endangered Species Act of 1973** (FESA) prohibits acts of disturbance that result in the “take” of threatened or endangered species. As defined by the FESA, “endangered” refers to any species that is in danger of extinction throughout all or a significant portion of its current range. The term “threatened” is applied to any species likely to become endangered within the foreseeable future throughout all or a significant portion of its current range. Take is defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” Violation of this section can result in penalties of up to \$50,000 and up to 1 year of imprisonment. Sections 7 and 10 of the FESA provide a method for permitting an action that may result in “incidental take” of a federally-listed species. Incidental take refers to take of a listed species that is incidental to, but not the primary purpose of, an otherwise lawful activity.

Incidental take is permitted under FESA Section 7 for projects on federal land or involving a federal action, while FESA Section 10 provides a method for permitting incidental take resulting from state or private action.

The Eagle Act, Title 50, Code of Federal Regulations (*Section 22.26*) authorizes the limited take of bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) under the Eagle Act, where the taking is associated with, but not the purpose of activity, and cannot practicably be avoided.

The Eagle Act, Title 50, Code of Federal Regulations (*Section 22.27*) provides for the intentional take of eagle nests where necessary to alleviate a safety hazard to people or eagles; necessary to ensure public health and safety; the nest prevents the use of a human-engineered structure or; the activity, or mitigation for the activity, will provide a net benefit to eagles. Only inactive nests would be allowed to be taken except in the case of safety emergencies.

Bald and Golden Eagle Protection Act (Title 16, United States Code Section 668) provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Act or regulations issued pursuant thereto and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for violation of the Act.

California Desert Conservation Area (CDCA) comprises one of two national conservation areas established by Congress at the time of the passage of the Federal Land and Policy Management Act (FLPMA). The FLPMA outlines how the BLM will manage public lands. Congress specifically provided guidance for the management of the CDCA and directed the development of the 1980 CDCA Plan.

Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan is the regional amendment to the CDCA Plan approved in 2002. NECO protects and conserves natural resources while simultaneously balancing human uses in the northern and eastern portion of the Colorado Desert.

Migratory Bird Treaty Act (MBTA) (Title 16, United States Code, Sections 703 through 711) makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 California Federal Regulations (CFR) Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). Most of the birds found in the study area are protected under the MBTA.

Executive Order 11312 Prevention and Control of Invasive Species (1999) directs all federal agencies to prevent and control introductions of invasive nonnative species in a cost-effective and environmentally sound manner to minimize their economic, ecological, and human health impacts. Executive Order 11312 established a national Invasive Species Council made up of federal agencies and departments and a supporting Invasive Species Advisory Committee composed of state, local, and private entities. The Invasive Species Council and Advisory

Committee oversees and facilitates implementation of the Executive Order, including preparation of a National Invasive Species Management Plan.

Desert Tortoise (Mojave Population) Recovery Plan (USFWS 1994a) and Draft Revised Recovery Plan (USFWS 2008a) describe a strategy for recovery and delisting of the desert tortoise.

Federal Noxious and Invasive Weed Laws. A number of federal laws pertain to noxious and invasive weeds, including the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990 as amended (16 U.S.C. 4701 et seq.), Lacey Act as amended (18 U.S.C. 42), Federal Plant Pest Act (7 U.S.C. 150aa et seq.), Federal Noxious Weed Act of 1974 as amended by the Food, Agriculture, Conservation and Trade Act of 1990 (Section 1453 “Management of Undesirable Plants on Federal Lands;” U.S.C. 2801 et seq.), the Carlson-Fogey Act of 1968 (Public Law 90-583), and Federal Executive Order 11312 released February 3, 1999. The BLM and other federal, state, and local agencies are also concerned about weed infestation and dispersal on private and public lands. The BLM and U.S. Department of Agriculture maintain lists of pest plants of economic or ecological concern.

3.5.1.2 State

The California Endangered Species Act (CESA) of 1984 (Fish and Game Code, Sections 2050 through 2098) protects California’s rare, threatened, and endangered species. The California Department of Fish and Wildlife (CDFW; formerly known as California Department of Fish and Game) has the responsibility for maintaining a list of endangered and threatened species (Fish and Game Code 2070). CDFW also maintains a list of “candidate species,” which are species that CDFW formally notices as being under review for addition to the list of endangered or threatened species. In addition, CDFW maintains lists of “species of special concern,” which serve as species “watch lists.” Pursuant to the requirements of CESA, an agency reviewing a proposed Project within its jurisdiction must determine whether any species that are state listed as endangered or threatened may be present in the Project study area and, if so, whether the proposed Project would have a potentially significant impact on any of these species. In addition, CDFW encourages informal consultation on any proposed project that may affect a species that is a candidate for state listing.

Project-related impacts to species listed as endangered or threatened under the CESA would be considered significant. State-listed species are fully protected under the mandates of the CESA. “Take” of protected species incidental to otherwise lawful management activities may be authorized under Section 2081 of the Fish and Game Code.

Protected furbearing mammals (California Code of Regulations [CCR], Title 14, Section 460) protects fisher, marten, river otter, desert kit fox, and red fox that may not be taken at any time.

California Code of Regulations (Title 14, Sections 670.2 and 670.5) lists the plants and animals of California that are declared rare, threatened, or endangered.

Fully Protected Species (Fish and Game Code, Sections 3511, 4700, 5050, and 5515) designates certain species as fully protected and prohibits the take of such species or their habitat unless for scientific purposes (*see* CCR Title 14, Section 670.7).

Nest or Eggs (Fish and Game Code Section 3503) protects California's birds by making it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird.

Birds of Prey (Fish and Game Code Section 3503.5) makes it unlawful to take, possess, or destroy any birds in the orders *Falconiformes* and *Strigiformes* or to take, possess, or destroy the nest or eggs of any such bird.

Migratory Birds (Fish and Game Code Section 3513) protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame birds.

Nongame mammals (Fish and Game Code Section 4150) makes it unlawful to take or possess any non-game mammal or parts thereof except as provided in the Fish and Game Code or in accordance with regulations adopted by the commission.

Significant Natural Areas (Fish and Game Code Section 1930 and following) designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitat.

California Environmental Quality Act (CEQA) Guidelines §15380 defines rare species more broadly than the definitions for species listed under the state and federal ESAs. Under Section 15830, species not protected through state or federal listing but nonetheless demonstrable as endangered or rare under CEQA should also receive consideration in environmental analyses. Included in this category are many plants considered rare by the California Native Plant Society (CNPS) and some animals on the CDFW's Special Animals List.

Streambed Alteration Agreement (Fish and Game Code Sections 1600 and following) regulates activities that may divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake in California designated by CDFW in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit. Impacts to vegetation and wildlife resulting from disturbances to waterways are also reviewed and regulated during the permitting process.

Native Plant Protection Act (Fish and Game Code Sections 1900-1913) prohibits the taking, possessing, or sale within the state of any plants with a state designation of rare, threatened, or

endangered, as defined by CDFW. Project impacts to these species are not considered significant unless the species are known to have a high potential to occur in the area of disturbance associated with construction of the Project.

California Desert Native Plants Act of 1981 (Food and Agricultural Code Section 80001 and following and Fish and Game Code Sections 1925-1926) protects non-listed California desert native plants from unlawful harvesting on both public and private lands in Imperial, Inyo, Kern, Los Angeles, Mono, Riverside, San Bernardino, and San Diego counties. Unless issued a valid permit, wood receipt, tag, and seal by the commissioner or sheriff, harvesting, transporting, selling, or possessing specific desert plants is prohibited.

Porter-Cologne Water Quality Control Act regulates discharges of waste and fill material to waters of the state, including isolated waters and wetlands.

3.5.1.3 Local

Riverside County General Plan provides protection and preservation of wildlife for the maintenance of the balance of nature.

Desert Renewable Energy Conservation Plan (Interim Planning). In addition to the federal, state, and local LORS summarized above, federal and state agencies are currently collaborating to establish joint policies and plans to expedite development of California's utility scale renewable energy projects. On October 12, 2009, the state of California and the U.S. Department of Interior (DOI) entered into a Memorandum of Understanding (MOU) on renewable energy, building on existing efforts by California and its federal partners to facilitate renewable energy development in the state. The MOU stems from California and DOI energy policy directives, and California's legislative mandate to reduce greenhouse gases to 1990 levels by 2020, and meet the goal of 33 percent of California's electricity production from renewable energy sources by 2020.

3.5.2 Environmental Setting

3.5.2.1 Plant Communities

The Project lies in the California portion of the western Sonoran Desert, commonly called the "Colorado Desert." This includes the area between the Colorado River Basin and the Coast Ranges south of the Little San Bernardino Mountains and the Mojave Desert. Rainfall amounts are low, approximately 2.8 to 5.4 inches per year (Turner and Brown, 1982). This is a warmer, wetter desert than the Mojave Desert and while substantial rainfall may occur in the winter months, there is a strong summer component, with warm, monsoonal rains emanating from the Gulf of Mexico. Winter temperatures average approximately 54 degrees Fahrenheit (°F) (Turner and Brown, 1982). Ambient, summer temperatures are extreme, commonly reaching 110+ °F for long periods and averaging approximately 90 °F. This period of extremely warm weather is also lengthy, extending from mid-spring through the fall. As a consequence of these climatic

conditions, the vegetation is highly drought-adapted, but contains subtropical elements. Where the summer rainfall is more reliable (extreme southeastern California), the arboreal community, largely consisting of microphyllous trees, is a primary component of the flora. But in general, species richness and density are relatively low due to the low rainfall and high temperatures, whether compared to more mesic environments or simply other regions of the Sonoran Desert.

The Project area can be described as rural. The population of the Eagle Mountain townsite was 1,890 at the time of the 1980 census, when the mine was still in full operation. At that time the town had 914 dwelling units as well as shopping, churches, and a school. A few years after the Eagle Mountain Mine ceased large-scale iron mining in 1983, a prison was opened in the town. That facility has since been closed. At this time, the school is still in use, and Kaiser has offices at the site. If the landfill is developed, the town is proposed to be redeveloped to house the landfill workers. Therefore, there is considerable past, present, and future human use of the Project area.

The Project extends from the edge of the Eagle Mountains into the adjacent Chuckwalla Valley, via a gently sloping bajada (Figure 3.5-1). The presence of coarse particles in the substrate varies and is largely dependent on the proximity of the Project to mountains and attendant hydrologic forces. Hence, boulders and cobbles are common in the upper bajadas and toeslopes with smaller particles downslope. Desert pavement is intermittently present along the bajada. Soils generally range from soft sand to coarse-sandy loams. Elevations range from approximately 500 to 1,300 feet.

Drainage patterns reflect the local topography. Along the broad bajada traversed by the Project's linear facilities, drainage is primarily characterized both by scattered, well-defined washes and numerous narrow runnels (sheet flow). The former are several-yards-wide, sandy to cobbly drainages that carry periodic runoff to a regional drainage. They are often incised, from a half to several yards deep, and vegetated along the banks by both shrubs and trees. By contrast, the numerous, shallow runnels are typically only a yard or less wide, one-to-a-few inches deep, and irregularly vegetated by locally common shrub species. Where there is greater runoff into these runnels, arboreal elements commonly seen in the larger washes are also present, albeit in a stunted form. These small channels often fail to either flow or provide through-flow to larger drainages. Sheet flow is evident across those bajadas where overland flows result from a combination of heavy precipitation, low permeability surface conditions, and local topography; the substrates there tend to be more gravelly than non-sheeting habitats due to the hydrologic transport of materials. East of the Project in the Chuckwalla Valley percolation into the plain or nearby playa occurs where slopes are negligible.

Two basic native plant communities (after Holland, 1986) are encountered by Project components: Sonoran Creosote Bush Scrub (*see* CNPS Element Code 33100) and Desert Dry Wash Woodland (*see* CNPS Element Code 62200) (Figure 3.5-1). The variations of Sonoran

Creosote Bush Scrub that occur in the Project vicinity are dominated by two species: creosote bush (*Larrea tridentata*) and burro bush (*Ambrosia dumosa*). However, common elements variously include brittlebush (*Encelia farinosa*), white rhatany (*Krameria grayi*), chollas (*Cylindropuntia echinocarpa*, *C. ramosissima*, and occasionally *C. bigelovii*), indigo bush (*Psoralea schottii*), and ocotillo (*Fouquieria splendens*). Desert Dry Wash Woodland in the Project area is characterized by broad plains of contiguous runnels (i.e., sheet flow) with ephemeral, well-defined washes. For the latter, the wash banks and islands are densely vegetated with aphyllous or microphyllous trees, primarily ironwood (*Olneya tesota*) and blue palo verde (*Cercidium floridum*), with occasional to common smoke tree (*Psoralea spinosus*) and catclaw (*Acacia greggii*). In the sheeting areas, the tree species typically found in arboreal drainages are, instead, aspect-dominant elements of the landscape and appear to be homogeneous across the landscape, forming a desert “woodland.” Other common wash associates – cheesebush (*Ambrosia [=Hymenoclea] salsola*), galleta grass (*Pleuraphis rigida*), desert lavender (*Hyptis emoryi*), desert peach (*Prunus fasciculatum*), chuparosa (*Justicia californica*), and jojoba (*Simmondsia chinensis*) grow in both the arboreal drainages as well as the less distinct runnels. (See Appendix B for a list of species observed in the Project area.)

The Central Project Area (i.e., the hydropower plant) is located in the edge of the Eagle Mountains and on the adjacent gently sloping bajada. The Biological Assessment (BA) (RECON, 1992) and EIS (County of Riverside and BLM, 1996) for the Eagle Mountain Landfill and Recycling Center identified Sonoran Creosote Bush Scrub in the Central Project Area, surrounding a substantial area heavily disturbed by prior iron ore mining activities and the related townsite. The Biological Assessment for the Eagle Mountain Pumped Storage Project prepared by FERC (2011) included a comparison of current aerial photos (2010) and aerial photos from 1997/1998. The FERC BA concluded that there do not appear to be any changes in the amount or quality of habitat in the disturbed areas of the Central Project Area since the 1992 RECON BA and 1992 BO were prepared on the Eagle Mountain Landfill Project. FERC concluded that, to a great extent, conditions on the Central Project Area are highly disturbed from past mining activities, and remain largely denuded of vegetation. However, the footprints of the Eagle Creek stream bed, areas adjacent to some access roads, and portions of the proposed footprint for the desalination area include previously undisturbed areas could provide habitat for desert tortoise. Based on current aerial photography and estimates of likely disturbance areas, FERC estimated 60.1 acres of surface disturbance would occur in areas potentially suitable for desert tortoise habitat (Table 3.5-1).

The transmission line extends south from the Central Project Area along the bajada and over one very low mountain near the Metropolitan Water District of Southern California’s substation (Figure 3.5-1). The northern approximately 2.8 miles segment is on private property (Kaiser Ventures, Inc.). A request to access the property to conduct field surveys was denied. However, it is evident from aerial photos and surveys that were completed along the accessible portions of the transmission line right-of-way (ROW) that approximately 1 mile of the ROW is in developed

land (i.e., disturbed by mining) and 5.3 miles is in Sonoran Creosote Bush Scrub. In the south, the ROW intersects 7.2 miles of Desert Dry Wash Woodland (Table 3.5-1).

The water pipeline runs southeast on the bajada from the Central Project Area, approximately 4.6 miles along the east edge of the Kaiser Road ROW (Figure 3.5-1). The vegetation community is a sheeting Sonoran Creosote Bush Scrub. The water line then travels parallel to an existing 161 kilovolt line ROW, initially through approximately 2 miles of native Sonoran Creosote Bush Scrub and then through abandoned jojoba (*Simmondsia chinensis*) fields to State Route 177. A dirt access road is present along this portion of the route between Kaiser Road and State Route 177. At State Route 177, the ROW splits, with one route travelling along State Route 177 (paved), mostly through agriculturally developed parcels, but also through approximately 0.3 miles of native Sonoran Creosote Bush Scrub. The other ROW fork travels southeast along an existing dirt road, primarily through abandoned jojoba, but also through approximately 1.2 miles of Sonoran Creosote Bush Scrub. The combined acreage of native Sonoran Creosote Bush Scrub intersected by the water pipeline ROWs is 20.9 acres (Table 3.5-1).

Table 3.5-1. Acreage of native habitats and developed areas on the Eagle Mountain Pumped Storage Project^{1,2,3}

Project Element	Total Acreage (acres)	Sonoran Creosote Bush Scrub (acres)	Desert Dry Wash Woodland (acres)	Developed (acres)
Central Project Area	1101.5	44.7	15.4	1,041.4
Transmission Line ROW	328 (13.5 miles)	129 (5.3 miles)	175 (7.2 miles)	24 (1 mile)
<i>Tower Footprint plus Construction Area</i>	4.5 – 5.6 (54-68 towers)	1.7-2.1 (21-26 towers)	2.4-3.0 (29-36 towers)	0.3-0.4 (4-5 towers)
<i>Access Road</i>	32.7	12.7	17.3	2.4
<i>Pulling/Tensioning Sites</i>	Currently Unknown (intended to fall within the T-Line ROW and substation site)	Currently Unknown	Currently Unknown	Currently Unknown
<i>Equipment Laydown Sites</i>	Currently Unknown	Assume 0	Assume 0	Assume 100%
Proposed Interconnection Collector Substation	25	25	0	0
Water Pipeline	55.6 (15.3 miles)	20.9 ⁴ (8.1 miles)	0 (0 miles)	34.7 ⁴ (7.2 miles)
TOTAL PROJECT ACREAGE	≥1219.8	≥105.0	≥35.1	≥1079.7

1. Acreage is calculated based on the following assumptions:

- Transmission Line
 - 13.5 mi long, 200-foot ROW
 - Approximately four towers per linear mile, with more in mountainous terrain (54 to 68 total)
 - Estimated access road width is 20 feet; towers will be immediately adjacent to the access road with no stub road. The communications cable will be within the access road footprint. (Note: This assumption may change when specific towers are engineered. In the 2 miles, small

- mountainous areas, stub roads are more likely to be present to accommodate both the access road and the necessary tower location.)
 - Total tower footprint (40 by 40 feet) plus construction area is 3600 ft² (60 by 60 feet)
 - Tensioning and pulling sites are unknown at this time, but are intended to be located within the transmission line ROW and substation site.
 - Equipment laydown areas will be on previously disturbed lands and/or overlapping with other Project acreage.
 - Water Pipeline and Wells
 - 15.3 mi long, 30-foot ROW, with access road included in the ROW
 - Along Kaiser Road, half of the ROW is in the disturbed (bladed) road shoulder
 - Three groundwater wells; total estimated disturbance footprint for each is 2500 ft² (50 by 50 feet)
2. All calculations of acreage on the Central Project Area are based GIS mapping performed by the Federal Energy Regulatory Commission in the Biological Assessment of the Eagle Mountain Pumped Storage Project, April 2011.
 3. Acreage based on acres of land disturbed, rather than total acreage within the Project boundary
 4. Part of the mileage was adjacent to Kaiser Road, where only half the width of the ROW was in native habitat. The other half was in the road shoulder.

3.5.2.2 Wildlife

Common wildlife species in this region are adapted to arid conditions and/or are migratory. In the habitats intersecting the Project, taxa include ungulates (hoofed animals), small and midsized mammals, birds, reptiles, and invertebrates. Common species include black-tailed hare (*Lepus californicus*), desert kit fox (*Vulpes macrotis*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), antelope ground squirrel (*Ammospermophilus leucurus*), Merriam's kangaroo rat (*Dipodomys merriami*), desert woodrat (*Neotoma lepida*), California leaf-nosed bat (*Macrotus californicus*), pallid bat (*Antrozous pallidus*), western pipistrelle (*Pipistrellus hesperus*), California myotis (*Myotis californicus*), black-throated sparrow (*Amphispiza bilenata*), California horned lark (*Eremophila alpestris actia*), ash-throated flycatcher (*Myiarchus cinerascens*), mourning dove (*Zenaida macroura*), cactus wren (*Campylorhynchus brunneicapillus*), lesser nighthawk (*Chordeiles acutipennis*), red-tailed hawk (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*). Common species specifically associated with drainages include desert mule deer (*Odocoileus hemionus*), verdin (*Auriparus flaviceps*), black-tailed gnatcatcher (*Polioptila melanura*), and phainopepla (*Phainopepla nitens*).

Side-blotched lizard (*Uta stansburiana*), desert iguana (*Dipsosaurus dorsalis*), zebra tailed lizard (*Callisaurus draconoides*), western whiptail (*Cnemidophorus tigris*), desert horned lizard (*Phrynosoma platyrhinos*), gopher snake (*Pituophis melanoleucus*), and coachwhip (*Masticophis flagellum*) are commonly occurring reptiles. Amphibians are comparatively uncommon in the Project area due to lack of permanent water and unreliable ephemeral water. However, a few species are known from the area and may breed in ephemeral water sources as they become available during summer or winter rains. The most common species are red-spotted toad (*Bufo punctatus*) and Pacific treefrog (*Pseudacris regilla*). Commonly occurring invertebrate taxa include spiders (Class: Arachnidae), beetles (Order: Coleoptera), true bugs (Order: Hemiptera), and wasps and ants (Order: Hymenoptera).

The Draft Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for the Eagle Mountain Landfill (County of Riverside and BLM, 1996) also identified several common species that inhabit the disturbed Kaiser Eagle Mountain Mine and surrounding mine shafts as a result of that disturbance. These include common raven (*Corvus corax*), house sparrow (*Passer domesticus*), house finch (*Carpodacus mexicanus*), European starling (*Sturnus vulgaris*) and several bat species that may now use the mine structures (but are generally intolerant of human activity) including California leaf-nosed bat, Townsend's big-eared bat [*Corynorhinus townsendii*], and pallid bat.

3.5.2.3 Fishery Resources

No perennial streams are present in the Project area. Ephemeral surface water features in the central Project site and vicinity are Eagle Creek, other smaller unnamed washes, and temporary pools at the bottom of mine pits that form from stormwater runoff. Ephemeral springs within the vicinity of the central Project site are Buzzard Spring, an unnamed spring near Buzzard Spring, and Eagle Tank Spring. All of these water sources are temporary and seasonal and are not capable of supporting fish.

The Colorado River Aqueduct (CRA) lies at the base of the Eagle Mountain Mine site. South of the central Project site is a forebay (part of the aqueduct system) at the Metropolitan Water District's Eagle Mountain Pumping Plant. The CRA diverts water from Lake Havasu on the Colorado River, and fish species that may be present in the aqueduct system are the same as those found in the lake and Colorado River. Most are introduced game species, including largemouth bass, striped bass, catfish (whitehead, bullhead, flathead, and channel), threadfin shad, green sunfish, black crappie, warmouth, and carp. Native species that may be present in the aqueduct are razorback sucker, bonytail chub, and desert pupfish. Although the CRA may support game fish, it is not accessible to the public.

No fish-related recreational opportunities exist in or near the Project area, and there are no plans to introduce fish into the Project reservoirs. The reservoirs will be unsuitable for aquatic species due to daily and weekly cycling up and down for power generation. While it is conceivable that fish could be accidentally introduced to the proposed reservoirs by birds that captured them in the open channel segment of the nearby aqueduct, it is not likely to occur in this desert environment and very unlikely that they would subsequently survive the operational conditions.

Both reservoirs would be drawn down on a daily cycle. The Upper Reservoir will fluctuate between elevation 2,343 feet and 2,485 feet. At minimum pool the surface area will be 48 acres, with 2,300 acre-feet of dead storage volume. At full pool the Upper Reservoir will be 191 acres surface area and volume of 20,000 acre-feet. The Lower Reservoir will fluctuate between elevation 925 and elevation 1,092 feet. At minimum pool, the Lower Reservoir will have a

surface area of 63 acres, and will contain 4,200 acre-feet of dead storage and at full pool will be 163 acres surface area and 21,900 acre-feet volume. Fish introduced to the reservoirs would be subjected to over 140 feet of vertical fluctuation on a daily basis. Entrainment rates would be high and fish habitat essentially non-existent.

3.5.2.4 Special-Status Species

Several species known to occur on or in the vicinity of the Project are accorded “special status” because of their recognized rarity or potential vulnerability to extinction (*see* Section 3.6 Threatened and Endangered Species for complete discussion). These species are listed in Table 3.5-2. Frequently, they have an inherently limited geographic range and/or limited habitat. Some are federal- or state-listed as Threatened or Endangered and receive specific protection as defined in one or both of the federal or state of California endangered species acts (FESA and CESA, respectively).

Candidate species for listing, species designated as “Species of Concern” or “Sensitive” by state or federal agencies, and plant species from Lists 1A, 1B, and 2 of the CNPS, (2009) Electronic Inventory of Rare and Endangered Vascular Plants of California (<http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>) are protected under CEQA by the statement that “a species not included in any listing in subsection (c) shall nevertheless be considered to be rare or endangered if the species can be shown to meet the criteria in subsection (b)” (CEQA Guidelines §15380, Subsection d). These species and listed species are referred to collectively as “special-status” species. While plant species from CNPS Lists 3 and 4 are “watchlist” species and generally not included for special-status consideration, several species from these two lists have been included by the Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan as species for which surveys must be completed where a project intersects the species ranges, as mapped in the NECO Plan. Therefore, these plants are also included in the list of special-status species for the Project. Similarly, any wildlife species listed by the NECO Plan as special-status, even if not otherwise considered special-status, is included¹. Finally, two species, burro deer and Nelson bighorn sheep, in the Project area receive protection and management as game species and burros are afforded protection by the Wild Free-Roaming Horses and Burros Act of 1971.

Special-status, game, and protected species that may occur or have been documented to occur in the Project vicinity and have potential to be affected by Project activities are listed in Table 3.5-2. The methods used to survey for these species is found in Section 3.5.3.1. (A summary of the habitat and range of each special-status species is presented in Appendix A.) This list only includes those species with the potential to be found in the area of Project components, not all special-status species that are regionally known. The list is based on (1) records of the California

¹ The only exception is LeConte’s thrasher, for which the BLM “Sensitive” and CDFW “SSC” designations refer to the San Joaquin Valley subspecies only (CNDDB 2009).

Natural Diversity Data Base (CDFW CNDDDB, 2008 and 2009) for special-status species that are known to occur in the Project survey area; (2) records from the CNPS for special-status plants (CNPS, 2009); (3) results from recent, relevant surveys and reviews (County of Riverside and BLM, 1996); (4) the NECO Plan (BLM and CDFW, 2002); and (5) known habitats in the area (i.e., experience of the consulting biologist). Recent, relevant biological surveys in the Project area include:

- *Eagle Mountain Pumped Storage Project* – 2008 and 2009 surveys *Southern California Edison Devers-Palo Verde 2* – Surveyed in 1985, 1987, 2002, 2003, 2004, 2005 and 2008 (see Blythe Energy LLC, 2004; EPG, 2004; Tetra Tech EC, Inc., 2005 and Karl, 2009 for recent data)
- *FPL Energy Blythe Energy Project Transmission Line* – 2004 (Blythe Energy LLC, 2004; EPG, 2004) and 2005 (Tetra Tech EC, Inc. 2005)
- *District Desert Southwest Transmission Line Project* – 2002 (BLM and IID, 2005) and 2005 (Tetra Tech EC, Inc. 2005)
- *Eagle Mountain Landfill and Recycling Center* – 1989-90 and 1995 EIS (County of Riverside and BLM, 1996), BA (RECON, 1992) and supporting studies for these Eagle Mountain Landfill permits

Four federally- or state-listed species are included in the list of special-status species with the potential to be on the Project site: Coachella Valley milkvetch, desert tortoise, American peregrine falcon, and Gila woodpecker. Please *see* Section 3.6 Threatened and Endangered Species, for full treatment of these species.

3.5.2.4.1 *Golden Eagle*

Golden eagle nest surveys were conducted by contractors for Eagle Crest Energy Company in spring 2010 (Section 12.15). The survey for the Eagle Mountain project area was conducted simultaneously with surveys for three nearby solar projects, over a total area encompassing 13 mountain ranges. A total of 34 golden eagle nests were located in the entire area (including areas surveyed for the nearby solar projects). These nests account for an estimated 14 golden eagle territories; six active, three possibly active (meaning they appeared to have a small amount of new material or the nest appeared to have been worked on this season), and five inactive. One incubating golden eagle was found in the northern part of the Coxcomb Mountains.

3.5.2.4.2 *Bighorn Sheep*

Nelson's Bighorn Sheep are listed by the BLM as a sensitive species. Nelson's, or desert bighorn, are widely distributed from the White Mountains in Mono County to the Chocolate Mountains in Imperial County (CNDDDB, 2001). They live most of the year close to the desert floor in canyons and rocky areas (Ingles, 1965). In summer, they move to better forage sites and

cooler conditions in the mountains. Migration routes can occur across valleys between mountain ranges.

BLM management of desert bighorn sheep is guided by the Mountain Sheep Ecosystem Management Strategy (EMS) in the 11 western states and Alaska (BLM, 1995). The EMS goal was to “ensure sufficient habitat quality and quantity to maintain and enhance viable big game populations, and to sustain identifiable economic and social contributions to the American people” (BLM and CDFW, 2002). This management plan identified eight metapopulations, two of which are included in the NECO Planning Area: the Southern Mojave and Sonoran metapopulations. These metapopulations were further divided into demes, or populations. The Project is located in the Southern Mojave Metapopulation, adjacent to the Eagle Mountain deme and near the Coxcomb deme (Figure 3.5-9).

NECO further provides for enhancing the viability of these populations through maintenance of genetic variability, providing connectivity between demes, enhancing and restoring habitat, augmenting depleted demes, and re-establishing demes. To this end, a Bighorn Sheep Wildlife Habitat Management Area (WHMA) has been established that encompasses and connects the Eagle Mountain and Coxcomb demes (BLM and CDFW, 2002) (Figure 3.5-9).

Bighorn scat were observed at the main project site during 1989-90 and 1995 surveys for the Eagle Mountain Landfill and Recycling Center and during related project surveys (County of Riverside and BLM, 1996). The bighorn sheep monitoring program for the Eagle Mountain Landfill project described a population of desert bighorn ewes that congregate in areas surrounding and near the Central Project Area in spring, fall, and winter. This document also describes migration patterns for this population between areas surrounding the Central Project Area and Buzzard Spring, located to the south of the project.

The report theorizes that the purpose of this migration is to access available water at Buzzard Spring during the hot summer months when water is less available within the habitat occupied during the other seasons.

Table 3.5-2. Special-status, game, and protected species that may occur or have been documented to occur in the Project vicinity and have potential to be affected by Project activities¹

Species	Status ²			Habitat	Likelihood of Occurrence on the Project Site
	Federal	State	CNPS ³		
Plants					
Abrams's Spurge (<i>Chamaesyce abramsiana</i>)	---	---	2	Sandy sites in Mojavean and Sonoran Desert scrubs in eastern California; 0-3000 ft	Possible along the water pipeline; fall flowering
Arizona Spurge (<i>Chamaesyce arizonica</i>)	---	---	2	Sandy flats in Sonoran Desert scrubs, below ~1000 ft	Possible along the water pipeline; not observed
Ayenia (<i>Ayenia compacta</i>)	---	---	2	Sand and gravelly washes and canyons in desert scrubs, 450-3600 ft	Possible around the Central Project Area; not observed on 2008 or 2009 surveys.
California Ditaxis (<i>Ditaxis serrata</i> var. <i>californica</i>)	---	---	3	Sonoran Creosote Bush Scrub from 100 to 3000 ft	Observed on both linear ROWs
Coachella Valley Milkvetch (<i>Astragalus lentiginosus</i> var. <i>cochellae</i>)	E BLM Sensitive	---	1B	Loose to soft sandy soils, often in disturbed sites; 100 to 2200 ft	Highly unlikely – little to no habitat on Project and local reported populations appear to have been misidentified ; not observed
Coue's Cassia (<i>Senna covesii</i>)	---	---	2	Dry washes and slopes in Sonoran Desert scrubs, 1000 to 3500 ft	Possible, especially on the bajadas and on/near the Central Project Area. Species not observed in 2008, 2009 or on related surveys
Crucifixion Thorn (<i>Castela emoryi</i>)	---	---	2	Mojavean and Sonoran Desert scrubs; typically associated with drainages	Observed on the water pipeline
Desert Sand-parsley (<i>Ammoselinum giganteum</i>)	---	---	2	Sonoran Desert scrub; known from only one site, near Hayfield Dry Lake, at 1200 ft; last seen in 1922	Highly unlikely; not observed
Desert Unicorn Plant (<i>Proboscidea altheaefolia</i>)	---	---	4	Sandy areas in Sonoran Desert scrubs throughout southeastern California, below 3300 ft.	Observed near the well sites; possible throughout the valley
Dwarf Germander (<i>Teucrium cubense depressum</i>)	---	---	2	Sandy soils, washes, playa edges, and fields in Sonoran Desert scrubs, below 1300 ft.	Possible on the water pipeline, in the valley; not observed
Flat-seeded Spurge (<i>Chamaesyce platysperma</i>)	BLM Sensitive	---	1B	Sandy flats and dunes in Sonoran Desert scrubs; below 350 ft; may be extirpated in CA	Possible on the water pipeline, in the valley; not observed
Foxtail Cactus	---	---	4	Primarily rocky substrates between 250	Observed on both linear ROWs

Species	Status ²			Habitat	Likelihood of Occurrence on the Project Site
	Federal	State	CNPS ³		
(<i>Coryphantha alversonii</i>)				and 4000 ft. Creosote Bush Scrub	
Glandular Ditaxis (<i>Ditaxis claryana</i>)	---	---	2	Sandy flats in Mojavean and Sonoran Creosote Bush scrubs in Imperial, San Bernardino, and Riverside counties; below 1500 ft	Possible; not observed
Harwood's Eriastrum (<i>Eriastrum harwoodii</i>)	---	---	1B	Range restricted to loose-sandy areas of eastern Riverside and San Bernardino counties	Unlikely due to lack of habitat; not observed
Harwood's Milkvetch (<i>Astragalus insularis</i> var. <i>harwoodii</i>)	---	---	2	Dunes, windblown sands, and soft sands below 1200 ft., east and south of Desert Center	Unlikely, no apparent habitat; not observed
Jackass Clover (<i>Wislizenia refracta</i> var. <i>refracta</i>)	---	---	2	Sandy washes, roadsides, flats; 1900 to 2700 ft	Unlikely due to lack of habitat; not observed
Las Animas Colubrina (<i>Colubrina californica</i>)	---	---	2	Sonoran Creosote Bush Scrub, <3300 ft	Possible on/near the Central Project Area; not observed in 2008, 2009, or on related surveys
Mesquite Neststraw (<i>Stylocline sonorensis</i>)	---	---	1A	Open sandy drainages; known from one site near Hayfield Spring; not seen since 1930 and presumed extinct in California	Highly unlikely; not observed
Orocopia Sage (<i>Saliva greatae</i>)	BLM Sensitive	---	1B	Mojavean and Sonoran Desert scrubs; gravelly/rocky bajadas, mostly near washes; below 3000 ft; only known west of the Project	Unlikely but possible near/on the Central Project Area. Reported south of the Central Project Area in earlier surveys but not observed in 2008 and 2009 on the linear ROWs
Sand Evening Primrose (<i>Camissonia arenaria</i>)	---	---	2	Sandy washes, rocky slopes, Sonoran desert scrubs; below 1500 ft	Possible; not observed
Slender Woolly-heads (<i>Nemacaulis denudate</i> var. <i>gracilis</i>)	---	---	2	Dunes in coastal and Sonoran Desert scrubs, primarily in the Coachella Valley; below 1500 ft	No habitat; not observed
Spearleaf (<i>Matelea parvifolia</i>)	---	---	2	Rocky ledges and slopes, 1000 to 6000 ft, in Mojave and Sonoran Desert scrubs	Possible habitat near/on the Central Project Area.
Spiny Abrojo (<i>Condalia globosa</i> var. <i>pubescens</i>)	---	---	4	Sonoran Creosote Bush Scrub; 500 to 3300 ft	Possible on/near the Central Project Area; not observed in 2008 or 2009 surveys

Species	Status ²			Habitat	Likelihood of Occurrence on the Project Site
	Federal	State	CNPS ³		
Wiggins' Cholla (<i>Opuntia wigginsii</i>)	---	---	3	Eastern Riverside County, under approximately 3000 ft	Observed in 2009 surveys
Invertebrates					
Cheeseweed Owlfly (<i>Oliarces clara</i>)	---	---	---	Creosote bush scrub in rocky areas	Possible, especially near the Central Project Area
Amphibians					
Couch's Spadefoot (<i>Scaphiopus couchii</i>)	BLM Sensitive	SSC	---	Various arid communities in extreme southeastern California and east, south	Possible on entire Project; no artificial impoundments
Reptiles					
Chuckwalla (<i>Sauromalus ater</i>)	---	---	---	Rock outcrops in Mojave and Sonoran desert scrubs	Observed; also likely on/near the Central Project Area
Desert Rosy Boa (<i>Charina trivirgata gracia</i>)	BLM Sensitive	---	---	Rocky uplands and canyons; often near stream courses	Possible, especially near the Central Project Area
Mojave Fringe-toed Lizard (<i>Uma scoparia</i>)	BLM Sensitive	SSC	---	Restricted to aeolian sandy habitats in the Mojave and northern Sonoran deserts	Does not occur on Project due to lack of habitat
Desert Tortoise (<i>Gopherus agassizii</i>)	T	T	---	Most desert habitats below approximately 5000 ft in elevation	Observed on both linear ROWs in 2008 and 2009. Likely on Central Project Area
Birds					
American Peregrine Falcon (<i>Falco peregrinus anatum</i>)	Delisted BCC	E Fully Protected	---	Dry, open country, including arid woodlands; nests in cliffs	Possible forager on site, may nest in adjacent mts.; not observed
Bendire's Thrasher (<i>Toxostoma bendirei</i>)	BCC BLM Sensitive	SSC	ABC:WL BCC	Arid to semi-arid brushy habitats, usually with yuccas, cholla, and trees	Possible; not observed
Burrowing Owl (<i>Athene cunicularia</i>)	BCC BLM Sensitive	SSC	---	Open, arid habitats	Observed on linear ROWs; possible on Central Project Area
Crissal Thrasher (<i>Toxostoma crissale</i>)	BCC	SSC	---	Dense mesquite and willows along desert streams and washes	Unlikely, but possible on Central Project Area only; no habitat on linear ROWs and not observed
Ferruginous Hawk (<i>Buteo regalis</i>)	BCC BLM Sensitive	WL	---	Arid, open country	Possible winter resident only
Gila Woodpecker (<i>Melanerpes uropygialis</i>)	BCC	E	---	Desert woodland habitats	Possible; not observed

Species	Status ²			Habitat	Likelihood of Occurrence on the Project Site
	Federal	State	CNPS ³		
Golden Eagle (<i>Aquila chrysaetos</i>)	BCC BLM Sensitive	WL Fully Protected	---	Open country; nests in large trees in open areas or cliffs	Possible forager on site, may nest in adjacent mts. Observed in 2008
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	BCC	SSC	---	Arid habitats with perches	Common; observed
Mountain Plover (<i>Charadrius montanus</i>)	BCC BLM Sensitive	SSC	ABC:WLBCC	Dry upland habitats, plains, bare fields	Unlikely, but possible winter visitor to agricultural fields in the Project area
Northern Harrier (<i>Circus cyaneus</i>)	---	SSC	---	Open habitats; nests in shrubby pen land and marshes	Possible; not observed
Prairie Falcon (<i>Falco mexicanus</i>)	BCC	WL	---	Dry, open country, including arid woodlands; nests in cliffs	Likely forager on site, may nest in adjacent mts.; not observed
Short-eared Owl (<i>Asio flammeus</i>)	---	SSC	ABC:WLBCC	Open habitats: marshes, fields; nests on ground and roosts on ground and low poles	Possible winter visitor
Sonoran Yellow Warbler (<i>Dendroica petechia sonorana</i>)	BCC	SSC	---	Riparian habitats, woodlands, orchards	Possible - no habitat on linear ROWs and habitat on the Central Project Area is unknown; observed at Kaiser townsite reservoir on previous survey; not observed during 2008 and 2009 surveys
Vermilion Flycatcher (<i>Pyrocephalus rubinus</i>)	---	SSC	---	Wooded and shrubby sites near water, especially with willows, mesquite and cottonwoods	Highly unlikely except as transient- no habitat on linear ROWs and unlikely to be habitat on the Central Project Area; not observed

Yellow-breasted Chat (<i>Icteria virens</i>)	---	SSC	---	Dense streamside thickets, willows; brushy hillsides and canyons	Highly unlikely except as transient- no habitat on linear ROWs and unlikely to be habitat on the Central Project Area; transients observed in area on two previous surveys, but not observed during 2008 and 2009 surveys
Mammals					
American Badger (<i>Taxidea taxus</i>)	---	SSC	---	Many habitats	Observed in 2008 and 2009
Big Free-tailed Bat (<i>Nyctinomops macrotis</i>)	---	SSC	WBWG:MH	Cliffs and rugged rocky habitats in arid, country, also riparian woodlands	Possible forager on site, especially near mountains
Burro Deer (<i>Odocoileus hemionus eremicus</i>)	---	Game Species	---	Arboreal and densely vegetated drainages	Observed
California Leaf-nosed Bat (<i>Macrotus californicus</i>)	BLM Sensitive	SSC	WBWG:H	Lowland desert associate, found in caves, mines, tunnels and old buildings	Known from Kaiser Mine so possible near or on the Central Project Area
Colorado Valley Woodrat (<i>Neotoma albigula venusta</i>)	---	---	---	Under mesquite in creosote bush scrub; southeastern California	Possible
Mountain Lion (<i>Puma concolor browni</i>)	---	SSC	---	Colorado River bottomlands	Possible
Nelson's Bighorn Sheep (<i>Ovis canadensis nelsoni</i>)	BLM Sensitive	Game Species	---	In mountains and adjacent valleys in desert Scrub	Likely near the Central Project Area; detected on previous surveys
Pallid Bat (<i>Antrozous pallidus</i>)	BLM Sensitive	SSC	WBWG:H	Several desert habitats	Possible, primarily near the Central Project Area; detected on previous surveys
Pocketed Free-tailed Bat (<i>Nyctinomops femorosaccus</i>)	---	SSC	WBWG:M	Variety of arid areas in pinyon-juniper woodland, desert scrubs, palm oases, drainages; always near rocky areas	Possible near the Central Project Area
Spotted Bat (<i>Euderma maculatum</i>)	BLM Sensitive	SSC	WBWG:H	Arid scrub and grasslands, to coniferous forests, roosts in cliffs, forages along streams and in woodlands, fields	Possible near the Central Project Area

Townsend's Big-eared Bat (<i>Corynorhinus townsendii</i>)	BLM Sensitive	SSC	WBWG:H	Broad habitat associations. Roosts in caves and manmade structures; feeds in trees	Possible, primarily near the Central Project Area and transmission line; detected on previous surveys
Western Mastiff Bat (<i>Eumops perotis californicus</i>)	BLM Sensitive	SSC	WBWG:H	Cliffs, trees, tunnels, buildings in desert scrub	Highly likely near/on the Central Project Area; detected on previous surveys

1 See text for method of determination of those species potentially in Project area.

2 Source: California Department of Fish and Game Wildlife and Habitat Data Analysis Branch, <http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/> (2009c)

Applicable Status codes are as follows:

E – Endangered

T – Threatened

Federal C – Candidate species for listing

Federal SC – Species of Special Concern (species whose conservation status may be of concern to the USFWS, but have no official status [formerly C2 species])

Federal BCC – USFWS Bird of Conservation Concern

State SSC – CDFW Species of Special Concern (species that appear to be vulnerable to extinction)

State Protected – Species that cannot be taken without a permit from the CDFW

State Fully Protected – Species that cannot be taken without authorization from the Fish and Game Commission

State WL – Watchlist species: species that are not SSC, state-listed, or fully protected (Note: State WL species have not been included in this table if they have no other protection designation.)

BLM Sensitive – Species under review, rare, with limited geographic range or habitat associations, or declining. BLM policy is to provide the same level of protection as USFWS candidate species

3 CNPS :

List 1A – Plants presumed extinct in California

List 1B – Plants rare and endangered in California and elsewhere

List 2 – Plants rare and endangered in California but more common elsewhere

List 3 – Plants about which CNPS needs more information

List 4 – Plants of limited distribution

(Note: CNPS lists 1 and 2 require CEQA consideration.)

ABC:WLBCC = American Bird Conservancy United States Watchlist of Birds of Conservation Concern

WBWG = Western Bat Working Group (<http://wbwg.org>)

H – High Priority – These species should be considered the highest priority for funding, planning, and conservation actions.

M – Medium Priority – These species warrant closer evaluation, more research, and conservation actions of both the species and the threats

L- Low Priority – Most of the existing data support stable populations of the species and that the potential for major changes in status is unlikely

Table 3.5-3. Results of Spring 2008 Surveys for Non-listed Special-Status Species.

Species	Type of Sign	Location (NAD 83)			Comments
		Zone	Easting	Northing	
<i>Plants</i>					
California Ditaxis	Individual	11 S	648100	3736724	
California Ditaxis	Individual	11 S	650953	3737484	
Foxtail Cactus	Individual	11 S	643894	3745288	
Foxtail Cactus	Individual	11 S	643877	3745261	
Foxtail Cactus	individuals	11 S	641619	3745840	
<i>Reptiles</i>					
Chuckwalla	Scat	11 S	646095	3742669	
<i>Birds</i>					
Black-tailed Gnatcatcher	Individual	11 S	653554	3734695	
Black-tailed Gnatcatcher	Individual	11 S	643705	3745413	
Black-tailed Gnatcatcher	Pair	11 S	642271	3745116	
Golden Eagle	Individual	11 S	656436	3733422	
Stick Nest (Raptor or Raven)		11 S	654147	3734217	In Tower 169095E
<i>Mammals</i>					
American Badger	Den	11 S	648076	3738819	

(Note: Only those 2008 observations that were in the area of the Project configuration are presented here due to relevance.)

Table 3.5-4. Results of spring 2009 Surveys for Non-listed Special-Status Species

Species	Type of Sign	Location (NAD 83)			Comments	
		Zone	Easting	Northing		
<i>Plants</i>						
California Ditaxis	5 individuals	11	S	643464	3734532	In swale with <i>Ditaxis neomexicana</i> and <i>Bromus tounefortii</i>
California Ditaxis	10 individuals	11	S	642898	3731526	
California Ditaxis	1 individual	11	S	641679	3730995	
California Ditaxis	Several individuals	11	S	643270	3732021	
California Ditaxis	~20 individuals	11	S	642256	3731712	Along 800 m of transect
California Ditaxis	10-20 individuals	11	S	643072	3731723	
California Ditaxis	1 individual	11	S	642603	3733273	
California Ditaxis	65 individuals	11	S	642959	3731237	Within ~50 m
California Ditaxis	1 individual	11	S	642612	3732902	
California Ditaxis	Several individuals	11	S	642917	3731448	
California Ditaxis	Several individuals	11	S	643109	3731805	
California Ditaxis	2 individuals	11	S	642603	3734104	
California Ditaxis	8 individuals	11	S	642928	3731379	
California Ditaxis	31 individuals	11	S	642891	3731423	Within ~50 m
California Ditaxis	5 individuals	11	S	643022	3734258	In 10 m radius
California Ditaxis	1 individual	11	S	644919	3732959	
California Ditaxis	1 individual	11	S	642705	3731475	
California Ditaxis	3 individuals	11	S	642859	3731410	
California Ditaxis	Many	11	S	642829	3731660	Along 1000 m of transect
California Ditaxis	15 individuals	11	S	642828	3731869	In 10 m radius
California Ditaxis	1 individual	11	S	642759	3731408	
California Ditaxis	6 individuals	11	S	642568	3731411	In 5 m radius
California Ditaxis	5 individuals	11	S	642713	3731265	
California Ditaxis	1 individual	11	S	642676	3731282	
California Ditaxis	4 individuals	11	S	643218	3732229	In 10 m area
California Ditaxis	37 individuals	11	S	642773	3731498	Between waypoints
California Ditaxis	2 individuals	11	S	644673	3732864	
California Ditaxis	1 individual	11	S	642572	3739484	
California Ditaxis	7 individuals	11	S	642589	3738993	Within 400 m along transect
California Ditaxis	2 individuals	11	S	644132	3742366	
California Ditaxis	11 individuals	11	S	642624	3737768	
California Ditaxis	1 individual	11	S	642955	3739755	
California Ditaxis	1 individual	11	S	643069	3741405	
California Ditaxis	2 individuals	11	S	642558	3741045	
California Ditaxis	3 individuals	11	S	646678	3742974	
California Ditaxis	50+ individuals	11	S	643214	3732072	
California Ditaxis	1 individual	11	S	643155	3731989	
California Ditaxis	1 individual	11	S	642823	3731444	
California Ditaxis	15 individuals	11	S	642873	3731587	Within 100 m
California Ditaxis	18 individuals	11	S	643161	3732052	Within 18 m
California Ditaxis	150+ individuals	11	S	643488	3732276	
California Ditaxis	12+ individuals	11	S	643309	3731898	
California Ditaxis	12+ individuals	11	S	643337	3731815	

Species	Type of Sign	Location (NAD 83)			Comments	
		Zone	Easting	Northing		
California Ditaxis	50+ individuals	11	S	643286	3731665	
California Ditaxis	5+ individuals	11	S	643789	3732035	
California Ditaxis	50+ individuals	11	S	643832	3731405	
California Ditaxis	1 individual	11	S	647644	3742050	
Crucifixion Thorn	1 individual	11	S	648552	3740059	
Crucifixion Thorn	1 individual	11	S	648410	3740229	
Crucifixion Thorn	1 individual	11	S	648803	3739844	
Crucifixion Thorn	6 individuals	11	S	648466	3740002	Within 20 m radius
Crucifixion Thorn	3 individuals	11	S	654228	3734400	Within 40 m
Crucifixion Thorn	1 individual	11	S	654187	3734350	
Desert Unicorn Plant	1 individual	11	S	654460	3733967	
Desert Unicorn Plant	1 individual	11	S	654917	3734261	1 pod
Desert Unicorn Plant	1 individual	11	S	654052	3737502	Seed pod only
Desert Unicorn Plant	1 individual	11	S	654296	3738162	
Foxtail Cactus	2 individuals	11	S	643374	3736115	
Foxtail Cactus	1 individual	11	S	643628	3737903	
Foxtail Cactus	Several individuals	11	S	641679	3730995	
Foxtail Cactus	Several individuals	11	S	643443	3737458	
Foxtail Cactus	3 individuals	11	S	643377	3736464	
Foxtail Cactus	1 individual	11	S	643612	3738256	
Foxtail Cactus	3 individuals	11	S	643376	3736689	
Foxtail Cactus	2 individuals	11	S	643463	3735279	
Foxtail Cactus	1 individual	11	S	643599	3738534	
Foxtail Cactus	Several individuals	11	S	643439	3737159	
Foxtail Cactus	4 individuals	11	S	643385	3737177	
Foxtail Cactus	2 individuals	11	S	643564	3739762	
Foxtail Cactus	Several individuals	11	S	643439	3736816	
Foxtail Cactus	3 individuals	11	S	643379	3737478	
Foxtail Cactus	1 individual	11	S	643554	3739858	
Foxtail Cactus	Several individuals	11	S	643438	3736337	
Foxtail Cactus	2 individuals	11	S	643500	3737654	
Foxtail Cactus	8 individuals	11	S	643555	3739912	
Foxtail Cactus	1 individual	11	S	643436	3735721	
Foxtail Cactus	Several individuals	11	S	643409	3735952	
Foxtail Cactus	3 individuals	11	S	643507	3737011	
Foxtail Cactus	1 individual	11	S	643556	3739966	
Foxtail Cactus	58 individuals	11	S	643457	3735567	Between waypoints
Foxtail Cactus	3 individuals	11	S	643501	3736688	
Foxtail Cactus	1 individual	11	S	643518	3740326	
Foxtail Cactus	1 individual	11	S	643452	3735124	
Foxtail Cactus	Several individuals	11	S	643873	3741325	
Foxtail Cactus	Several individuals	11	S	643448	3737794	
Foxtail Cactus	3 individuals	11	S	643514	3740279	
Foxtail Cactus	1 individual	11	S	643302	3740346	
Foxtail Cactus	Several individuals	11	S	643770	3741179	

Species	Type of Sign	Location (NAD 83)			Comments	
		Zone	Easting	Northing		
Foxtail Cactus	1 individual	11	S	643433	3738228	
Foxtail Cactus	3 individuals	11	S	643313	3739809	
Foxtail Cactus	Several individuals	11	S	643748	3741172	
Foxtail Cactus	Several individuals	11	S	643418	3738468	
Foxtail Cactus	2 individuals	11	S	643526	3739905	
Foxtail Cactus	Several individuals	11	S	643726	3741135	
Foxtail Cactus	Several individuals	11	S	643412	3738805	
Foxtail Cactus	2 individuals	11	S	643525	3739715	
Foxtail Cactus	10 individuals	11	S	643318	3738925	
Foxtail Cactus	Several individuals	11	S	643545	3740868	
Foxtail Cactus	Several individuals	11	S	643366	3739788	
Foxtail Cactus	1 individual	11	S	643578	3738130	
Foxtail Cactus	2 individuals	11	S	643419	3740434	
Foxtail Cactus	Several individuals	11	S	643452	3740761	
Foxtail Cactus	Several individuals	11	S	643363	3740056	
Foxtail Cactus	4 individuals	11	S	643910	3741002	Within 20 m
Foxtail Cactus	1 individual	11	S	643439	3739700	
Foxtail Cactus	Several individuals	11	S	642614	3744511	
Foxtail Cactus	Several individuals	11	S	643349	3740247	
Foxtail Cactus	3 individuals	11	S	644042	3741172	Within 20 m
Foxtail Cactus	3 individuals	11	S	643488	3738221	
Foxtail Cactus	Several individuals	11	S	642529	3744597	
Foxtail Cactus	49 individuals	11	S	643339	3740530	Between waypoints
Foxtail Cactus	4 individuals	11	S	644077	3741285	Within 20 m
Foxtail Cactus	1 individual	11	S	643496	3737939	
Foxtail Cactus	Several individuals	11	S	643287	3743731	
Foxtail Cactus	1 individual	11	S	643361	3740531	
Foxtail Cactus	Several individuals	11	S	643864	3741369	
Foxtail Cactus	4+ individuals	11	S	643543	3740777	
Foxtail Cactus	1 individual	11	S	643811	3741299	
Foxtail Cactus	39 individuals	11	S	643800	3741134	Between waypoints
Foxtail Cactus	16 individuals	11	S	642628	3737261	
Foxtail Cactus	Several individuals	11	S	643770	3741234	
Foxtail Cactus	1 individual	11	S	644475	3742603	
Foxtail Cactus	1 individual	11	S	643254	3735172	
Foxtail Cactus	6 individuals	11	S	643517	3740633	
Foxtail Cactus	Several individuals	11	S	643347	3740738	
Foxtail Cactus	15 individuals	11	S	643245	3736090	Between waypoints
Foxtail Cactus	3 individuals	11	S	643543	3740679	
Foxtail Cactus	6 individuals	11	S	642614	3736796	
Foxtail Cactus	1 individual	11	S	643798	3743387	
Foxtail Cactus	Several individuals	11	S	643472	3743632	
Foxtail Cactus	17 individuals	11	S	643276	3736503	Between waypoints
Foxtail Cactus	2 individuals	11	S	643841	3741090	
Foxtail Cactus	4 individuals	11	S	642626	3736265	
Foxtail Cactus	Several individuals	11	S	643362	3740790	
Foxtail Cactus	1 individual	11	S	643601	3743572	
Foxtail Cactus	1 individual	11	S	643673	3743592	
Foxtail Cactus	1 individual	11	S	644284	3741679	

Species	Type of Sign	Location (NAD 83)			Comments	
		Zone	Easting	Northing		
Foxtail Cactus	3 individuals	11	S	642633	3735778	
Foxtail Cactus	Several individuals	11	S	643494	3740940	
Foxtail Cactus	1 individual	11	S	643740	3743520	
Foxtail Cactus	1 individual	11	S	643026	3744106	
Foxtail Cactus	3 individuals	11	S	642618	3735277	
Foxtail Cactus	2 individuals	11	S	643252	3738050	
Foxtail Cactus	1 individual	11	S	644231	3741049	
Foxtail Cactus	1 individual	11	S	644526	3742651	
Foxtail Cactus	1 individual	11	S	642852	3745078	
Foxtail Cactus	1 individual	11	S	643021	3735770	
Foxtail Cactus	Several individuals	11	S	643581	3741048	
Foxtail Cactus	5 individuals	11	S	643182	3739782	
Foxtail Cactus	2 individuals	11	S	644122	3740898	
Foxtail Cactus	1 individual	11	S	642446	3745540	
Foxtail Cactus	1 individual	11	S	643159	3740345	
Foxtail Cactus	1 individual	11	S	643919	3740599	
Foxtail Cactus	1 individual	11	S	642829	3744549	
Foxtail Cactus	1 individual	11	S	642963	3731810	
Foxtail Cactus	2 individuals	11	S	642316	3745455	
Foxtail Cactus	Several individuals	11	S	643726	3741249	
Foxtail Cactus	3 individuals	11	S	643195	3740171	Within 100 m
Foxtail Cactus	1 individual	11	S	643261	3743346	
Foxtail Cactus	1 individual	11	S	642401	3745370	
Foxtail Cactus	11 individuals	11	S	643038	3736738	
Foxtail Cactus	1 individual	11	S	643266	3738398	
Foxtail Cactus	1 individual	11	S	643815	3739101	
Foxtail Cactus	Several individuals	11	S	641951	3743929	
Foxtail Cactus	1 individual	11	S	642537	3740439	
Foxtail Cactus	1 individual	11	S	642465	3745313	
Foxtail Cactus	5 individuals	11	S	643035	3737730	
Foxtail Cactus	2 individuals	11	S	643279	3738006	Within 70 m
Foxtail Cactus	1 individual	11	S	642622	3743298	
Foxtail Cactus	1 individual	11	S	643570	3735634	
Foxtail Cactus	1 individual	11	S	642598	3745159	
Foxtail Cactus	1 individual	11	S	643282	3737798	
Foxtail Cactus	2 individuals	11	S	642814	3743140	
Foxtail Cactus	6 individuals	11	S	643563	3735854	Within 100 m
Foxtail Cactus	1 individual	11	S	643304	3737910	Within 100 m
Foxtail Cactus	1 individual	11	S	644153	3740314	
Foxtail Cactus	1 individual	11	S	643150	3742824	
Foxtail Cactus	4 individuals	11	S	642586	3739011	Within 600 m along transect
Foxtail Cactus	3 individuals	11	S	643306	3738128	Within 100 m
Foxtail Cactus	Several individuals	11	S	643340	3743253	
Foxtail Cactus	7 individuals	11	S	643564	3736125	Within 100 m
Foxtail Cactus	5 individuals	11	S	643265	3738831	Within 100 m
Foxtail Cactus	1 individual	11	S	643943	3742608	
Foxtail Cactus	5 individuals	11	S	642615	3738161	Within 10 m
Foxtail Cactus	1 individual	11	S	643268	3739008	Within 100 m
Foxtail Cactus	Several individuals	11	S	643990	3742559	

Species	Type of Sign	Location (NAD 83)			Comments	
		Zone	Easting	Northing		
Foxtail Cactus	Many	11	S	643567	3736859	
Foxtail Cactus	7 individuals	11	S	643245	3739709	Within 100 m
Foxtail Cactus	2 individuals	11	S	644081	3742429	
Foxtail Cactus	Many	11	S	643538	3737665	
Foxtail Cactus	4 individuals	11	S	642623	3737768	
Foxtail Cactus	1 individual	11	S	643220	3740603	Within 100 m
Foxtail Cactus	3 individuals	11	S	643276	3740231	Within 100 m
Foxtail Cactus	Several individuals	11	S	643667	3742351	
Foxtail Cactus	Many	11	S	643533	3736704	
Foxtail Cactus	1 individual	11	S	643027	3738058	
Foxtail Cactus	8 individuals	11	S	643279	3739877	Within 100 m
Foxtail Cactus	5 individuals	11	S	643587	3742435	
Foxtail Cactus	1 individual	11	S	642957	3739582	
Foxtail Cactus	1 individual	11	S	642969	3739719	
Foxtail Cactus	1 individual	11	S	643313	3741279	
Foxtail Cactus	3 individuals	11	S	643540	3740585	Along 300 m of transect
Foxtail Cactus	1 individual	11	S	647449	3741888	
Foxtail Cactus	4 individuals	11	S	643313	3737740	Within 100 m
Foxtail Cactus	3 individuals	11	S	643776	3740875	Along 300 m of transect
Foxtail Cactus	3 individuals	11	S	643314	3737524	Within 100 m
Foxtail Cactus	4 individuals	11	S	642950	3740296	
Foxtail Cactus	6 individuals	11	S	643304	3737192	Within 100 m
Foxtail Cactus	5 individuals	11	S	643963	3741134	Along 300 m of transect
Foxtail Cactus	7 individuals	11	S	643308	3737053	Within 100 m
Foxtail Cactus	4 individuals	11	S	643315	3736677	Within 100 m
Foxtail Cactus	1 individual	11	S	644418	3745014	
Foxtail Cactus	3 individuals	11	S	643310	3736332	Within 100 m
Foxtail Cactus	7 individuals	11	S	643974	3741196	Along 300 m of transect
Foxtail Cactus	3 individuals	11	S	643308	3736015	Within 100 m
Foxtail Cactus	2 individuals	11	S	643523	3740599	
Foxtail Cactus	2 individuals	11	S	643313	3735788	Within 100 m
Foxtail Cactus	1 individual	11	S	643303	3735550	
Foxtail Cactus	13 individuals	11	S	643271	3740712	In 1300 m of transect
Foxtail Cactus	1 individual	11	S	643348	3735341	
Foxtail Cactus	1 individual	11	S	643953	3741595	
Foxtail Cactus	2 individuals	11	S	644402	3745362	Along 300 m of transect
Foxtail Cactus	1 individual	11	S	643355	3736796	
Foxtail Cactus	12 individuals	11	S	643895	3741553	In 1100 m of transect
Foxtail Cactus	2 individuals	11	S	644349	3742533	
Foxtail Cactus	1 individual	11	S	644330	3742494	
Foxtail Cactus	3 individuals	11	S	643835	3745456	
Foxtail Cactus	1 individual	11	S	643810	3743030	
Foxtail Cactus	1 individual	11	S	643345	3735205	
Foxtail Cactus	4 individuals	11	S	643325	3737665	Within 100 m
Foxtail Cactus	1 individual	11	S	643323	3737422	Within 100 m
Foxtail Cactus	9 individuals	11	S	643321	3737190	Within 100 m
Foxtail Cactus	2 individuals	11	S	643837	3735373	
Foxtail Cactus	2 individuals	11	S	643319	3737019	Within 100 m
Foxtail Cactus	5 individuals	11	S	643317	3736723	Within 200 m

Species	Type of Sign	Location (NAD 83)			Comments	
		Zone	Easting	Northing		
Foxtail Cactus	2 individuals	11	S	643845	3735970	
Foxtail Cactus	7 individuals	11	S	643846	3736641	
Foxtail Cactus	5 individuals	11	S	643854	3737028	
Foxtail Cactus	1 individual	11	S	643848	3737532	
Foxtail Cactus	8 individuals	11	S	643314	3736007	Along 1300 m of transect
Foxtail Cactus	3 individuals	11	S	643857	3737813	
Foxtail Cactus	6 individuals	11	S	643348	3735893	Along 800 m of transect
Foxtail Cactus	3 individuals	11	S	644259	3737646	
Foxtail Cactus	10 individuals	11	S	643348	3736653	Along 800 m of transect
Foxtail Cactus	1 individual	11	S	644262	3736910	
Foxtail Cactus	2 individuals	11	S	643664	3735497	
Foxtail Cactus	7 individuals	11	S	643352	3737628	Along 800 m of transect
Foxtail Cactus	2 individuals	11	S	643658	3735759	
Foxtail Cactus	1 individual	11	S	643658	3736167	
Foxtail Cactus	3 individuals	11	S	643661	3736569	
Foxtail Cactus	6 individuals	11	S	643542	3738453	Along 800 m of transect
Foxtail Cactus	7 individuals	11	S	643661	3737015	
Foxtail Cactus	5 individuals	11	S	643504	3739643	Along 800 m of transect
Foxtail Cactus	11 individuals	11	S	643667	3737493	
Foxtail Cactus	7 individuals	11	S	643450	3740278	Along 800 m of transect
Foxtail Cactus	11 individuals	11	S	643666	3737712	
Foxtail Cactus	1 individual	11	S	643631	3737447	
Foxtail Cactus	4 individuals	11	S	643492	3738902	Within 50 m
Foxtail Cactus	1 individual	11	S	643632	3737225	
Foxtail Cactus	1 individual	11	S	643633	3736835	
Foxtail Cactus	1 individual	11	S	643635	3736471	
Foxtail Cactus	3 individuals	11	S	643524	3737972	Along 400 m of transect
Foxtail Cactus	1 individual	11	S	643629	3735778	
Foxtail Cactus	2 individuals	11	S	644012	3745455	
Foxtail Cactus	1 individual	11	S	643795	3745633	
Foxtail Cactus	Several individuals	11	S	642753	3744448	
Wiggins' Cholla	1 individual	11	S	644080	3733741	
Wiggins' Cholla	1 individual	11	S	641679	3730995	
Wiggins' Cholla	1 individual	11	S	647533	3732431	
Wiggins' Cholla	Several individuals	11	S	644416	3733960	
Wiggins' Cholla	1 individual	11	S	645728	3732455	
Wiggins' Cholla	1 individual	11	S	642612	3732902	
Wiggins' Cholla	1 individual	11	S	643860	3733366	
Wiggins' Cholla	3 individuals	11	S	642619	3734529	In 100 m radius
Wiggins' Cholla	1 individual	11	S	653778	3734517	
Wiggins' Cholla	6 individuals	11	S	642600	3735108	In 250 m radius
Wiggins' Cholla	1 individual	11	S	654437	3733985	
Wiggins' Cholla	2 individuals	11	S	643025	3732892	In 100 m length of transect
Wiggins' Cholla	1 individual	11	S	654111	3734140	
Wiggins' Cholla	1 individual	11	S	643239	3732995	
Wiggins' Cholla	1 individual	11	S	642718	3731687	
Wiggins' Cholla	1 individual	11	S	643251	3735020	
Wiggins' Cholla	1 individual	11	S	643253	3735123	

Species	Type of Sign	Location (NAD 83)			Comments	
		Zone	Easting	Northing		
Wiggins' Cholla	8 individuals	11	S	642628	3737261	
Wiggins' Cholla	2 individuals	11	S	642614	3736796	
Wiggins' Cholla	2 individuals	11	S	642626	3736265	
Wiggins' Cholla	1 individual	11	S	652075	3740775	
Wiggins' Cholla	12 individuals	11	S	643266	3735059	Between waypoints
Wiggins' Cholla	3 individuals	11	S	642633	3735778	
Wiggins' Cholla	3 individuals	11	S	643272	3733232	Between waypoints
Wiggins' Cholla	2 individuals	11	S	642618	3735277	
Wiggins' Cholla	8 individuals	11	S	643021	3735770	
Wiggins' Cholla	2 individuals	11	S	642976	3731834	In 10 m area
Wiggins' Cholla	6 individuals	11	S	643038	3736738	
Wiggins' Cholla	4 individuals	11	S	643035	3737730	
Wiggins' Cholla	1 individual	11	S	642580	3739658	
Wiggins' Cholla	1 individual	11	S	645233	3732601	
Wiggins' Cholla	Many	11	S	643553	3736109	
Wiggins' Cholla	2 individuals	11	S	645497	3732466	
Wiggins' Cholla	Many	11	S	643566	3736580	
Wiggins' Cholla	2 individuals	11	S	645973	3732232	
Wiggins' Cholla	1 individual	11	S	642611	3738152	
Wiggins' Cholla	2 individuals	11	S	646713	3731888	
Wiggins' Cholla	Many	11	S	643533	3737259	
Wiggins' Cholla	2 individuals	11	S	646961	3731758	
Wiggins' Cholla	Many	11	S	643531	3736234	
Wiggins' Cholla	8 individuals	11	S	645773	3732360	
Wiggins' Cholla	Many	11	S	643527	3735275	
Wiggins' Cholla	2 individuals	11	S	644217	3733122	Along 400 m of transect
Wiggins' Cholla	1 individual	11	S	642959	3739841	
Wiggins' Cholla	3 individuals	11	S	647593	3741664	Within 20 m radius
Wiggins' Cholla	4 individuals	11	S	643808	3740932	Along 300 m of transect
Wiggins' Cholla	2 individuals	11	S	642944	3740433	
Wiggins' Cholla	2 individuals	11	S	643971	3741150	Along 300 m of transect
Wiggins' Cholla	1 individual	11	S	643689	3745634	
Wiggins' Cholla	3 individuals	11	S	644092	3741360	Along 300 m of transect
Wiggins' Cholla	3 individuals	11	S	645617	3743954	
Wiggins' Cholla	1 individual	11	S	646328	3743284	
Wiggins' Cholla	1 individual	11	S	645756	3743774	
Wiggins' Cholla	1 individual	11	S	645525	3744000	
Wiggins' Cholla	4 individuals	11	S	644686	3744720	
Wiggins' Cholla	3 individuals	11	S	643872	3745437	
Wiggins' Cholla	1 individual	11	S	647486	3742200	
Wiggins' Cholla	1 individual	11	S	644386	3732303	
Wiggins' Cholla	1 individual	11	S	643311	3735161	
Wiggins' Cholla	1 individual	11	S	653679	3734845	
Wiggins' Cholla	1 individual	11	S	647279	3742366	
Wiggins' Cholla	1 individual	11	S	643323	3731917	
Wiggins' Cholla	1 individual	11	S	643522	3732964	
Wiggins' Cholla	1 individual	11	S	646531	3731701	
Wiggins' Cholla	3 individuals	11	S	645818	3732045	
Wiggins' Cholla	2 individuals	11	S	643850	3735855	

Species	Type of Sign	Location (NAD 83)			Comments	
		Zone	Easting	Northing		
Wiggins' Cholla	1 individual	11	S	643322	3736538	
Wiggins' Cholla	1 individual	11	S	643317	3736419	
Wiggins' Cholla	4 individuals	11	S	643312	3735939	Within 100 m
Wiggins' Cholla	1 individual	11	S	643856	3733015	
Wiggins' Cholla	1 individual	11	S	643856	3732915	
Wiggins' Cholla	1 individual	11	S	643852	3737656	
Wiggins' Cholla	2 individuals	11	S	643340	3735743	Within 100 m
Wiggins' Cholla	1 individual	11	S	643853	3732495	
Wiggins' Cholla	1 individual	11	S	643347	3737020	
Wiggins' Cholla	1 individual	11	S	654899	3733633	
Wiggins' Cholla	1 individual	11	S	643565	3737733	
Wiggins' Cholla	1 individual	11	S	643513	3738321	
Wiggins' Cholla	1 individual	11	S	654561	3733313	
Wiggins' Cholla	1 individual	11	S	654435	3733733	
Wiggins' Cholla	1 individual	11	S	654768	3734122	
Wiggins' Cholla	2 individuals	11	S	654554	3734191	Within 10 m
Wiggins' Cholla	1 individual	11	S	654969	3733971	
<i>Reptiles</i>						
Chuckwalla	Scat	11	S	644665	3742190	Rock outcrop
Chuckwalla	Scat	11	S	644680	3742211	Fresh scat on rock outcrop
<i>Birds</i>						
Burrowing Owl	Burrow	11	S	646900	3731948	10+ pellets and white wash
Burrowing Owl	Burrow	11	S	650652	3737636	Whitewash; not currently used by owl; old coyote den
Loggerhead Shrike	1 individual	11	S	642615	3735280	
Loggerhead Shrike	1 individual	11	S	642614	3736795	
Loggerhead Shrike	Pair	11	S	643047	3735904	
Loggerhead Shrike	1 individual	11	S	642989	3736199	Also, sharp-shinned hawk
Loggerhead Shrike	1 individual	11	S	644845	3741176	
Loggerhead Shrike	1 individual			644856	3741176	
Loggerhead Shrike	1 individual	11	S	645317	3732550	
Loggerhead Shrike	Pair	11	S	646985	3742526	
Loggerhead Shrike	Pair	11	S	643316	3736647	
Loggerhead Shrike	Pair	11	S	643110	3733638	
Red-tailed Hawk	Nest	11	S	643005	3732244	Adult bird on nest and defensive
<i>Mammals</i>						
American Badger	Den	11	S	654696	3733855	Active; fresh tracks and digs
Kit Fox	Den Complex	11	S	643065	3731723	5 burrows
Kit Fox	Den Complex	11	S	643369	3733309	
Kit Fox	Den Complex	11	S	643832	3733413	
Kit Fox	Den Complex	11	S	642978	3731567	8 burrows
Kit Fox	Den Complex	11	S	643865	3733425	6 burrows
Kit Fox	Den Complex	11	S	643692	3733560	8 burrows
Kit Fox	Den Complex	11	S	645291	3732801	6 burrows
Kit Fox	Den Complex	11	S	643314	3731893	11 entrances

Species	Type of Sign	Location (NAD 83)			Comments	
		Zone		Easting		Northing
Kit Fox	Den Complex	11	S	655871	3732800	5 active entrances
Kit Fox	Den Complex	11	S	646583	3743137	9 entrances; active
Kit Fox	Den Complex	11	S	643612	3734118	10 entrances
Kit Fox	Den Complex			645796	3732416	

3.5.2.5 Special Habitats

Desert Dry Wash Woodland. The arboreal washes that are common in the landscape traversed by the linear components of the Project are considered biologically significant habitat features to which biodiversity in the Colorado Desert is strongly linked (National Research Council, 1995). These assemblages provide critical breeding, refuge, and foraging habitat for a variety of birds, amphibians, and invertebrates and many local species concentrate their activities in these lush drainages. Because of its value to wildlife and natural processes, Desert Dry Wash Woodland is considered sensitive by the California Resources Agency (DOI, BLM, and CDFW, 2002).

A total of 19.7 acres of Desert Dry Wash Woodland is located on the transmission line ROW. Based on the analysis performed by FERC, there are 15.4 acres of Desert Dry Wash Woodland habitat on the Central Project Area (Table 3.5-1).

Wetlands, Seeps and Springs, and Streams. There are no perennial streams, or associated riparian habitats, in the Project vicinity.

No natural wetlands occur in the Project vicinity. Drainages in this part of Riverside and Imperial counties are generally limited to high-energy runoff via washes that are usually dry. As water from these runoff events quickly percolates into the surrounding soil, the establishment of wetland vegetation is precluded. The additional soil moisture during these brief periods is enough to allow the growth of aphyllous or microphyllous trees, but the lack of residual soil moisture and less importantly, the scouring action from the high-energy ephemeral flow, prohibits the growth of most species of plants.

Six seeps, springs, or water catchments were identified by the proposed NECO Plan (DOI, BLM, and CDFW, 2002) in the immediate vicinity of the Project, all on or near the Metropolitan Water District's Eagle Mountain Pumping Plant (Figure 3.5-8). Four of these – Buzzard Spring, Dengler Tank, Eagle Tank, and Cactus Spring are outside the Project boundary by at least 2 miles (County of Riverside and BLM, 1996). All may be intermittent (*see* Section 3.3 Groundwater). The NECO Plan identified two other springs (unnamed), one of which might be adjacent to, in, or borderline with the Project. However, part of the NEPA compliance for the federal lead agency the Federal Energy Regulatory Commission (FERC) included investigations of these sites for the Project Pre-Application Document which were unsuccessful in locating any further details on these springs. A May 1994 helicopter survey of all water sources in the Eagle Mountains also did not note them (Devine and Douglas, 1996), and it is possible that they no longer exist or were incorrectly mapped. During final engineering design a pre-construction

surveys (PDF BIO-1) will determine the presence any springs within the Project's area of potential effects, their quality, and value for wildlife.

Artificial Water Impoundments. Onsite water sources plus nearby water sources currently provide a variety of water resources for ravens and coyotes and other native and non-native species. There is a 1.2-acre wastewater treatment pond that can be seen on aerials and is assumed to still support these human uses of the site (Figure 3.5-10). Photos of this pond, and other water sources in the Project area, are found in Figures 3.5-11 through 3.5-18. As one of the few easily accessible water sources in that area, it is highly likely to provide water for both coyotes and ravens. Seasonal water is likely to pool in the pits and on other hard, mined surfaces. NECO identified a developed tank along the northern edge of the Central Project Area (Figure 3.5-8). Buzzard Spring, approximately 3 miles south of the Central Project Area, as having pooled water (Divine and Douglas, 1996). There is a 10-acre pond used by the Metropolitan Water District's Eagle Mountain Pumping Plant, approximately 4 miles south of the Central Project Area (Figures 3.5-13 and 3.5-14). The CRA has 8 acres of exposed water near the Central Project Area and transmission corridor. Access to the CRA by wildlife is likely to be limited by physical characteristics of the channel and fencing, although it is accessible to ravens and other birds (Figures 3.5-15 and 3.5-16). Two large ponds (17 acres) are present within the community of Lake Tamarisk (Figure 3.5-17 and 3.5-18).

Biological Soil Crusts. Biological crusts, also variously known as cryptobiotic, cryptogamic, microbiotic, and micryphytic crusts, form in the upper layers of soils. These soil crusts include a community of microscopic bacteria, fungi, algae, and other microorganisms that function mechanically, chemically, and biologically to stabilize soils against erosion; provide nutrients and water for plant growth; and modify ambient temperatures (West, 1990; Belnap et al., 2001). Their function in arid systems has only relatively recently been addressed, especially as it relates to crust disturbance (Rowlands, 1980; Belnap et al., 1998; Evans and Belnap, 1999). Crusts are highly susceptible to crushing, especially when dry, which can occur via a number of mechanisms, including grazing, vehicular traffic, surface grading, and hiking. Not only do crushed crusts lose their function, but crushed crusts release a flush of nutrients that support the growth of exotic annual species (e.g., *Bromus* spp., *Schismus arabicus*) (Pendleton et al., 2004).

3.5.2.6 Invasive Species

Several species of exotic plants have been introduced to the southwestern deserts. Tamarisk (*Tamarix* spp.), a medium-sized tree, was introduced to the United States as an ornamental and windbreak. Brought to the United States in the early 1800s (Allen, 2002), old hedges of tamarisk are still common along farms and railroads in many areas of the desert. It has especially invaded riparian areas, including springs, rivers, and canals, outcompeting native vegetation for available resources. On the Project, a tamarisk grove was identified in the East Pit, although this species is not apparent in recent aerial photographs (Kaiser and MRC, 1991).

Highly successful annual exotics in the desert include three grasses – red brome (*Bromus madritensis rubens*), cheatgrass (*B. tectorum*), and split grass (*Schismus* spp) – and two dicots –

Tournefort's mustard (*Brassica tournefortii*) and filaree (*Erodium cicutarium*). Most were established in the desert in the mid-twentieth century primarily via grazing and agriculture (Allen, 2002), but also by road-building and other anthropogenic activities that disturb soil surfaces and/or use equipment capable of transporting exotic seed from sources elsewhere. Brooks (2007) also cited nitrogen deposition from vehicle exhaust as potentially promoting plant invasions.

Exotic species use available resources, thereby competing with native plant species and altering species composition and evenness (a measure of biodiversity). This, in turn, alters the availability of resources (e.g., cover, forage) to wildlife, which may alter species diversity in the affected wildlife community. Lack of native vegetation may also be implicated in the inability of species that are periodically stressed by drought – a normal and relatively frequent phenomenon in the desert – to withstand that stress. Furthermore, exotic annuals are responsible for promoting wildfires in the desert (Brown and Minnich, 1986; and Allen, 2002).

3.5.3 Potential Environmental Impacts

3.5.3.1 Methodology

The environmental impact analysis is based on field reconnaissance, resources agency consultation (as noted), and literature review of pertinent biological reports as referenced throughout this document.

During March and early April in 2008, 2009, and 2010 surveys were conducted for special-status species along the Project linear elements and at potential well sites.

In all years spring surveys were conducted at the appropriate time to identify plants – i.e., when special-status species were flowering or easily identifiable. For the special plant species in the Project area, this begins in mid-March, which is prior to the survey timing requirement for USFWS desert tortoise protocol surveys – March 25 to May 31. However, because tortoises are known to be active in the Project area much earlier than March 25, the USFWS permitted the consulting biologist to begin tortoise surveys on March 18 in 2009 (Tannika Engelhardt, USFWS Carlsbad Field Office, personal communication with Alice Karl [Project Biologist], March 18, 2009) concurrent with plant surveys.

In all years of biological reconnaissance surveys, Kaiser Ventures, LLC. (Kaiser) denied access to the Project Applicant to their properties for surveying. This exclusion included a short segment of the Project water pipeline ROW north of the Metropolitan Water District of Southern California's aqueduct, and a short segment of the transmission line ROW west of the aqueduct (north of UTM 3745200N, North American Datum [NAD] 83). As a result, on-site surveys of the mine pits that will form the reservoirs and other Central Project Area features were not conducted. Tables 3.5-3 and 3.5-4 and Figures 3.5-3 to 3.5-7 report the results of Project surveys in 2008 and 2009, respectively. The extreme level of habitat disturbance in the pits and surrounding mine tailings piles is readily observable from the edge of the property and on recent

aerial photos, permitting a reasonable assessment of these lands in the absence of detailed on the ground surveys.

In 2008, the Project water pipeline and transmission line routes were preliminary, so surveys were conducted both on areas where the Project would ultimately occur and areas that were eliminated in 2009. Because of the uncertain nature of the routes in 2008, the extensive survey protocol required by USFWS for desert tortoises was not used. Rather, evidence of desert tortoises and other special-status species, including habitat mapping, was gathered via the following procedures:

- **Transmission Line ROW: Inside Wildlife Habitat Management Areas (WHMAs)**, four, 50-foot-wide, adjacent transects were walked in the 200-foot transmission line ROW; outside WHMAs, 2 miles, 100-foot-wide, adjacent, meandering transects were walked in the ROW. (The NECO Plan places special emphasis on WHMAs; hence the more intensive surveys inside WHMAs; Figure 3.5-2.)
- **Water Pipeline ROW:** Where the ROW was precise, a 30-foot-wide transect was walked; where the ROW was imprecise, 2 miles, 100-foot-wide, adjacent, meandering transects were walked.
- For ROWs through jojoba fields that had access roads, only the roadsides were surveyed.
- **Potential Well Sites:** All known commercial wells in the Project area that had the potential to supply water to the Project were examined, photographed, and analyzed for biological issues (especially ephemeral impoundments that could host Couch's spadefoot).

In 2009 and 2010, pedestrian transects were completed consistent with the NECO Plan, USFWS "protocol" desert tortoise transects (DOI and USFWS, 1992; Revised Draft, 2008), and the California Burrowing Owl Consortium (CBOC) Guidelines (CBOC, 1993). The NECO Plan identified situations for which surveys must be completed for projects in the NECO planning area. Those that are relevant to the Project include the following:

- In Multi-species Conservation Zones – Survey for all special-status species
- Special-status Plants – Survey in all mapped ranges
- Special-status Wildlife – Survey at all known locations
- Townsend's Bat – Identify maternity roosts within 5 miles of riparian habitat
- Other Bats – Identify all significant roosts within 1 mile
- Prairie Falcon and Golden Eagle – Identify all eyries within 0.25 miles
- Burrowing Owl – Identify presence and locations
- Crissal Thrasher – Identify presence
- Couch's Spadefoot – Identify all ephemeral impoundment areas
- Natural and Artificial Water Sources – Identify presence within 0.25 miles

Desert Tortoise. Per the USFWS (1992) protocols, 100 percent of the ROWs were surveyed using parallel, 30-foot-wide, pedestrian belt transects. The transmission ROW was 200 feet

wide. The surveyed water pipeline ROW was 60 feet wide to account for minor route shifts in the final 30-foot-wide ROW. In addition, 30-foot-wide “Zone-of-influence” (ZOI) transects were walked on both sides of the ROWs at 100, 300, 500, 1200, and 2400 feet from the outer edges of the ROWs. (The 500-foot ZOI coincided with the 500-foot buffer transect for burrowing owls; *see* Burrowing Owls below.) The exception to this occurred where the ROWs went through jojoba farms. These are not tortoise habitat, although it is recognized that a tortoise could move in from adjacent native habitat, even if unlikely. Burrowing owls and other special-status vertebrates were, however, possible. So, in addition to full ROW transects, ZOIs/buffer transects were walked at 100-foot intervals out to 500 feet. ZOIs through fenced or residential properties also were not walked, but were visually inspected from the edges of the property.

In all years, all tortoise sign (e.g., individuals, dens, burrows, scat, tracks, pellets, skeletal remains) that were observed were measured, mapped and described relative to condition, size, and (where applicable) gender. Current and recent weather conditions were recorded to identify the potential for tortoise activity and the topography, drainage patterns, soils, substrates, plant cover, anthropogenic disturbances, and aspect-dominant, common and occasional plant species were described and mapped. Mapping sign and habitat features was achieved using Global Positioning System (GPS) units. Every mile of ROW and ZOI transects was photographed.

Burrowing Owl. CDFW require protocol surveys for burrowing owls that are consistent with the CBOC Guidelines (CBOC, 1993). The guidelines project a set of consecutive surveys, each following the previous based on the latter’s results:

- Phase I: Habitat Assessment – This “first step in the survey process is to assess the presence of burrowing owl habitat on the project site including a 150-meter (approximately 500 feet) buffer zone around the project boundary...”

“The Phase II burrow survey is required if burrowing owl habitat occurs on the site. If burrowing owl habitat is not present on the project site and buffer zone, the Phase II burrow survey is not necessary.”

- Phase II: Burrow Survey – “A survey for burrows and owls should be conducted by walking through suitable habitat over the entire project site and in areas within 150 meters (approximately 500 feet) of the project impact zone. This 150-meter buffer zone is included to account for adjacent burrows and foraging habitat outside the project area and impacts from factors such as noise and vibration due to heavy equipment which could impact resources outside the project area.”
- Phase III: Owl Presence – “If the project site contains burrows that could be used by burrowing owls, then...surveys in the breeding season are required to describe if, when, and how the site is used by burrowing owls. If no owls are observed using the site during the breeding season, a winter survey is required.” The survey methodology requires four site visits, each on a separate day. Birds are observed from 2 hours before sunset to 1 hour after sunset, or from one hour before sunrise to two hours after sunrise. The four

visits are initially conducted during the nesting season, February 1 to August 31, although it is preferable to survey at the height of the breeding season, between April 15 and July 15. If no owls are observed during the nesting season, then “winter surveys should be conducted between December 1 and January 31... (to) count and map all owl sightings, occupied burrows, and burrows with owl sign.”

The Project area is known to host burrowing owl habitat based on surveys in 2008 (i.e., Phase I requirement). In 2009, Phase II surveys were completed concurrent with the desert tortoise/biological surveys because the latter cover the entire site. The CBOC Guidelines suggest a buffer (\cong ZOI) transect every 100 feet from the Project footprint for the Phase II surveys. To meet this objective, a buffer transect was walked at 100-foot intervals from all ROW edges, including jojoba farms. Transects at 100 and 300 feet coincided with those for the desert tortoise at 100 and 300 feet. To meet the burrowing owl requirement for a buffer transect at 500 feet, the desert tortoise ZOI was moved to 500 feet, from 600 feet.

Other Special-Status Species. Surveys for other special-status wildlife and plants were concurrent with the desert tortoise and burrowing owl surveys. A plant and wildlife inventory was made during the general biological survey. Raptor nests and eyries were sought during ZOI transects.

Vegetation Mapping and Special Habitats. Habitats were described and mapped during the biological surveys. Surrounding anthropogenic and natural features that could provide insight into populations of special-status species, including population functioning (e.g., corridors), and existing or anticipated impacts to special-status species were identified and mapped.

Natural and Artificial Water Sources. During biological surveys, any ephemeral, permanent, natural, or artificial water sources, including ephemeral impoundments, on or affected by the Project were sought and mapped.

Golden Eagle Surveys. Helicopter surveys for golden eagles were conducted using the 2010 USFWS Interim Guidelines for Golden Eagle Surveys within a 10-mile radius of the proposed Project.

3.5.3.2 Significance Criteria

The State Water Resources Control Board (State Water Board) concludes that the Project may have significant impacts on biological resources if the Project does any of the following:

- (a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS.
- (b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS.

- (c) Have a substantial adverse effect on federally-protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other measures.
- (d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- (e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- (f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

3.5.3.3 Environmental Impact Assessment

Project effects and potential impacts to biological resources are analyzed for two project phases: (1) the construction phase and (2) the operation/maintenance (O&M) phase.

3.5.3.3.1 *Construction*

Construction activities associated with the Project include: (1) development of the Central Project Area to accommodate the Project, (2) construction of the transmission line, and (3) construction of the water conveyance and supply system.

Construction of the Central Project Area facilities includes:

- Building of the dams at the Upper Reservoir
- Application of seepage control grouting in the Lower Reservoir
- Construction of the tunnels, and underground surge control facilities and powerhouse using blasting and boring
- Construction of storage and administration buildings
- Excavation of water treatment ponds

Construction of the transmission line includes:

- Preparation of staging/laydown areas
- Access road and spur road construction/improvement
- Installation of a communications cable
- Clearing and grading of lattice tower sites
- Foundation preparation and installation of lattice towers
- Wire stringing and conductor installation
- Temporary parking of vehicles and equipment in construction zones
- Equipment laydown/storage
- Cleanup and site reclamation

Construction of the water pipeline collection system includes:

- Site preparation and trenching
- Installation, covering and testing of the pipeline
- Temporary parking of vehicles and equipment in construction zones
- Equipment laydown/storage
- Cleanup and site reclamation

Equipment required for construction includes bulldozers, backhoes, graders, air compressors, man lifts, generators, drill rigs, truck-mounted augers, flatbed trucks, boom trucks, rigging and mechanic trucks, small wheeled cranes, concrete trucks, water trucks, crew trucks, a tunnel boring machine, and other heavy equipment.

Plants. Based on occurrences identified from Project surveys in 2008 and 2009, plus other surveys in the Project area (Table 3.5-2 and Appendix A), there are six special-status plant species that are unlikely to be affected by the Project's construction: Abram's spurge, Arizona spurge, dwarf germander, flat-seeded spurge, glandular ditaxis, and sand evening primrose. All but sand evening primrose would be restricted to the water pipeline in the valley portions of the ROW. None was found during surveys, but the possibility exists that these plants might be present. Because of the low likelihood of their presence, impacts to populations by the loss of individuals or habitat should be considered low.

Five special-status plants – California ditaxis, crucifixion thorn, desert unicorn plant, foxtail cactus, and Wiggins' cholla – were observed on the ROWs and will experience loss during construction. All are likely to also occur on those portions of the transmission line and water pipeline that were unable to be surveyed due to denied access. Population effects are likely to be minor.

1. Three of the species – California ditaxis, foxtail cactus, and Wiggins' cholla – are common in the Project area. Inherently, then, losses are unlikely to create a major impact on the populations. Furthermore, Project mitigation will incorporate avoidance, transplanting, and site reclamation techniques that will mitigate and enhance plant survival and population growth.
2. Wiggins' cholla is not recognized as a species, but as a hybrid. The parent species, pencil cholla and silver cholla, are very common.
3. Very few individuals (<5) of either crucifixion thorn or desert unicorn plant will be affected. Crucifixion thorn can probably be avoided. Desert unicorn is a species of disturbed places that receive increased water, including washes, but also road shoulders. Site reclamation techniques will include the construction of swales to promote growth of desert unicorn plant.

Three species–Coue's cassia, Las Animas colubrina, and Orocopia sage–may occur on those portions of the transmission line and water pipeline that were unable to be surveyed due to

denied access. They were not found on the remainder of the ROWs, so the total number of plants likely to be affected is probably low. Invasive, non-native plant species are already present in the area but may be spread as a result of construction. Pre-construction surveys, controls during construction, and post-construction weed abatement will be employed to minimize or eliminate this impact.

Construction in the Central Project Area will take place entirely on highly disturbed, heavily mined areas. The water conveyance tunnels connecting the two reservoirs and the powerhouse will be entirely underground. However, there may be some areas in the mined pits that have biological resources that have regenerated naturally. If regeneration has occurred, it is likely that the plant population will be represented by exotic, invasive species.

On the transmission line and water pipeline corridors, impacts to vegetation will be limited to the loss of habitat and individuals. Based on habitat mapping, it is anticipated that a Project total of at least 60.3 acres of Sonoran Creosote Bush Scrub and 19.7 acres of Desert Dry Wash Woodland will be lost or impacted during construction² (Table 3.5-1). Among these communities are a number of species that are not special-status, but are protected by the CDNPA, including the following species that occur in the Project area:

- Catclaw acacia
- Smoke tree
- Ironwood
- Ocotillo
- Mojave yucca (*Yucca schidigera*)
- Desert Unicorn Plant
- Blue palo verde
- All cacti

While the loss of native habitat for the sole purpose of construction (as opposed to maintenance) is temporary, it should be considered semi-permanent for the Colorado Desert. Natural regrowth is constrained by limited and unpredictable precipitation and can require several decades to approach pre-disturbance conditions. Population impacts are generally expected to be both minor and highly localized for those species that might be affected by habitat loss or loss of individuals during construction of the linear facilities. This is due to the small footprint of habitat physically disturbed relative to the surrounding available habitat and probable and/or documented populations.

There will be no permanent impacts on plant growth that could affect either foraging or shelter for wildlife.

² The only acreage not included in this calculation is pulling and tensioning sites for transmission line construction, assumed to be included in the corridor ROW.

Wildlife. The schedule of construction for the entire Project spans 4 years, but construction of the linear facilities will be completed in less than 1 year. The assessment of the effects on wildlife must include not only the presence of wildlife, but the anticipated activity levels, which will be affected by weather conditions, forage and prey availability, and season.

Disturbance of wildlife due to construction in the Central Project Area may temporarily deter wildlife from using the Central Project Area. Due to lack of habitat for most wildlife species (except bats), avoidance of the Central Project Area due to construction activities should not cause an impact. Noise levels during construction in the Central Project Area are not anticipated to exceed typical noise levels for construction, and blasting and boring for the tunnels and powerhouse facilities will be conducted deep underground with concomitant buffering of associated noise (*see* Section 3.14 Noise).

Construction activities, which will produce noise and increased human activity, may temporarily disrupt bighorn sheep movement in the Central Project Area, although all existing springs that are used by bighorn sheep will still be accessible through native habitat outside the Central Project Area and inside the Central Project Area outside of the reservoirs.

No effects on Couch's spadefoot are anticipated unless artificial impoundments that could support reproduction are found to be present. In the event this occurs, the mitigation program includes the NECO Plan which would be implemented to avoid disturbance of impoundments and restriction of surface flow to impoundments (MM BIO-9).

There is a possibility for several special-status bat species that may roost or feed in the Central Project Area to be affected. The Pallid bat, California leaf-nosed bat, Townsend's big-eared bat, and western mastiff bat are known from the Central Project Area; pallid bat and western mastiff bat, which roost in rock crevices as opposed to adits and mine shafts, particularly may be affected by any disturbance of rock faces, including pit walls (MM BIO-15).

Construction and filling of reservoirs may result in losses of any bats that are roosting in the pit walls. Birds and resident bats could be exposed to sodium, and other elements harmful to birds, in the brine ponds. On the linear facilities, direct impacts from construction will include habitat loss and may include temporary disturbance to and/or the loss of individuals. With the exception of bats, population impacts are generally expected to be both minor and highly localized for those wildlife species that might be affected by habitat loss, temporary loss of use of the construction area, or loss of individuals during construction.

Increased traffic during construction may result in increased losses of terrestrial wildlife, although these are expected to be minor (MM BIO-16 through MM BIO-20).

On the linear facilities, direct impacts from construction will include habitat loss and may include temporary disturbance to and/or the loss of individuals. Special habitat resources, such as specific burrowing sites, may be lost during Project construction (MM BIO-12 and MM BIO-13). Any population impacts to those species that are affected by habitat loss on the linear

facilities are generally expected to be minor due to the small footprint of habitat physically disturbed relative to the surrounding available habitat. However, all surface disturbance during construction that results in the removal or displacement of vegetation and soil is considered to be a semi-permanent loss.

Wildlife may experience temporary disruption of normal movements to achieve feeding, breeding, sheltering, and dispersal on the linear facilities. This could occur due to the noise and congestion associated with construction, but also may result from mitigation associated with construction of any Project component that includes erecting temporary exclusion fencing. Although some animals may be temporarily disturbed by construction activities and abandon the area, others will become habituated to human activity (e.g., loggerhead shrike). All animals displaced due to construction on the linear facilities would be able to return to the area once construction activities cease (BIO MM-16 through BIO MM-20).

On the linear facilities, those species with relatively limited mobility – i.e., those that are underground or sequestered during most of the day or year (e.g., Couch's spadefoot) or those that have a life stage in the soil or on plants (e.g., insects, nesting birds) – are more likely to experience losses of individuals than more mobile species. Similarly, species with highly localized and specific microhabitat preferences that may be unavoidable (e.g., chuckwalla), may experience losses due to lack of detection, even with a diligent construction monitoring program.

With the exception of bats, population impacts are generally expected to be both minor and highly localized for those wildlife species that might be affected by habitat loss, temporary loss of use of the construction area, or loss of individuals during construction. This is due to the small footprint of habitat physically disturbed relative to the surrounding available habitat and probable and/or documented populations.

Indirect impacts from Project construction will include increased traffic on roads that service the Project. This may result in increased losses of terrestrial wildlife, although these are expected to be minor based on Project traffic assessments (*see* Section 3.12 Transportation and Traffic).

Indirect impacts could also include dust deposition on neighboring vegetation. This is expected to be both temporary and minimized by maintaining air quality standards (*see* Section 3.13 Air Quality).

Seeps, Springs, and Dry Desert Washes. NECO requires the following mitigation measures for seeps and springs:

- Avoid construction disturbance of any seep or spring for the duration of a project.
- Close any routes within ¼-mile of any seep, spring, or guzzler.

Also encouraged under NECO is the improvement of seeps and springs that may be in need of rehabilitation, including but not limited to, removing exotic vegetation (e.g., tamarisk), planting native species, excluding livestock and burrows, eliminating water diversions, and controlling bird pests (e.g., starlings).

At this time, it is not anticipated that any seeps, springs or guzzlers will be affected or be within a ¼-mile of the Project. A thorough examination of the Central Project Area during pre-construction surveys (PDF BIO-1) will provide information to determine if any avoidance or adaptive management is required.

Available information indicates that springs in the mountains surrounding the Central Project Site are not hydrologically connected to the Pinto or Chuckwalla basin aquifers since they are located in the mountains above the Pinto and Chuckwalla basins. These springs appear to be fed by local groundwater systems that would be unaffected by pumping for the proposed Project (NPS, 1994; *see also* Section 3.3, Groundwater Resources). Since flow from the springs is unlikely to be affected by the Project, the vegetation and functions supported by these springs is also unlikely to be affected by the Project.

Since there are no wetlands in the Project vicinity, there will be *no impacts* to wetlands.

There are many small washes crossed by the pipeline and transmission line that will be regulated by the CDFW under Section 1602 of the Fish and Game Code. Transmission line towers will be sited to avoid dry desert washes. However, the water pipeline will be a continuous linear feature that will be buried under any dry washes along the route. A Streambed Alteration Agreement will be developed with the CDFW to address the condition and location of all washes and mitigation measures to protect those washes.

It is estimated that a total of approximately 37.4 acres of state washes may be affected by Project activities: 2.5 acres for the pipeline, 13.4 acres for the transmission line, 15.4 acres in the Central Project Area (FERC 2011), and 6 acres for the substation. This is based on the Project feature parameters identified in the footnotes of Table 3.5-1, a conservative estimate of half of the Desert Dry Wash Woodland acreage, and identification of individual washes in Sonoran Creosote Bush Scrub, from aerial photographs. There will be no loss of hydrological function via construction and operation of the transmission line, substation, and pipeline.

3.5.3.3.2 *Operation and Maintenance*

Operation and maintenance activities associated with the Project will primarily be restricted to the Central Project Area, but will also include infrequent routine, as well as unscheduled, maintenance on the transmission line, pipeline, and wells. The following discussion summarizes the impacts to biological resources that may result from the presence and functioning of the Project.

Plants. Plant community structure and resulting fauna may be altered if non-native invasive species that are currently in the area spread during construction and/or maintenance activities.

Maintenance of tower pads, access and spur roads on the transmission line would perpetuate the vegetation loss of tower pads and roads and, potentially, increase the spread of non-native, invasive vegetation.

It is unlikely that native vegetation will proliferate in the reservoir sides as they are exposed by daily and weekly rising and falling water levels. Cattails (*Typha* sp.) and sedges that grow in inundated mud and shallow water could begin to grow. However, with each reservoir filling, any plants that grew below the high water mark would be submerged, a situation that would probably eliminate them.

Wildlife. Continued loss of resources to wildlife due to habitat lost during construction is expected to be functionally negligible for most species, based on the minor expected habitat loss on the linear facilities and lack of habitat on the Central Project Area. However, two taxa, birds and bats, may experience non-negligible losses (discussed in more detail below).

Due to the small footprint of the transmission line, and infrequent maintenance activities, it is anticipated that losses of individuals or resources provided by intact habitat from on-site Project impacts will be minor to negligible.

Offsite, wildlife may also experience indirect, adverse effects from Project operation. Such effects that are considered include:

- Loss of special biological resources (e.g., springs and seeps) due to their proximity to Project operations
- Loss of dispersal areas and connectivity to other areas
- Altered home ranges and social structure
- Facilitated ingress into the Project area from Project features
- Altered plant species composition due to the introduction of exotic vegetation
- Increased depredation by predators attracted to the site

On neither the Central Project Area nor the transmission or pipeline corridors will project operations result in greater disturbance than currently exists. The water pipeline and transmission line will present no physical barrier or deterrent to movement, so will not affect the normal movements of wildlife to achieve feeding, breeding, sheltering, dispersal migration, or access to resources currently utilized. The substation would present a small barrier to movement, but it is adjacent to the town of Desert Center, the frontage road and Interstate 10, so it is unlikely that many wildlife species would be further affected. The Central Project Area has been developed as a mine for decades, so its development for the Project would not cause an incremental change that would affect wildlife use of the site.

Because of the existence of many roads in the area of the water pipeline, it is not anticipated that any new recreational access, with concomitant habitat degradation and potential species loss, will be provided by the water pipeline ROW. Similarly, roads that service the Project are already in regular daily use by Kaiser employees and local residents. Long-term operational traffic associated with the Project is anticipated to provide a negligible incremental increase over current levels (*see* Section 3.12 Transportation).

While the current use of the Central Project Area by bighorn sheep is unknown, it is assumed that sheep may still be in the vicinity of the Central Project Area. The existing mining pits, which will become Project reservoirs, are not habitat that can be used by sheep for migration or other activities. The site has been extensively mined for decades and development of a hydroelectric project will not increase negative impacts. Access to Buzzard Spring, as well as other movements, will not be further affected by use of the mining pits for the Project.

Post-construction operations will include only limited vehicular traffic (less than 5 round trips per day) in the area where sheep previously have been observed. No further disturbance will occur.

Project lands include no streams or ponds that could support any species of fish, and there will be *no impacts* to fish resources. No artificial water impoundments were detected in examination of recent aerial photographs of the Central Project Area.

Predators. Predators in the project area include common ravens and coyotes. It is known that both ravens and coyotes are present on in the Project area. Ravens were detected during biological surveys for the proposed landfill project, and were also observed during biological surveys for the pumped storage project. Coyote scat was detected during biological surveys for the pumped storage project. The presence of both species reflects past and present human use in the project area which provides these animals food, water and some shelter. Coyotes are another predator species of concern in the Project area.

Common ravens, in particular, are predators as well as scavengers, and may increase as a result of the reservoirs providing a new and secure water supply. However, the Eagle Mountain townsite currently appears to have open water resources (water treatment plant) that support the school and employees. Other open water sources include the CRA, the Metropolitan Water District's Eagle Mountain Pumping Plant, and the ponds at Lake Tamarisk. A simple increase in the quantity of water when it is already fully available does not change the availability to opportunistic predators.

Both construction and operational activities consist of project design features and mitigation measures such as designed trash deposition, avoidance areas, biological monitoring (MM BIO-1), as well as Predator Monitoring and Control Plan (MM TE-5) to reduce predator abundance. As such, it is not likely that there would be a measurable change in the density of predators, or, as a result, a significant change in impacts to local fauna.

Birds. The transmission line will be the first such structure along this route. As such, the elevated structures and wires will be new to birds in the area, which could experience losses through collisions with wires or electrocution. Project design features, which increase the distance between wires so that birds cannot touch the ground wire and "hot" wires simultaneously will eliminate electrocutions.

It is anticipated that birds protected by the Migratory Bird Treaty Act (MBTA), plus resident shorebird species, other birds, and resident bats may be attracted to the brine ponds at the Project that are associated with the reverse osmosis system, as well as the main reservoirs. The ponds and reservoirs would comprise a new water source in the region, and one located in the Pacific Flyway for migrating waterfowl. The reservoirs are not expected to constitute a significant impact to waterfowl as a water source, and the drawdown of water during peak power production is slow enough and at depth in the reservoirs such that floating birds could not be entrained in the intakes.

By virtue of their collection and evaporative function the brine ponds may concentrate naturally occurring arsenic, sodium, and other harmful elements. The source water has concentrations of nitrate, boron, fluoride, arsenic and total dissolved solids (TDS) that can exceed recommended drinking water standards (*see* Section 3.3 Groundwater). All water quality samples to date have found selenium levels to be below detection.

Groundwater TDS for the Project area has been measured at 275 to 730 mg/L; sodium has been measured at 16 to 350 mg/L (*see* Section 3.3 Groundwater). At a solar facility evaporation pond near Blythe, California, approximately 40 miles east of the Project, groundwater TDS of 960 to 1200 mg/L resulted in pond TDS of 41,000 and 53,000 mg/L. Sodium was calculated at approximately 37 percent of TDS, or approximately 355-444 mg/L in the groundwater and 15,170 to 19,610 mg/L in the pond water. The California Energy Commission determined that sodium concentrations >17,000 mg/L could cause physiological harm to migrating birds. (*See* Karl, 2005, for a thorough treatment of this condition.) Based on this analysis, and the known levels of sodium and TDS in the groundwater that would serve the Project, it is likely that sodium in the Project brine ponds would exceed safe levels for migratory birds.

Exposure to arsenic, and/or other harmful elements may be exacerbated by bioaccumulation. This occurs when the harmful elements accumulate in plants (including phytoplankton, algae, and rooted plants) and invertebrates and then successively higher trophic levels in the food chain (e.g., bacteria, phytoplankton, algae, rooted plants, invertebrates, fish, waterfowl). Solute concentrations can also “biomagnify” (Lemly, 1977; Ohlendorf, 1989). Sodium toxicity to waterfowl has been documented to occur in desert brine ponds (LUZ Solar Partners, 2008) and is dependent not only on the water salinity, but exposure time; toxic effects can be enhanced by cooler ambient temperatures. The brine ponds will be managed to minimize access and attractiveness, and include a monitoring program to determine effectiveness of deterrent and water quality (MM BIO-11).

Golden Eagles. The Central Project Site is located in a highly disturbed, previously mined area. Therefore, operation of the proposed Project will not impact golden eagles. The water pipeline will be buried, and therefore will also not impact golden eagles. The transmission line has the potential to pose a threat of electrocution or collision to golden eagles. The risk of collision will be minimized because the transmission line will be very large (500 kV) and will use very large wires which will maximize visibility to birds. Electrocution risks will be minimized by designing

the line using raptor guidelines. Wire spacing will be too large to allow birds to come in contact with more than one wire at a time.

Bats. In addition to potential impacts from ingesting potentially harmful levels of elements in the brine ponds, those bats that currently inhabit the Central Project Area may be affected.

Four species have been documented to roost in or near the Central Project Area: pallid bat, California leaf-nosed bat, Townsend's big-eared bat, and western mastiff bat. The initial debris clearing, seepage controls and filling of reservoirs may result in losses of any bats that are roosting in the pit walls. Pre-construction surveys will be conducted to determine the presence and condition of any roosting bat colonies (MM BIO-15). Once in operation, maximum reservoir volumes are fixed, and daily and weekly volume fluctuations in the two reservoirs as water is moved back and forth between them will have no effects on roosting bats.

Another possible consequence of the Project on the California leaf-nosed bat population is the loss of foraging habitat in close proximity to the Central Project Area. In radio-telemetry studies of *Macrotus* in the Cargo Muchacho Mountains, most bats foraged in the winter within a ½ mile of their deep warm mine roosts and stayed on the surface for brief periods. In the summer, bats traveled further, at least 5 miles from their roost while foraging among desert wash vegetation (Brown, 2000).

Environmental Impact Assessment Summary:

- (a) *Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species indentified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?* No. The Project is conditioned with Project design features and mitigation to reduce, avoid, or offset potential impacts.
- (b) *Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community indentified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?* No riparian habitat is found in the project area, compensation is proposed for losses of desert tortoise habitat, dry desert washes, borrowing owl, and desert dry wash woodland.
- (c) *Would the project have a substantial adverse effect on federally-protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other measures?* No federally-protected wetlands occur on the Project site.
- (d) *Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?* No. The Project is conditioned with Project design features and mitigation to reduce, avoid, or offset potential impacts. These measures include pre-construction surveys to further detect potential habitat paths on-

site and measures to reduce any effect, minimizing site disturbance, and avoidance of known habitat areas, where possible. Resource agency standards for habitat compensation will be adopted for habitat loss for desert tortoise, burrowing owl, and Desert Dry Wash Woodland.

- (e) *Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?* No. As designed the Project would conform to regulatory LORS.
- (f) *Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?* No. As designed the Project would conform to regulatory LORS, and in [continued] agency consultation, where applicable.

Impact 3.5-1 Construction Impacts on Plants. This impact is *potentially significant and subject to the mitigation program* (MM BIO-1 through MM BIO-9, and PDF BIO-1 through PDF BIO-2). Pre-construction surveys and construction controls such as an employee awareness program, on-site Project Biologist, restricted areas, revegetation plan, and minimal surface disturbance plans will be employed avoid or reduce these impacts.

Impact 3.5-2 Construction Impacts on Wildlife Species. Within in the Central Project Area, the baseline condition of the habitat is highly disturbed, with limited wildlife use. The transmission line and water pipeline will cross higher quality habitat areas and may impact species occupying those areas. These impacts are *potentially significant and subject to the mitigation program* (MM BIO-1 through MM BIO-4, MM BIO-9 through MM BIO-20, MM BIO-22, PDF BIO-1, and PDF BIO-3). Pre-construction surveys and construction controls such as an employee awareness program, on-site Project Biologist, restricted hours and areas, habitat compensation, and minimal surface disturbance plans will be employed minimize or eliminate these impacts.

Impact 3.5-3 Operational Effects on Plant Species. Plant community structure and resulting fauna may be altered if non-native invasive species that are currently in the area spread during construction and/or maintenance activities increase both abundance and distribution of those species. These impacts are *potentially significant and subject to the mitigation program* (MM BIO-1 through MM BIO-8, PDF BIO-1, and PDF BIO-2). Pre-construction surveys and operational controls such as implementing an invasive plant monitoring and control plan, revegetation plan, and minimal surface disturbance plans will be employed minimize or eliminate this impact.

Impact 3.5-4 Operational Effects to Wildlife Species. Loss of resources to wildlife is expected to be functionally negligible for most species. The primary on-site impacts to species from operation of the Project are limited to loss of individuals that move onto the site, including during transmission line maintenance. Faunal community structure may be altered if predators are attracted to reservoirs due to available water or night lighting. These impacts are considered *potentially significant and subject to the mitigation program* (MM BIO-1 through MM BIO-4,

MM BIO-9 through MM BIO-16, MM BIO-20, and MM BIO-22, and PDF BIO-4). Pre-construction surveys and operational controls such as wildlife fencing, brine pond management, employee awareness programs, adherence to survey recommendations, minimal surface disturbance plans, and habitat compensation will be employed to minimize or eliminate these impacts.

Impact 3.5-5 Indirect Impacts of Operation and Maintenance. Neither the Central Project Area nor the transmission or pipeline corridors will experience greater disturbance than currently exists. The Project will not affect the normal movements of wildlife. It is not likely that there would be a measurable change in the density of predators, or, as a result, a significant change in impacts to local fauna. Therefore, this impact is *less than significant*.

Impact 3.5-6 Impacts of Brine Ponds. Birds and bats may be affected by ingesting harmful elements and/or highly saline water in the brine ponds. This impact is *potentially significant and subject to the mitigation program* (MM BIO-11).

Impact 3.5-7 Transmission Impacts to Birds. Birds (including golden eagles) could be affected by collision with transmission lines or electrocution. This impact is *potentially significant and subject to the mitigation program* (PDF BIO-4).

Impact 3.5-8 Wetlands, Seeps, and Springs. Since there are no wetlands in the Project vicinity, there will be *no impacts* to wetlands. There will be *no impact* on seeps and springs in the Eagle Mountains. Available information indicates that these springs are not hydrologically connected to the Pinto or Chuckwalla Valley Basin aquifers since they are located in the mountains above the Pinto and Chuckwalla basins. Rather, they appear to be fed by local groundwater systems that would be unaffected by pumping for the proposed Project (NPS, 1994); also see Section 3.3 Groundwater Resources. Since flow from the springs is unlikely to be affected by the Project, the vegetation and functions supported by these springs is also unlikely to be affected by the Project.

Impact 3.5-9 Dry Desert Washes. There are many small washes crossed by the pipeline and transmission line that will be regulated by the CDFW under Section 1602 of Fish and Game Code. This impact to local washes may include degradation or loss of wash habitat, which would be monitored and limited under standard terms of the Streambed Alteration Agreement; and which will identify the condition and location of all state jurisdictional waters, impacts, and mitigation measures. This impact is considered *potentially significant and subject to the mitigation program* (MM BIO-21).

Impact 3.5-10 Operational Effects to Fish Species. Project lands include no streams or ponds that could support any species of fish, and there will be *no impacts* to fish resources.

3.5.4 Mitigation Program

The mitigation program includes project design features and mitigation measures. Project design features are design elements inherent to the Project that reduce or eliminate potential impacts. Mitigation measures are provided to reduce impacts to below a level of significance, where applicable. As appropriate, performance standards have been built into mitigation measures.

As mentioned under Regulatory Settings, LORS are based on local, state, or federal regulations or laws that are frequently required independent of CEQA review, yet also serve to offset or prevent certain impacts. The proposed Project will be constructed and operated in conformance with all applicable federal, state, and local LORS.

PDF BIO-1. Pre-construction Special Species and Habitat Survey. Following licensing and access to the Central Project Area, surveys for special species and habitats that could support special species will be conducted. A thorough examination of the Central Project Area and local springs and seeps will provide information to determine if any avoidance or adaptive management is required. Simultaneously, the site will be assessed for use by other wildlife. Based on the results of these surveys, the biological mitigation and monitoring program will be modified in ongoing consultation with the United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW). Reporting requirements for the pre-construction surveys are specified in MM BIO-2.

PDF BIO-2. Pre-construction Plant Survey. Preconstruction surveys will identify special-status plant populations and also species protected by the California Desert Native Plants Act (CDNPA). For annuals or herbaceous perennials that are dormant during certain seasons, data from 2008, 2009, and 2010 surveys will be used to assist in locating populations during dormant seasons. Based on these combined surveys, avoidance areas in construction zones will be established for special plant resources. The perimeters will be marked with wooden stakes, at least 3 feet high, and no more than 10 feet apart. Each stake will be flagged with red and white candy-striped flagging or other obvious barrier tape.

Where avoidance is not feasible, and the species can be reasonably transplanted (e.g., foxtail cactus, Wiggins' cholla, other cacti and species protected by the CDNPA), plants will be salvaged and transplanted in areas approved in the Re-Vegetation Plan. Transplantation will be part of the Re-Vegetation Plan developed for the Project. Salvaging seed and replanting may be an option considered for certain species (e.g., smoke tree, ironwood).

PDF BIO-3. Pre-construction Mammals Surveys. Prior to construction, surveys will be conducted for all burrows that might host a badger or kit fox. (These surveys can be simultaneous with those for desert tortoise burrows.) Active burrows and all fox natal dens will be avoided, where possible. The perimeters of all avoidance areas will be marked with wooden stakes, at least 3 feet high, and no more than 10 feet apart. Each stake will be flagged with red and white candy-striped flagging or other obvious barrier tape.

Where avoidance is infeasible, occupancy of burrows will be determined through fiberoptics and/or night vision equipment. All occupants will be encouraged to leave their burrows using one-way doors, burrow excavation in the late afternoon/early evening (to encourage escape at night), or other approved methods. All burrows from which badgers or foxes have been removed will be fully excavated and collapsed to ensure that animals cannot return prior to or during construction.

PDF BIO-4. Avian Protection of Transmission Line. The Licensee will develop an avian protection plan in consultation with the USFWS. The plan will: meet Avian Power Line Interaction Committee/Fish and Wildlife Service (APLIC/FWS) guidelines for an avian protection plan; present designs to reduce potential for avian electrocution and collisions; provide methods for surveying and reporting Project-related raptor mortality and managing nesting on the proposed transmission lines; and include a workers education program.

The raptor-friendly transmission lines will be developed in strict accordance with the industry standard guidelines set forth in *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006*, by Avian Power Line Interaction Committee, Edison Electric Institute, and Raptor Research Foundation and the USFWS-approved Avian and Bat Protection Guidelines. The design plan (filed for FERC approval) will include adequate insulation, and any other measures necessary to protect bats and raptors from electrocution hazards.

3.5.4.1.1 *General Biological Mitigation Measures*

Mitigation measures proposed in this section are based on the presence of biological resources – especially special-status resources and those protected by laws and regulations – and the analysis of Project effects on those species.

These mitigation measures are consistent with the NEPA Handbook (BLM, 2007), NECO Plan (BLM and CDFW, 2002), and standard agency recommendations for similar impacts. Avoidance of biological resources is the preferred method to minimize Project impacts. If avoidance is not possible, then minimization techniques are identified that will mitigate Project effects.

Additionally, site restoration along the transmission line and water pipeline corridors will assist in repairing affected habitats and minimizing long-term Project effects. Off-site compensation is

a final category of mitigation that can be used to mitigate impacts to special-status species and habitats when avoidance and disturbance cannot be avoided.

Several monitoring and/or control plans are identified here that have been developed, in draft, in consultation with the resource agencies (USFWS, NPS, CDFW, and the BLM). These plans are included in Section 12.14. The salient features for all measures and plans are summarized here to verify that they are a part of Project environmental measures.

Several mitigation measures that are identified for desert tortoises (*see* Section 3.6 Threatened and Endangered Species) will also assist in minimizing impacts to other wildlife species. In order to reduce redundancy, they are not repeated here as stand-alone BIO mitigation measures, but include the following:

- Construction Monitoring (MM TE-2)
- Predator Monitoring and Control (MM TE-5)
- Habitat Compensation (MM TE-6)

MM BIO-1. Biological Mitigation and Monitoring Program. Concurrent with final engineering design a comprehensive site-specific mitigation and monitoring program shall be verified and implemented in consultation with the Biological Technical Advisory Team. The Biological Technical Advisory Team shall be composed of the Licensee’s Environmental Coordinator and consultants, and staff from the resource managing agencies (BLM, USFWS, and CDFW).

MM BIO-2. Biological Reporting to Resource Agencies. As part of implementing protection measures, regular reports shall be submitted to the relevant resource agencies to document the Project activities, mitigation implemented and mitigation effectiveness, and provide recommendations as needed. Reporting shall include monthly reports during construction, annual comprehensive reports, and special-incident reports. The Project Biologist shall be responsible for reviewing and signing reports prior to submittal to the agencies.

MM BIO-3. Designation of an Authorized Project Biologist. An authorized Project Biologist, approved of by USFWS, the State Water Board, and CDFW, shall be responsible for implementing and overseeing the biological compliance program. This person shall be sufficiently qualified to ensure approval by the USFWS and CDFW for all biological protection measures that may be implemented by the Project. The USFWS describes a single designation for biologists who can be approved to handle tortoises as an “Authorized Biologist.” Such biologists have demonstrated to the USFWS that they possess sufficient desert tortoise knowledge and experience to handle and move tortoises appropriately. Authorized Biologists are permitted to then approve specific monitors to handle tortoises, at their discretion. CDFW must also approve such biologists, potentially including individual approvals for monitors approved by the Authorized Biologist.

MM BIO-4. Worker Environmental Awareness Program. A Worker Environmental Awareness Program (WEAP) (*see* Section 12.14) shall be implemented to ensure that Project construction and operation occur within a framework of safeguarding environmentally sensitive resources. Although facility construction has the greatest potential to harm environmental resources, the WEAP shall be designed to address those environmental issues that pertain to Project operations, such as general conduct, repairs and maintenance. All project workers will be required to attend the program.

The WEAP shall include information on biological resources that may occur on the site, with emphasis on listed and special-status species. Education shall include, but not be limited to, ecology, natural history, endangerment factors, legal protection, site mitigation measures, and hierarchy of command. Site rules of conduct shall be identified, including but not limited to: speed limits, work areas that must be accompanied by a biological monitor, parking areas, looking under parked vehicles prior to moving them, trash deposition, off-site conduct in the area of the Project, and other employee response protocols. Teamwork will be emphasized, but it will be clear that willful non-compliance may result in sufficiently severe penalties to the contractor that the contractor may dismiss the offending employee.

The educational format will be a video, shown initially by the Project Biologist and ultimately by a limited staff of trained and approved personnel. The Project Biologist also may be videotaped giving the first program, for assistance to further instructors.

All workers completing the education program shall be given a wallet card with site “rules” and contact cell phone numbers, and a sticker to affix to their hard hat. Each shall sign a sheet attesting to completing the training program.

Plants

MM BIO-5. Minimize Surface Disturbance. During construction in native habitats, all surface disturbance shall be restricted to the smallest area necessary to complete the construction. New spur roads and improvements to existing access roads shall be designed to preserve existing desert wash topography and flow patterns.

MM BIO-6. California Desert Native Plants Act. In compliance with the California Desert Native Plants Act (CDNPA), the County Agricultural Commissioner shall be consulted for direction regarding disposal of plants protected by the CDNPA. This may include salvage for subsequent revegetation of temporarily disturbed areas

on-site, salvage by an approved nursery, landscaper or other group, or landfill disposal.

MM BIO-7. Revegetation Plan. A revegetation plan (*see* Section 12.14) shall be implemented for areas that are temporarily disturbed during construction. In order to accommodate the specific features of the desert that make revegetation difficult – namely lack of predictable rainfall, lack of an “A” soil horizon, and the difficulty of re-establishing a soil community of micro-organisms – a detailed and realistic vegetation program shall address the following:

- Quantitative identification of the baseline community, both annual, herbaceous perennial and woody perennial species
- Soil salvage and replacement on areas to be revegetated
- Final site preparation and grading to include features that enhance germination and growth of native species. This includes surface pitting for the accumulation of sediments, water and seed and the construction of small swales for such species as California ditaxis and desert unicorn plant, which are commonly found in road swales and shoulders. All disturbed washes shall be recontoured to eliminate erosion and encourage the reestablishment of the drainage to its pre-construction condition.
- Vertical mulching and other techniques to promote a hospitable environment for germination and growth
- Seeding and/or planting of seedlings of colonizing species
- Development of a soil micro-community by inoculation of mycorrhizal fungi and planting species that develop a mycorrhizal net
- Weed control
- Initial irrigation, if necessary
- A realistic schedule of regrowth of native species, and remedial measures, if needed
- Monitoring and reporting

MM BIO-8. Invasive Species Monitoring and Control. To minimize the spread of invasive non-native vegetation a weed control program shall be implemented during construction. This program (*see* Section 12.14) includes:

- Baseline surveys for weed species that are present and/or are most likely to invade the Project site and surrounding area
- Methods quantifying weed invasion

- Methods for minimizing weed introduction and/or spread
- Triggers which prompt weed control
- Methods and a schedule for weed control and eradication
- Success standards

Pesticides will be used in accordance with label directions.

Wildlife

MM BIO-9. Couch's Spadefoot. The NECO Plan requirements shall be implemented to avoid disturbance of impoundments and restriction of surface flow to impoundments. Surveys on the Central Project Area shall elucidate the presence of any artificial impoundments that could subsidize Couch's spadefoot reproduction. Should those exist then surveys shall be conducted at the appropriate time to determine if larvae are present. If present, the impoundment will be avoided, if possible. If avoidance is not possible, then a new impoundment will be constructed as close as is feasible, to replicate and replace each lost impoundment. All larvae shall be removed to the new impoundment.

During construction on all Project facilities, should ephemeral pools develop in response to intense rainfall showers from early spring through fall these shall be examined for larvae of Couch's spadefoot. If larvae are present, the pools shall be flagged and avoided by construction activities. Where pools cannot be avoided, new pools shall be constructed and larvae transplanted.

MM BIO-10. Breeding Bird Surveys and Avoidance. For all construction activities in vegetated habitat that are scheduled to occur between approximately February 15 and July 30, surveys shall be completed in all potential nesting sites for active bird nests. Unless otherwise directed by the CDFW, if an active bird nest is located, the nest site shall be flagged or staked a minimum of 5 yards in all directions. This flagged zone shall not be disturbed until the nest becomes inactive. Alternatively, grading and site preparation may occur prior to February 15 to preclude interference with nesting birds.

MM BIO-11. Brine Ponds Management. Brine ponds shall be managed to minimize their attractiveness and access to migratory birds. This consists of making resources provided by the ponds less available to birds through their design (steep slopes to discourage wading birds, etc.) and netting the ponds to prevent access by birds (Figure 3.5-19).

MM BIO-12. Burrowing Owls Phase III Survey. Based on the results of the 2009 surveys, a Phase III survey shall be completed to further assess bird use of the Project area and potential impacts (CBOC, 1993). This includes a nesting season survey, followed by a winter survey if no burrows or owls are observed during the nesting season. Each of these surveys shall span several visits and days.

A pre-construction survey shall be conducted within 30 days of the start of Project construction to assess species presence and the need for avoidance. In consultation with the CDFW, the pre-construction survey may obviate the need for the Phase III survey (see MM BIO-13).

MM BIO-13. Burrowing Owl Breeding Season. The Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan limits the construction period to September 1 through February 1 if burrowing owls are present, to avoid disruption of breeding activities. Following CDFW (1995) guidance, mitigation measures for resident owls will be implemented:

- Disruption of burrowing owl nesting activities shall be avoided during construction
- Active nests shall be avoided by a minimum of a 250-foot buffer until fledging has occurred (February 1 through August 31)
- Following fledging, owls may be passively relocated

MM BIO-14. Raptor Buffer. The Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan identifies ¼-mile as an important buffer distance for prairie falcon or golden eagle aerie. No aeries or nests have been observed within a ¼-mile, but pre-construction surveys on the Central Project Area will confirm if any raptor aeries are within ¼-mile of construction. If so, a ¼-mile construction buffer will be required during the nesting seasons.

MM BIO-15. Bat Survey. The following applicable measures are required by the Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan:

- Survey for bat roosts within 1 mile of a project, or within 5 miles of any permanent stream or riparian habitat on a project site.
- Projects authorized within 1 mile of a significant bat roost site would have applicable mitigation measures, including, but not restricted to seasonal restrictions, light abatement, bat exclusion, and gating of alternative sites. Any exclusion must be performed at a non-critical time, by an authorized bat biologist.

Pre-construction bat surveys shall be completed by a qualified bat biologist to determine the existence, location and condition of bat roosts on the site. Because foraging areas used by resident bats may be critical to the functioning of those colonies, foraging habitat within the Project lands will be identified. If needed based on the results of these surveys, actions will be taken to avoid roosting and foraging impacts to resident bats, minimize that disturbance or, as an inescapable measure, evict bats. These actions shall include (as relevant):

- Designation of avoidance areas and associated measures
- Eviction of bats outside of the maternity season
- A monitoring program to determine impacts from the Project
- Extending the monitoring program for the brine ponds to include bats, as deemed necessary

MM BIO-16. Wildlife Fencing. The Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan recommends fencing potential hazards to bighorn sheep. A security fence shall be constructed around portions of the Central Project Area to *exclude larger terrestrial wildlife* – bighorn sheep, deer, coyotes, foxes, badgers – from entering Project areas that could pose a hazard to these species (Figure 3.6-4). Such areas shall include the transmission switchyard and other structures that may be dangerous to wildlife. Where exclusion fencing is required, security gates will remain closed except during specific vehicle entry and may be electronically activated to open and close immediately after vehicle(s) have entered or exited.

Permanent security fences will be installed around the Upper and Lower reservoirs, switchyard and brine ponds, for security, safety and general liability purposes, and will prevent wildlife access. These fences will also be equipped with tortoise exclusion fencing. In addition, temporary tortoise exclusion fences will be installed around work zones during construction, and will be sufficiently low (3 feet) to permit passage by sheep.

These temporary fences will be removed at the end of construction. Figure 3.6-4 shows the concept for the temporary construction fencing. If additional fencing is needed during construction to protect tortoises, this fencing will be installed and maintained during the construction period.

All required exclusion fencing shall be maintained for the life of the Project. All fences will be inspected monthly and during/following all major rainfall events. Any damage to the fencing shall be temporarily repaired immediately, followed by permanent repair within 1 week.

MM BIO-17. Construction and Operation Restricted Areas. Construction and maintenance activities shall be restricted to minimize biological Project impacts. These restrictions shall include vehicle speed limits on both paved and dirt roads; avoidance areas, work areas in which workers must be accompanied by a biological monitor, specified parking areas, trash deposition, repair, and refueling areas; looking under parked vehicles prior to movement; and the appropriate response upon finding a special-status species. For construction, this will include the entire construction period. For operations, this will apply to scheduled and unscheduled maintenance activities.

MM BIO-18. Construction during Daylight Hours. The Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan requires that, in areas without wildlife exclusion fencing or those areas that have not been cleared of tortoises, construction activities will only take place during daylight hours. This permits avoidance of construction-related mortalities of fossorial, diurnal species such as the desert tortoise, or nocturnally active species, such as the desert rosy boa.

MM BIO-19. Construction of Pipeline Trenches. The Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan identifies that pipeline trenches must be closed, covered, and/or inspected. Pipeline trenches shall be closed, temporarily fenced, or covered each day. Each day, any open trenches shall be inspected by an approved biological monitor at first light, midday, and at the end of each day to ensure animal safety. Ramps shall be provided to encourage animals to escape on their own. The biological monitor shall be confirmed by the Approved Project Biologist.

MM BIO-20. Minimize Nighttime Lighting Impacts. Facility lighting will be designed, installed, and maintained to prevent casting of nighttime light into adjacent native habitat. *See also* MM AES-1.

Special Habitats

MM BIO-21. Dry Desert Washes. There are many small washes crossed by the pipeline and transmission line that are regulated by the CDFW. A Streambed Alteration Agreement (Section 1602 of the Fish and Game Code) shall be obtained, which will identify the condition and location of all state jurisdictional waters, impacts, and mitigation measures. Mitigation includes the acreage assessment of washes that may be affected, construction requirements associated with working on or near the washes, and compensation for lost or damaged acreage. It is anticipated that this compensation will be included in the habitat compensation for special-status species (MM BIO-22 and MM TE-6).

MM BIO-22. Habitat Compensation. CDFW standard off-site compensation for loss of occupied burrowing owl habitat consists of a minimum of 6.5 acres of lands, approved by CDFW and protected in perpetuity, for each pair of owls or unpaired resident bird. In addition, existing unsuitable burrows on the protected lands should be enhanced (i.e., cleared of debris or enlarged) or new burrows installed at a ratio of 2:1. Habitat compensation for burrowing owls, if needed, will be subsumed by compensation for lost desert tortoise habitat, which also constitutes burrowing owl habitat.

The Northern and Eastern Colorado Desert Coordinated Management (NECO) Plan requires compensation for disturbance of Desert Dry Wash Woodland in WHMAs [Wildlife Habitat Management Area] at the rate of 3:1. The Project does not disturb any Desert Dry Woodland inside a WHMA. However, the compensation for desert tortoise habitat that is lost to the Project will compensate for the loss of Desert Dry Wash Woodland expected to be lost or disturbed during construction activities.

3.5.5 Level of Impact after Implementation of the Mitigation Program

Impact 3.5-1 Construction Impacts on Plants. Adherence to the mitigation program (MM BIO-1 through MM BIO-8, and PDF BIO-1 through PDF BIO-2) will result in *less than significant impacts*.

Impact 3.5-2 Construction Impacts on Wildlife Species. Adherence to the mitigation program (MM BIO-1 through MM BIO-4, MM BIO-9 through MM BIO-20, MM BIO-22, PDF BIO-1, and PDF BIO-3) will result in *less than significant impacts*.

Impact 3.5-3 Operational Effects on Plant Species. Adherence to the mitigation program (MM BIO-1 through MM BIO-8, PDF BIO-1, and PDF BIO-2) will result in *less than significant impacts*.

Impact 3.5-4 Operational Effects to Wildlife Species. Adherence to the mitigation program (MM BIO-1 through MM BIO-4, MM BIO-9 through MM BIO-16, MM BIO-20, and MM BIO-22 and PDF BIO-4) will result in *less than significant impacts*.

Impact 3.5-5 Indirect Impacts of Operation and Maintenance. Neither the Central Project Area nor the transmission or pipeline corridors will experience greater disturbance than currently exists. The Project will not affect the normal movements of wildlife. It is not likely that there would be a measurable change in the density of predators, or, as a result, a significant change in impacts to local fauna. Therefore, this impact is *less than significant*.

Impact 3.5-6 Impacts of Brine Ponds. Adherence to the mitigation program (BIO-11) will result in *less than significant impacts*.

Impact 3.5-7 Transmission Impacts to Birds. Adherence to the mitigation program (PDF -4) will result in *less than significant impacts*.

Impact 3.5-8 Wetlands, Seeps, and Springs. Since there are no wetlands in the Project vicinity, there will be *no impacts to wetlands*. There *will be no impact on seeps and springs* in the Eagle Mountains.

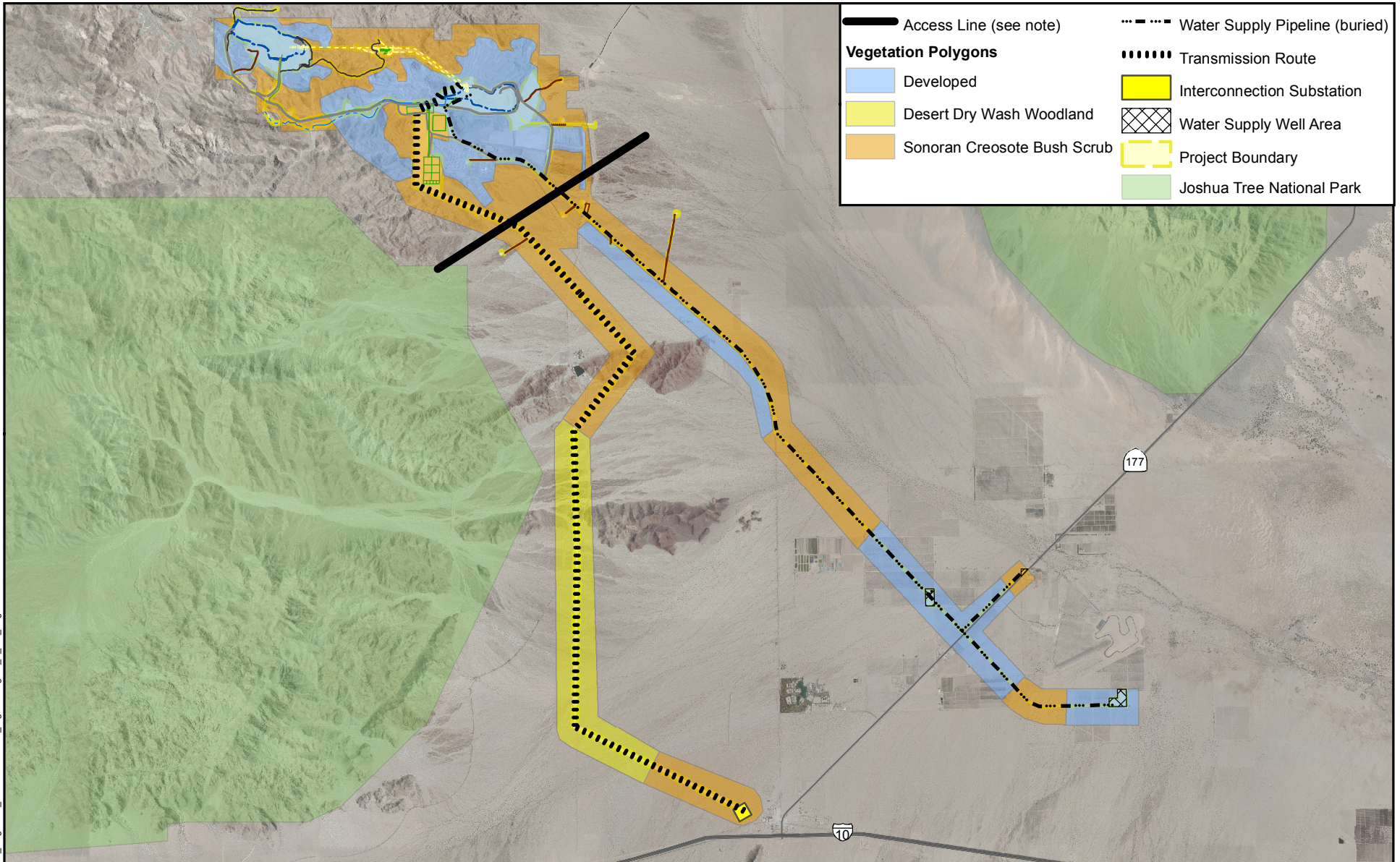
Impact 3.5-9 Dry Desert Washes. Adherence to the mitigation program (MM BIO-21) will result in *less than significant impacts*.

Impact 3.5-10 Operational Effects to Fish Species. Project lands include no streams or ponds that could support any species of fish, and there will be *no impacts to fish resources*.

All potential biological impacts can be mitigated to less than significant levels, and therefore, there are no significant impacts after the implementation of mitigation measures.

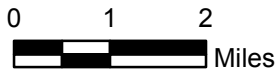
Environmental measures proposed here to minimize Project effects on biological resources have specifically addressed all potential Project effects, as well as agency concerns and known mitigation measures and approaches. Environmental measures that entail construction, such as fencing, include maintenance requirements so that the effectiveness is maintained for the life of the Project. Based on this approach, it is believed that all Project effects can be successfully and fully mitigated.

08-Feb-2012 Z:\Projects\080472_EagleMtn_fromDenver\EIR_Figures\Figure_3_5-1_Vegetation.mxd SET



Access Line (see note)	Water Supply Pipeline (buried)
Vegetation Polygons	Transmission Route
Developed	Interconnection Substation
Desert Dry Wash Woodland	Water Supply Well Area
Sonoran Creosote Bush Scrub	Project Boundary
	Joshua Tree National Park

NOTE: Mapping northwest of Access Line is based on aerial photographs and ground views rather than direct site access.
 SOURCE: USDA FSA Aerial Photography Field Office: County Image Mosaic for Riverside, CA (2010).



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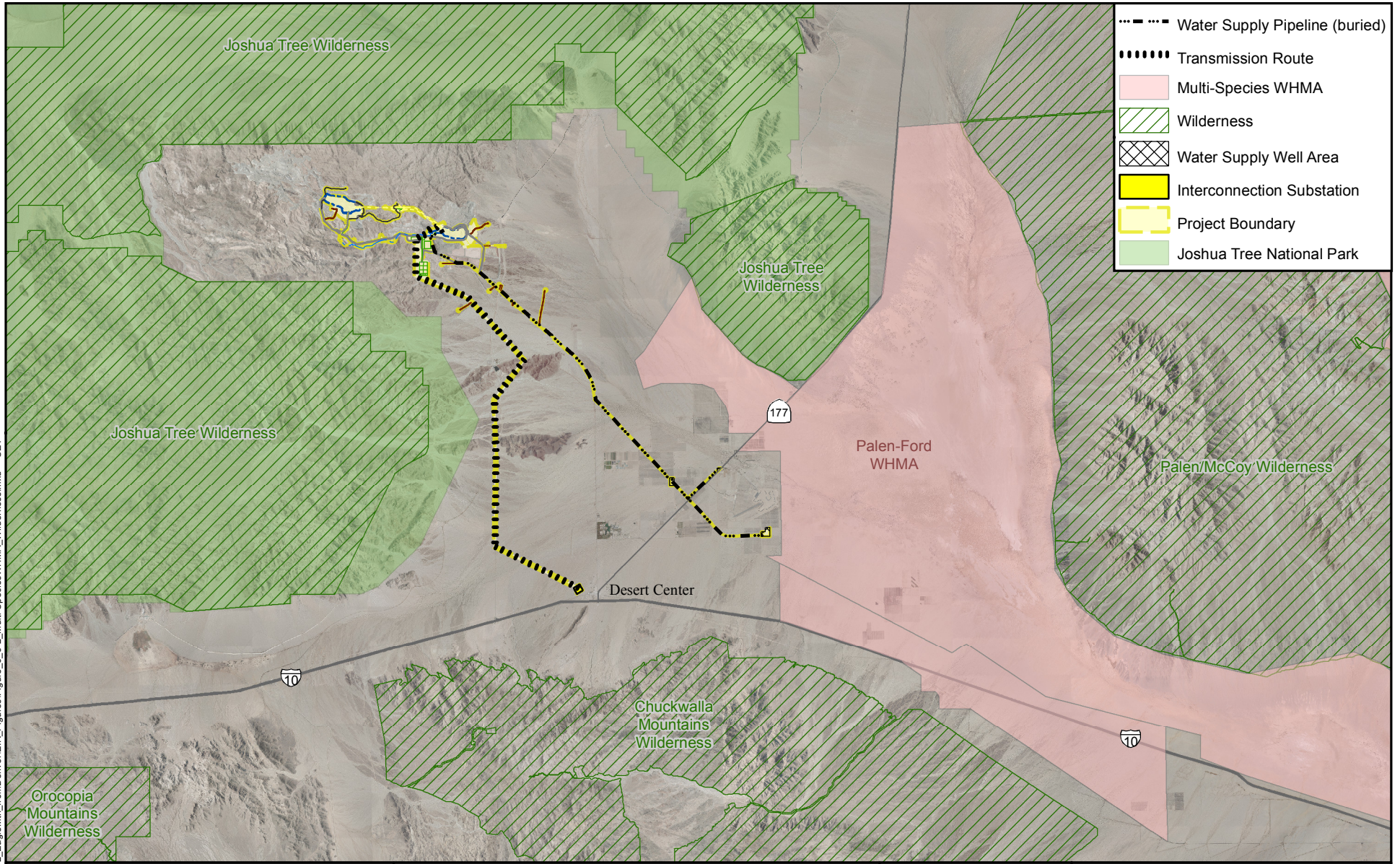


VEGETATION IN
 PROJECT AREA

July 2013

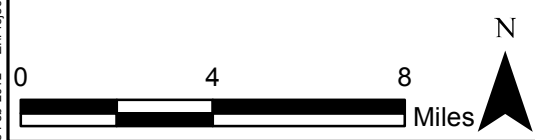
Figure 3.5-1

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- Water Supply Pipeline (buried)
- Transmission Route
- Multi-Species WHMA
- Wilderness
- Water Supply Well Area
- Interconnection Substation
- Project Boundary
- Joshua Tree National Park

SOURCE: USDA FSA Aerial Photography Field Office: County Image Mosaic for Riverside, CA (2010).



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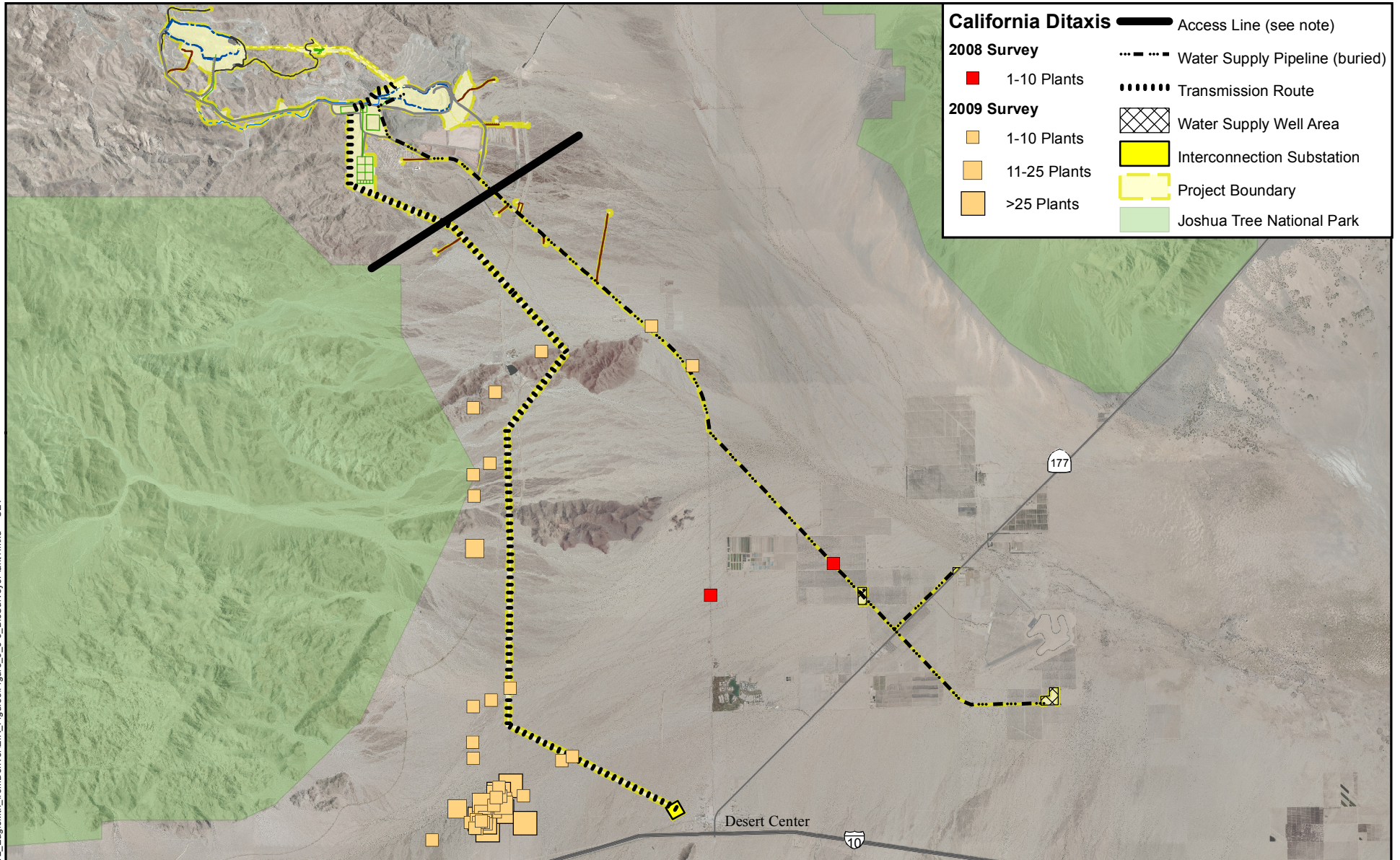


MULTI-SPECIES WHMA
AND WILDERNESS
NEAR PROJECT AREA

July 2013

Figure 3.5-2

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California Ditaxis

- Access Line (see note)
- 2008 Survey**
 - 1-10 Plants
 - Water Supply Pipeline (buried)
 - Transmission Route
- 2009 Survey**
 - 1-10 Plants
 - 11-25 Plants
 - >25 Plants
 - Water Supply Well Area
 - Interconnection Substation
 - Project Boundary
 - Joshua Tree National Park

NOTE: Mapping northwest of Access Line is based on aerial photographs and ground views rather than direct site access.
 SOURCE: USDA FSA Aerial Photography Field Office: County Image Mosaic for Riverside, CA (2010).

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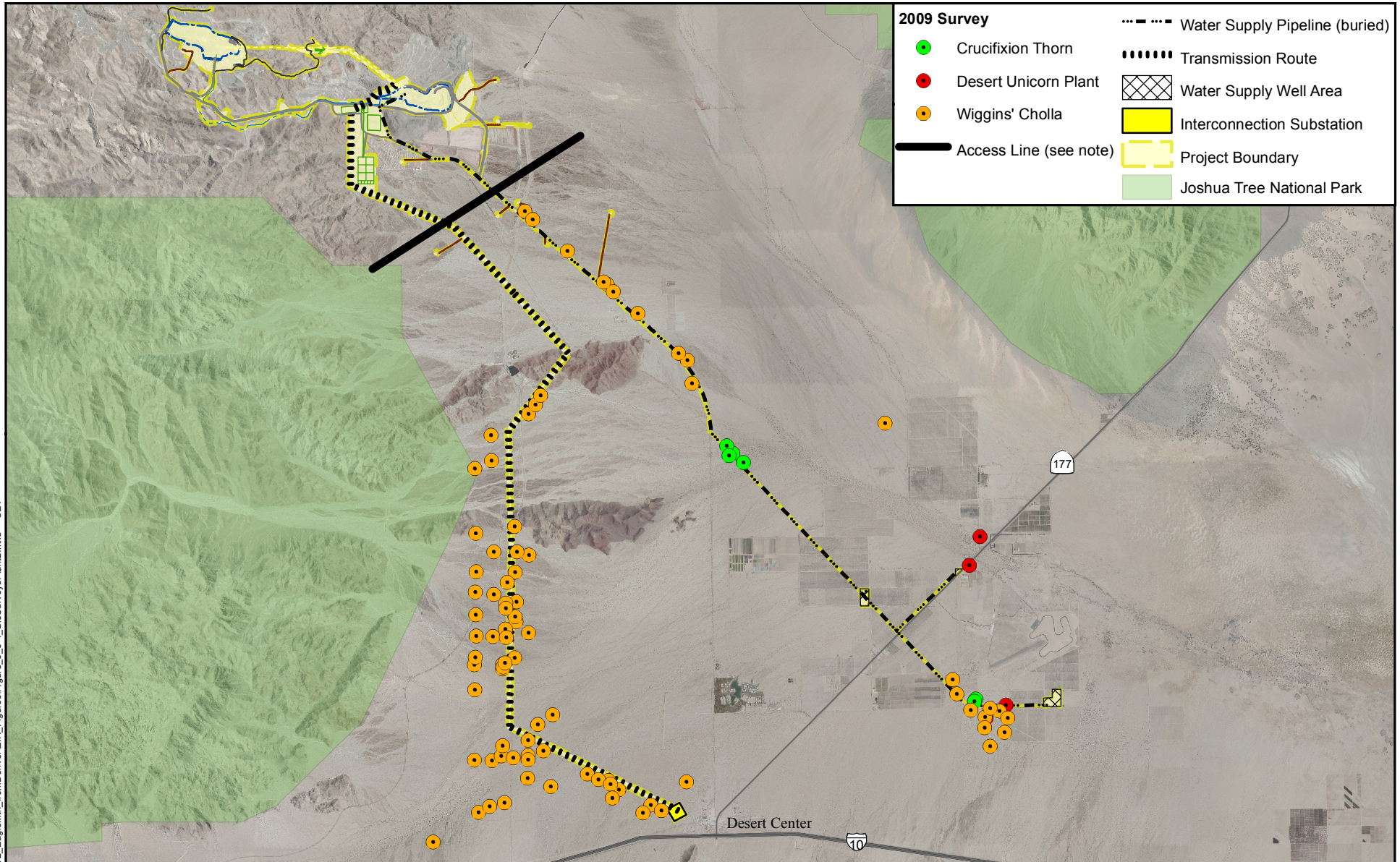


RESULTS OF SPECIAL
 BIOLOGICAL RESOURCES
 SURVEYS IN 2008 AND 2009:
 PLANTS (PAGE 1 OF 3)

July 2013

Figure 3.5-3

08-Feb-2012 Z:\Projects\080472_EagleMtn_fromDenver\ER_Figures\Figure_3_5-4_BioSurveysPlan2.mxd SET



2009 Survey

- Crucifixion Thorn
- Desert Unicorn Plant
- Wiggins' Cholla
- Access Line (see note)
- Water Supply Pipeline (buried)
- Transmission Route
- Water Supply Well Area
- Interconnection Substation
- Project Boundary
- Joshua Tree National Park

NOTE: Mapping northwest of Access Line is based on aerial photographs and ground views rather than direct site access.
 SOURCE: USDA FSA Aerial Photography Field Office: County Image Mosaic for Riverside, CA (2010).



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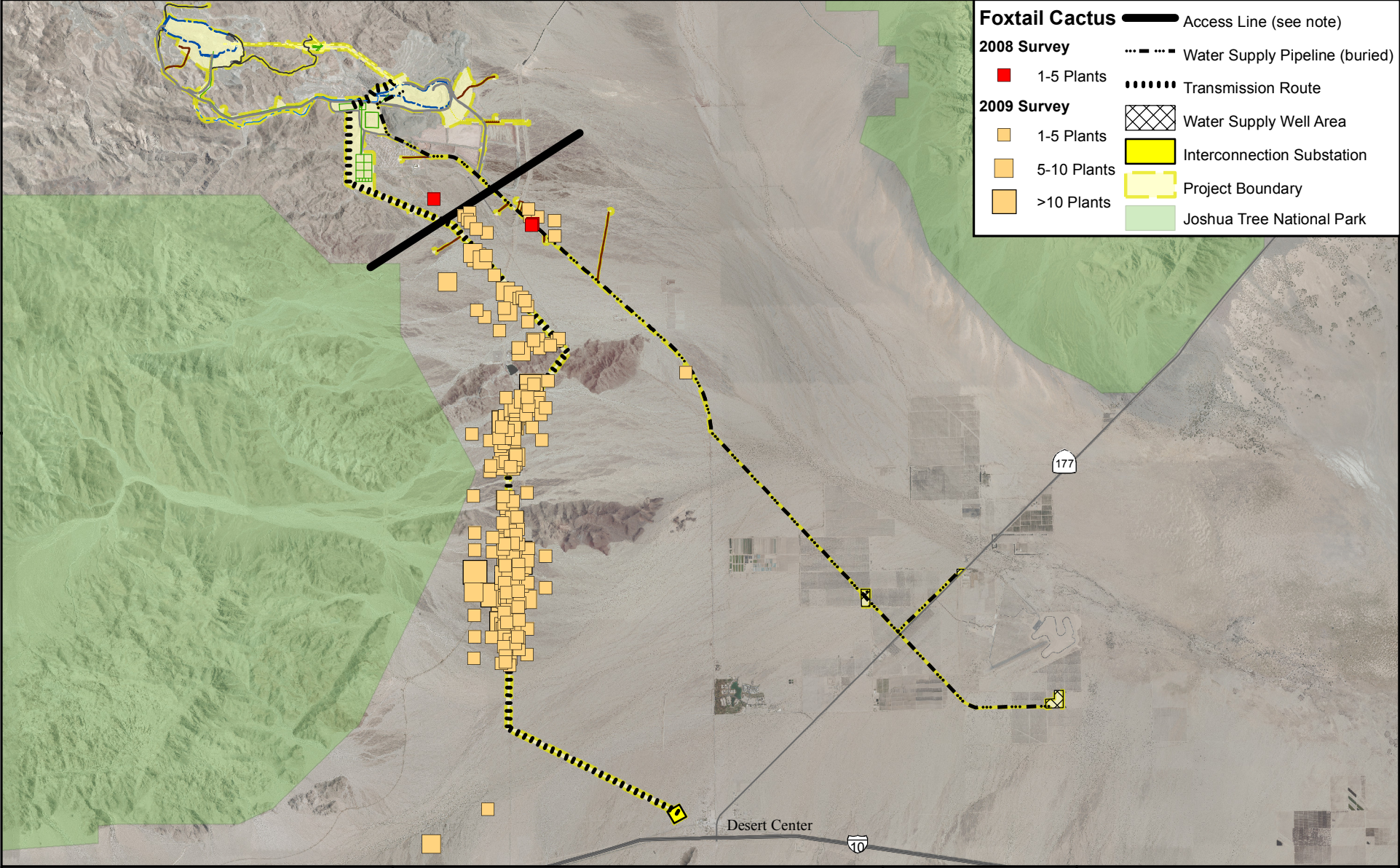


RESULTS OF SPECIAL
 BIOLOGICAL RESOURCES
 SURVEYS IN 2008 AND 2009:
 PLANTS (PAGE 2 OF 3)

July 2013

Figure 3.5-4

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Foxtail Cactus

- Access Line (see note)
- Water Supply Pipeline (buried)
- Transmission Route
- 1-5 Plants (2008 Survey)
- 1-5 Plants (2009 Survey)
- 5-10 Plants (2009 Survey)
- >10 Plants (2009 Survey)
- Water Supply Well Area
- Interconnection Substation
- Project Boundary
- Joshua Tree National Park

NOTE: Mapping northwest of Access Line is based on aerial photographs and ground views rather than direct site access.
 SOURCE: USDA FSA Aerial Photography Field Office: County Image Mosaic for Riverside, CA (2010).

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0 2 4
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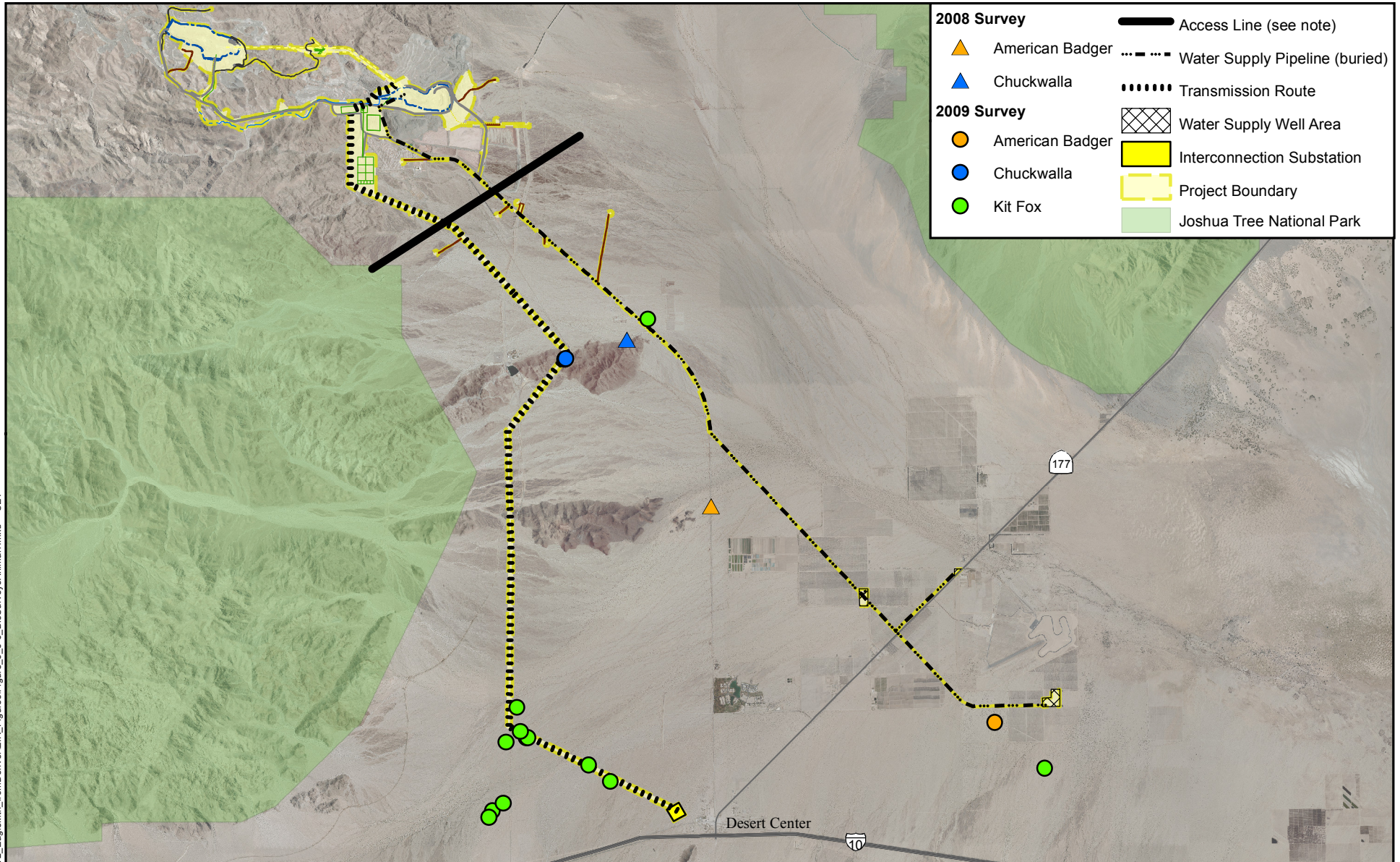
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RESULTS OF SPECIAL
 BIOLOGICAL RESOURCES
 SURVEYS IN 2008 AND 2009:
 PLANTS (PAGE 3 OF 3)

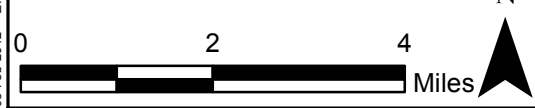
July 2013 Figure 3.5-5

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2008 Survey	Access Line (see note)
American Badger	Water Supply Pipeline (buried)
Chuckwalla	Transmission Route
2009 Survey	Water Supply Well Area
American Badger	Interconnection Substation
Chuckwalla	Project Boundary
Kit Fox	Joshua Tree National Park

NOTE: Mapping northwest of Access Line is based on aerial photographs and ground views rather than direct site access.
 SOURCE: USDA FSA Aerial Photography Field Office: County Image Mosaic for Riverside, CA (2010).



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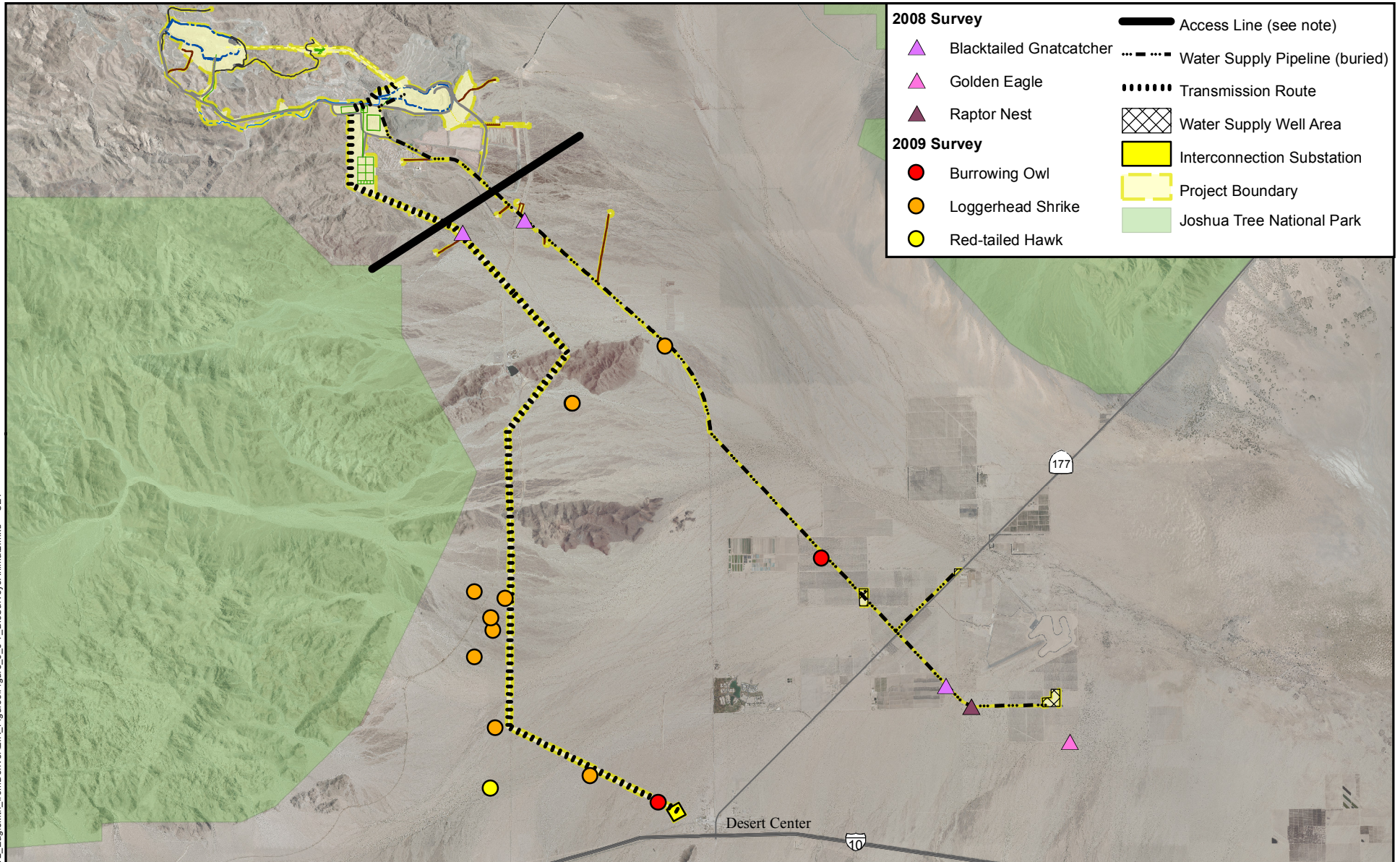


RESULTS OF SPECIAL
 BIOLOGICAL RESOURCES
 SURVEYS IN 2008 AND 2009:
 PLANTS (PAGE 1 OF 2)

July 2013

Figure 3.5-6

08-Feb-2012 Z:\Projects\080472_Eagle\Mn_fromDenver\ER_Figures\Figure_3_5-7_BioSurveys\Animal2.mxd SET



2008 Survey	Access Line (see note)
	Blacktailed Gnatcatcher
	Golden Eagle
	Raptor Nest
2009 Survey	Water Supply Pipeline (buried)
	Burrowing Owl
	Loggerhead Shrike
	Red-tailed Hawk
	Transmission Route
	Water Supply Well Area
	Interconnection Substation
	Project Boundary
	Joshua Tree National Park

NOTE: Mapping northwest of Access Line is based on aerial photographs and ground views rather than direct site access.
 SOURCE: USDA FSA Aerial Photography Field Office: County Image Mosaic for Riverside, CA (2010).

0 2 4 Miles

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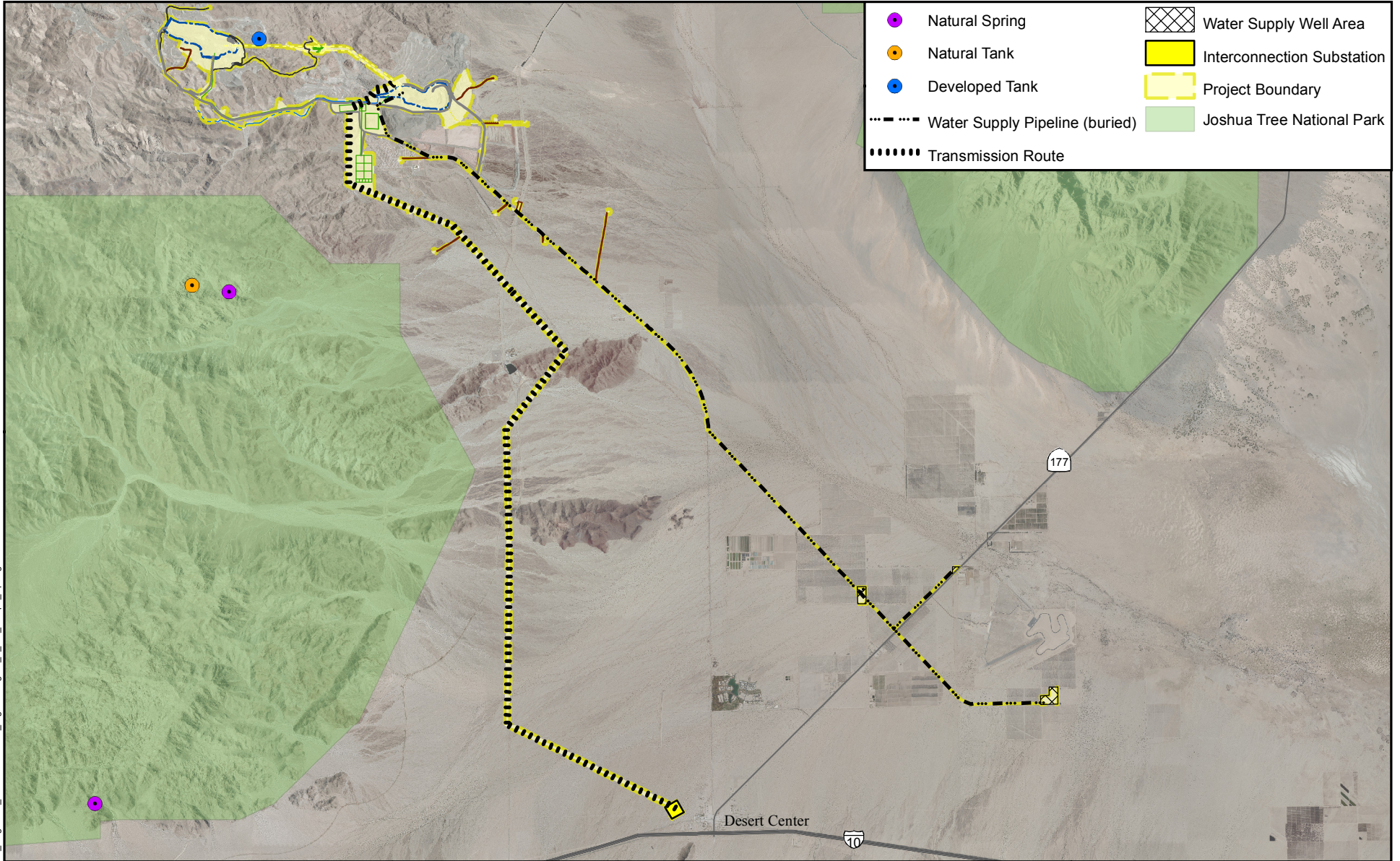


RESULTS OF SPECIAL
 BIOLOGICAL RESOURCES
 SURVEYS IN 2008 AND 2009:
 PLANTS (PAGE 2 OF 2)

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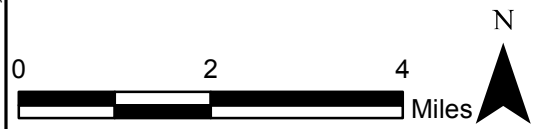
Figure 3.5-7

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- Natural Spring
- Natural Tank
- Developed Tank
- Water Supply Pipeline (buried)
- Transmission Route
- Water Supply Well Area
- Interconnection Substation
- Project Boundary
- Joshua Tree National Park

SOURCE: USDA FSA Aerial Photography Field Office: County Image Mosaic for Riverside, CA (2010).



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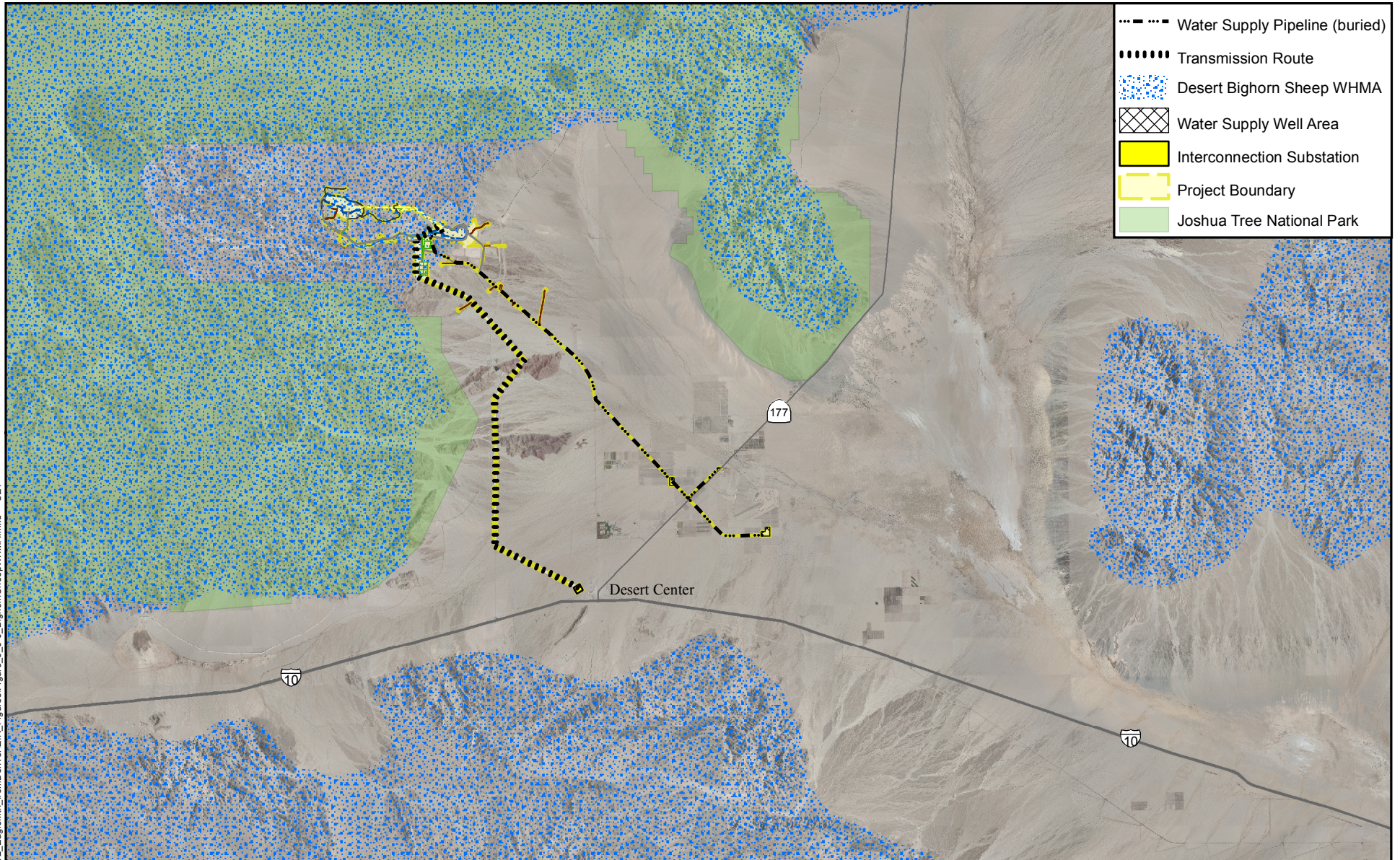


SEEPS AND SPRINGS
NEAR THE PROJECT AREA

July 2013

Figure 3.5-8

08-Feb-2012 Z:\Projects\080472_EagleMtn_fromDenver\ER_Figures\Figure_3_5-9_BighornSheep\WHMA.mxd SET



- Water Supply Pipeline (buried)
- Transmission Route
- Desert Bighorn Sheep WHMA
- Water Supply Well Area
- Interconnection Substation
- Project Boundary
- Joshua Tree National Park

SOURCE: USDA FSA Aerial Photography Field Office: County Image Mosaic for Riverside, CA (2010).

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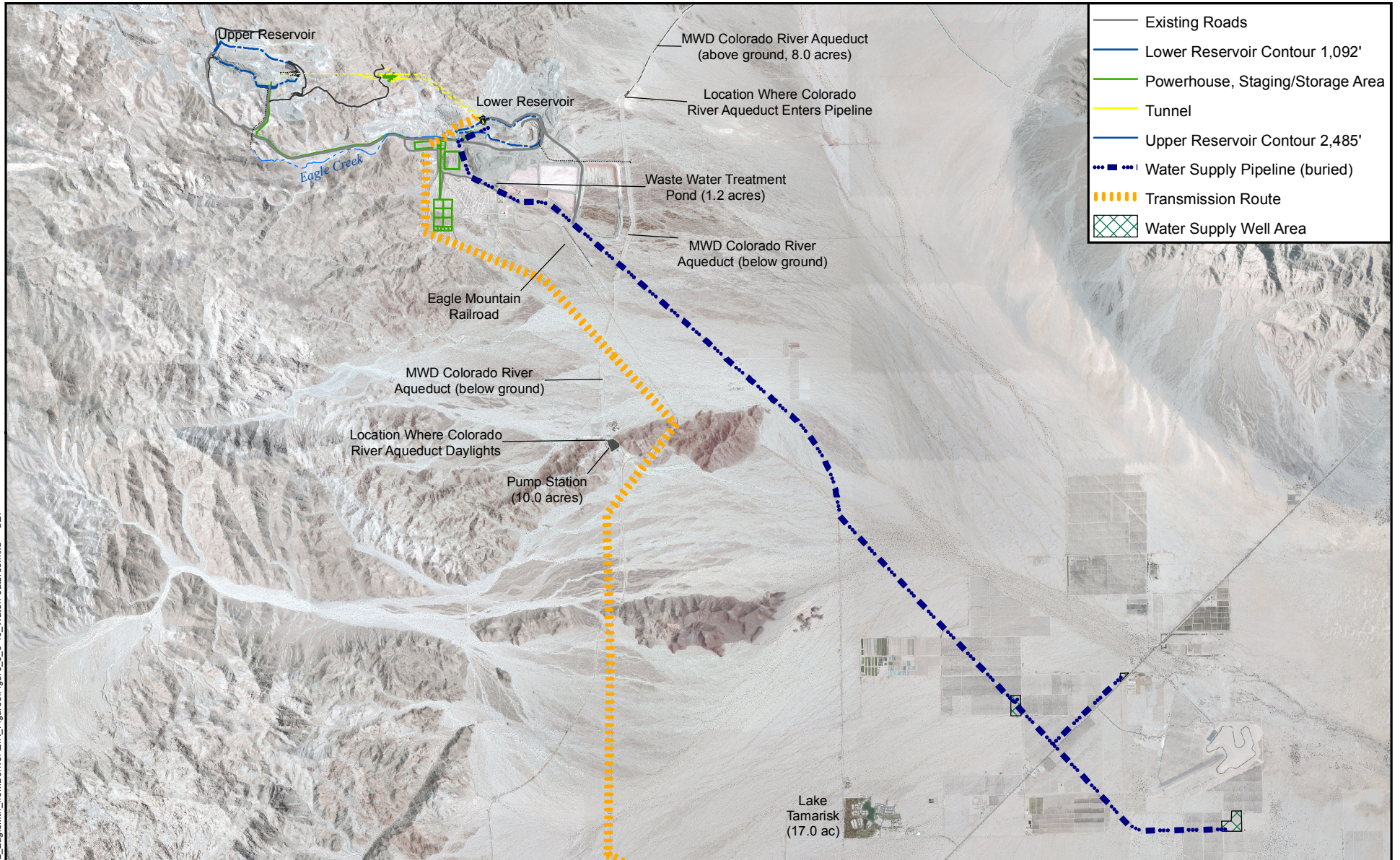


DESERT BIGHORN SHEEP WHMA
 NEAR PROJECT AREA

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Figure 3.5-9

08-Feb-2012 2: Projects\060472_Eagle\Mn_fromDenver\EIR_Figures\Figure_3_5-10_WaterFeatures.mxd SET



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EXISTING SURFACE WATER
FEATURES IN THE EAGLE MOUNTAIN
PUMPED STORAGE PROJECT AREA

July 2013

Figure 3.5-10



Figure 3.5-11. Aerial view of Eagle Mountain Mine Site, circle shows the location of the existing water treatment pond.



Figure 3.5-12. Aerial view of lower pit, with existing water treatment pond at lower left.



12/22/2007

Figure 3.5-13. Colorado River Aqueduct, Eagle Mountain Pumping Station.



12/22/2007

Figure 3.5-14. Colorado River Aqueduct at Eagle Mountain Pumping Station, view NW towards the Eagle Mountain Mine



04.07.2008

Figure 3.5-15. Colorado River Aqueduct, where it goes subsurface, north of the Eagle Mountain Mine.



10.24.2007

Figure 3.5-16. Aerial view of the Colorado River Aqueduct

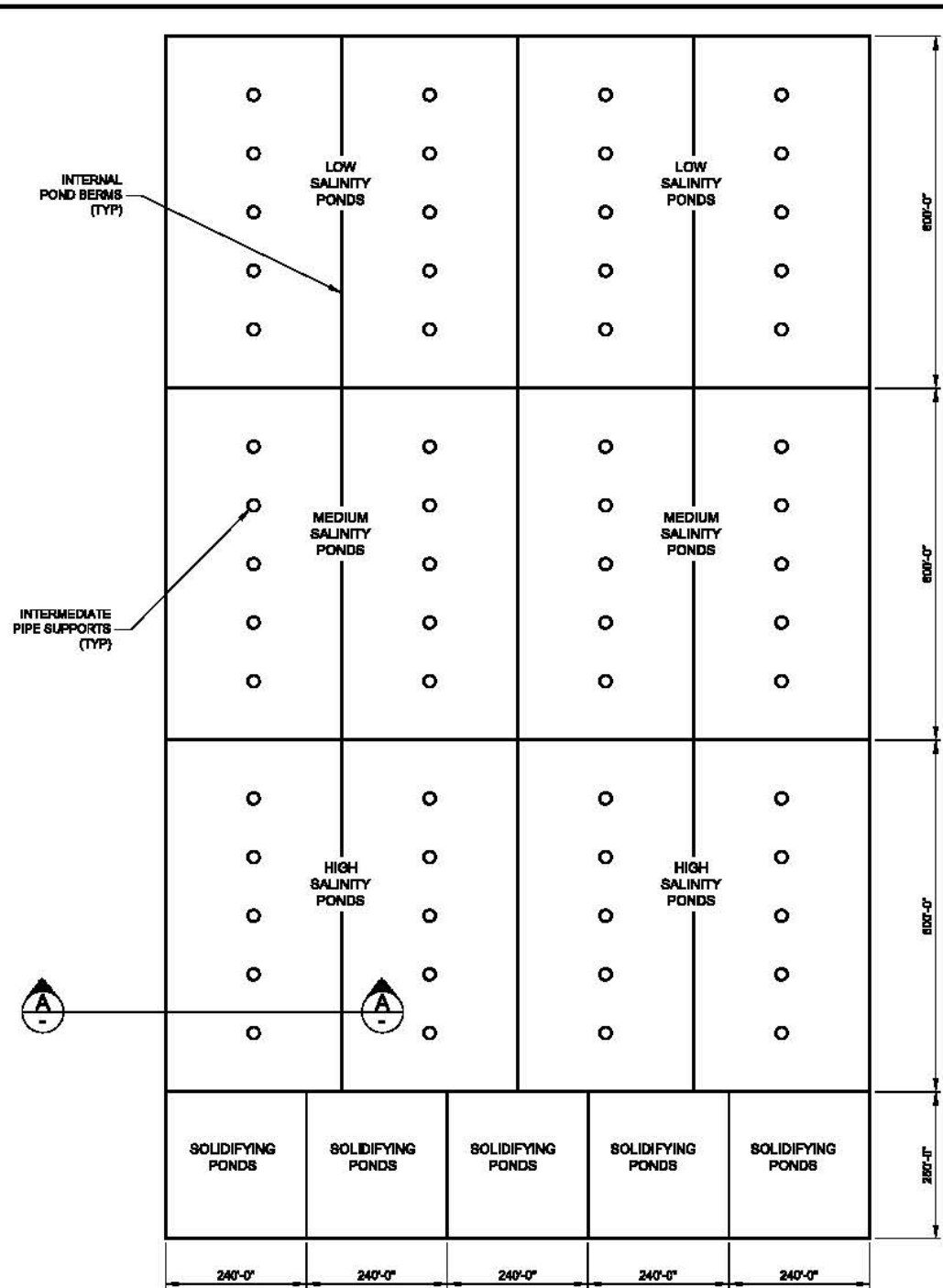


Figure 3.5-17. North Pond at Community of Lake Tamarisk



Figure 3.5-18. South pond at Community of Lake Tamarisk.

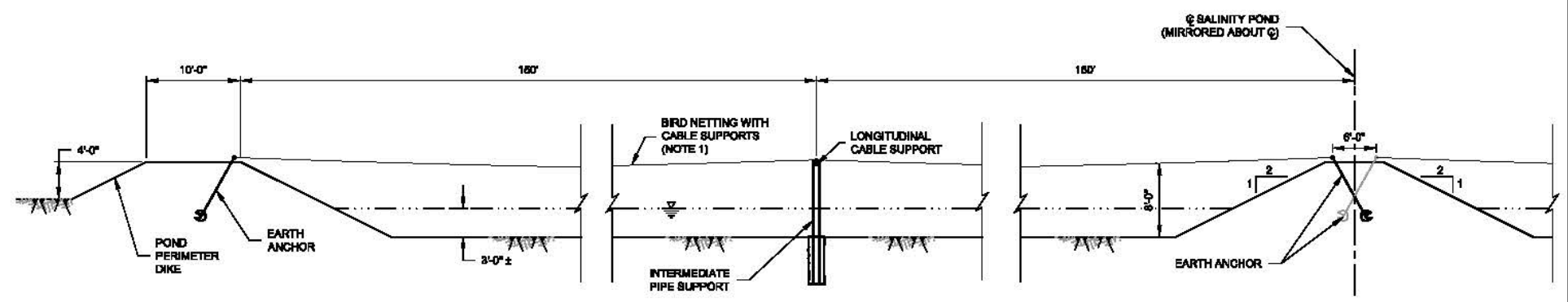
01-Jun-2010 P:\080470 Eagle MVEvaporation Ponds\Evaporation Pond.dwg



PLAN- EVAPORATION POND

- NOTES:**
1. USE UV-TREATED POLYPROPYLENE SOLID-STRAND NET WITH 1-INCH OPENINGS. USE 3/16-INCH DIAMETER UV-TREATED COATED CABLE. ATTACH NETTING TO SUPPORT CABLES WITH HOG-RINGS SPACED AT 8-INCHES ON CENTER.

Legend



SECTION A
NOT TO SCALE



PHOTO COURTESY OF WILDLIFE CONTROL TECHNOLOGY, INC.

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RO BRINE EVAPORATION
PONDS GENERAL PLAN AND
SECTION OF BIRD NETTING

July 2013

Figure 3.5-19