Section 3.7
Biological Resources

3.7 Biological Resources

3.7.1 Introduction

This section includes the methodology for determining biological resources present in the project area and a description of the environmental and regulatory setting, summarized from the *Biological Resources Report* prepared by ICF (Appendix C). It also describes the impacts on biological resources from implementation of the project, and mitigation measures that would reduce those impacts.

Growth-inducing and cumulative impacts are discussed separately in Chapter 4, *Other CEQA Analyses*.

3.7.1.1 Summary of Impacts

Table 3.7-1 presents a summary of the impacts on biological resources. See Section 3.7.6, *Impacts,* and Section 3.7.7, *Mitigation Measures*, for a detailed discussion of all impacts and mitigation measures.

Table 3.7-1. Summary of Biological Resources Impacts

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
BIO-1a: Disturbance, Mortality, and Loss of Habitat for Desert Tortoise	All Alternatives	Significant	BIO-MM-1a: Construction Measures Required to Minimize, Reduce, or Mitigate Impacts to Desert Tortoise. BIO-MM-1b: Limit Footprint of Disturbance Areas within Special-Status Species Habitats BIO-MM-1c: Implement Pre-Construction and Ongoing Awareness and Training Program. BIO-MM-1d: Conduct Ongoing Biological Construction Monitoring. BIO-MM-1e: Minimize Potential Construction Hazards to Special-Status Species BIO-MM-1f: Minimize Construction and/or Operational Practices and/or Facilities to Prevent Attraction of Project-Related Predators. BIO-MM-1g: Reduction of Project-Related Spread of Invasive Plant Species BIO-MM-1h: Compensate Impacts to Desert Tortoise and Mohave Ground Squirrel	Less than significant (other than desert tortoise movement) Less than Significant (No Project Alternative, desert tortoise movement) Potentially Significant (all action alternatives, desert tortoise movement)

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
			BIO-MM-1i: Integrated Pest Management and Adaptive Management Plan for Agricultural Treatment Units BIO-MM-1j: Reduction of Night Light Spillover	
BIO-1b: Disturbance, Mortality, and Loss of Habitat for Mohave Ground Squirrel	All Alternatives	Potentially Significant	BIO-MM-1b, BIO-MM-1c, BIO-MM-1d, BIO-MM-1e, BIO-MM-1f, BIO-MM-1g, BIO-MM-1h, BIO-MM-1i, BIO-MM-1j, BIO-MM-1k: Other Measures Required to Minimize, Reduce, or Mitigate Impacts to Mohave Ground Squirrel	Less than Significant
BIO-1c: Disturbance, Mortality, and Loss of Habitat for Burrowing Owl and American Badger, and Mortality of Desert Kit Fox	All Alternatives	Potentially Significant	BIO-MM-1b, BIO-MM-1c, BIO-MM-1d, BIO-MM-1e, BIO-MM-1f, BIO-MM-1g, BIO-MM-1h, BIO-MM-1i, BIO-MM-1j, BIO-MM-1l: Other Measures Required to Minimize, Reduce, or Mitigate Impacts to Burrowing Owl BIO-MM-1m: Minimize Impacts to American Badger Natal Dens and Desert Kit Fox Occupied Dens	Less than Significant
BIO-1d: Disturbance, Mortality, and Loss of Habitat to Loggerhead Shrike and Northern Harrier	No Project	Less than Significant	None Required	--
	All Action Alternatives	Potentially Significant	BIO-MM-1b, BIO-MM-1c, BIO-MM-1d, BIO-MM-1e, BIO-MM-1f, BIO-MM-1i, BIO-MM-1n: Avoid Impacts to Loggerhead Shrike, Northern Harrier, and Other Nesting Migratory Birds (including Raptors)	Less than Significant
BIO-1e: Mortality and Loss of Habitat to Mojave River Vole	All Alternatives	Less than Significant	None Required	--
BIO-1f: Mortality and Loss of Habitat for Mojave Fringe-Toed Lizard	All Alternatives	Less than significant	BIO-MM-1b, BIO-MM-1c, BIO-MM-1d, BIO-MM-1e, BIO-MM-1f, BIO-MM-1g, BIO-MM-2: Habitat Compensation for Loss of Sensitive Natural Communities	Less than Significant
BIO-1g: Loss of Other Special-Status Birds	All Alternatives	Potentially Significant	BIO-MM-1i, BIO-MM-1i, BIO-MM-1n	Less than Significant
BIO-1h: Loss of Individual Plants or Disturbance to Special-Status Plants	All Alternatives	Potentially Significant	BIO-MM-1g, BIO-MM-1o	Less than Significant

Impact	Applicable Alternative	Significance before Mitigation	Mitigation Measures	Significance after Mitigation
BIO-2: Reduction or Loss of Function of Riparian Habitat or Sensitive Natural Communities	All Alternatives	Potentially Significant	BIO-MM-2	Less than Significant
BIO-3: Loss or Disturbance of Federal and/or State Jurisdictional Waters (including wetlands)	All Alternatives	Potentially Significant	BIO-MM-3: Measures Required to Minimize, Reduce, or Mitigate Impacts to Waters and/or Wetlands under the Jurisdiction of the State	Less than Significant
BIO-4: Conflicts with Wildlife Movement	No Project Alternative	Less than Significant	None Required	--
	All Action Alternatives	Potentially Significant	BIO-MM-1a, BIO-MM-1b, BIO-MM-1c, BIO-MM-1d, BIO-MM-1e, BIO-MM-1f, BIO-MM-1g, BIO-MM-1h, BIO-MM-1i, BIO-MM-1j, BIO-MM-1k, BIO-MM-1l BIO-MM-4: Implement Applicable Mitigation to Address Locations within the Project Area that Overlap DWMAs (or Conservation Areas) of the West Mojave Plan	Less than Significant Potentially Significant (desert tortoise only)
BIO-5: Removal of Protected Trees	All Alternatives	Less than Significant	None Required	--
BIO-6: Conflicts with West Mojave Plan Conservation Requirements on BLM Land	No Project Alternative	No Impact	None Required	--
	All Action Alternatives	Potentially Significant	BIO-MM-1a, BIO-MM-1b, BIO-MM-1c, BIO-MM-1d, BIO-MM-1e, BIO-MM-1f, BIO-MM-1g, BIO-MM-1h, BIO-MM-1i, BIO-MM-1j, BIO-MM-1k, BIO-MM-1l BIO-MM-4	Less than Significant

3.7.1.2 Methods Used to Identify Biological Resources

The methods used to identify biological resources in the project area consisted of pre-field literature review and field surveys.

Pre-field Literature Review

Prior to field surveys, ICF biologists conducted a comprehensive literature review related to the project area to identify potential special-status species that may be found in the project area. Pertinent sources reviewed were:

- California Natural Diversity Database (CNDDB) (California Department of Fish and Game 2011) for the nine 7.5-minute U.S. Geological Survey quadrangle maps in the project vicinity: Hinkley, Barstow, Barstow SE, Mud Hills, Water Valley, Lockhart, Twelve Gauge Lake, Wild Crossing, and Hodge.
- California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (California Native Plant Society 2011).
- United States Fish and Wildlife Service (USFWS) Species list for the project area was generated using the online Information, Planning and Conservation System (IPaC).
- Literature detailing the habitat requirements of special-status species.
- Most recent USFWS critical habitat maps (USFWS 2011b).
- U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA/NRCS 2011).
- Review of biological survey data collected by CH2MHill and provided by Haley & Aldrich (Pacific Gas and Electric 2011).
- The West Mojave Plan (BLM 2005).

Field Survey

ICF biologists conducted reconnaissance-level field surveys in December 2011 to identify and evaluate vegetation communities and habitat assessments for special-status plants and wildlife present within the project area.

Reconnaissance field surveys included on-ground evaluation for the presence, absence, or likelihood of occurrence of special-status species and vegetation types, and for more general biological resources within the project area. Although focused protocol surveys for plants or wildlife were not performed during this field survey, habitat assessments were performed. Parameters evaluated for special-status plants included topography, soil conditions, elevation, hydrology, the site's operational activities, and life history needs for the specific species. Parameters evaluated for special-status wildlife included connectivity to documented and potentially occurring habitat, hydrology, access to the site, foraging and nesting habitat, the site's operational activities, and life history needs for each species.

Only a portion of the study area could be surveyed due to access restrictions, therefore, much of the reconnaissance was done by visual observation from public roads only.

A formal jurisdictional wetland delineation was not conducted for the project area; however, potential jurisdictional features were noted and mapped during the habitat assessment.

A more detailed description of field survey methods is provided in the *Biological Resources Study* (Appendix C).

Vegetation Mapping

Vegetation mapping was conducted in the field using approximate 1 inch to 400-foot scale aerials (aerial dated January 31, 2009), which were later transferred to a digital file using Google Earth and then converted to Geographic Information System shapefiles. Since the field visit, one polygon was added to the study area in the northeast portion. For this polygon, a Google Earth aerial (dated January 31, 2009) was used with reference to the vegetation mapping completed in the field to aerially interpret the vegetation. Where possible, the vegetation mapping followed the classifications defined in A Manual of California Vegetation (Sawyer et al. 2009); however, Holland (1986) was also conferred. A component of aerial interpretation was required for some of the remote and inaccessible locations of the study area, and was based on colorations and patterns as distinguishing features on the aerial photography.

Geographic Information System Analysis

Geographic information system analysis was completed by overlaying the project's direct impact footprint on the vegetation communities to calculate the number of acres of each plant community that are estimated to be removed by the project. In addition, a scaling factor was used for potential direct impacts that are expected but are not currently defined in geographic space. Scaling approaches to adjust the areas of potential impact up from the Feasibility Study/Addenda numbers are described in Chapter 2, *Project Description*.

3.7.2 Regulatory Setting

The federal, state, and local plans, policies, and laws relevant to biological resources are discussed in this section.

3.7.2.1 Federal Regulations

Federal Endangered Species Act

The federal Endangered Species Act (ESA) (U.S. Government Code [USC], Title 16, Sections 1530 et seq.) protects fish and wildlife species and their habitats that have been identified by the USFWS as threatened or endangered. Endangered refers to species, subspecies, or distinct population segments that are in danger of extinction through all or a significant portion of their range; threatened refers to species, subspecies, or distinct population segments that are likely to become endangered in the near future.

USFWS regulates the "take" (i.e., killing, harassing, or habitat destruction) of federally listed species through Section 9 of the ESA. Take of listed species can be authorized through either the ESA Section 7 consultation process for actions by federal agencies or the ESA Section 10 permit process for actions by nonfederal agencies. Federal agency actions include activities that are:

- On federal land,
- Conducted by a federal agency,

- Funded by a federal agency, or
- Authorized by a federal agency (including issuance of federal permits and licenses).

Under Section 7, the federal agency conducting, funding, or permitting an action (the federal lead agency) must consult USFWS to ensure that the proposed action will not jeopardize endangered or threatened species or destroy or adversely modify designated critical habitat. If a proposed project "may affect" a listed species or designated critical habitat, the lead agency is required to prepare a biological assessment evaluating the nature and severity of the expected effect. In response, USFWS issues a biological opinion with a determination that the proposed action either:

- May jeopardize the continued existence of one or more listed species (jeopardy finding) or result in the destruction or adverse modification of critical habitat (adverse modification finding), or
- Will not jeopardize the continued existence of any listed species (no jeopardy finding) or result in adverse modification of critical habitat (no adverse modification finding).

Under Section 10, which applies to projects where federal action is not involved and take of a listed species may occur, the project proponent may seek an incidental take permit under Section 10(a) of the ESA. Section 10(a) of ESA allows USFWS to permit the incidental take of listed species if such take is accompanied by a habitat conservation plan that ensures minimizing and mitigation of impacts associated with the take.

The biological opinion issued by USFWS may stipulate discretionary "reasonable and prudent" conservation measures. If the project would not jeopardize a listed species, USFWS issues an incidental take statement to authorize the proposed activity.

The ESA applies to the project area due to the presence of one ESA listed threatened species: the desert tortoise. Desert tortoise is known to occur in the project area, which contains many areas of suitable habitat for this species.

The Recovery Plan for the Mojave Population of the Desert Tortoise

The Recovery Plan for desert tortoise (USFWS 2011a) identifies six recovery units, in which one to four Desert Wildlife Management Areas (DWMAs) were designated, and describes the development and implementation of specific recovery actions focused within the DWMAs. BLM administers the DWMAs on federal land to protect important wildlife and natural resources, such as the desert tortoise. Maintaining high survivorship of adult desert tortoise was identified as the key factor in recovery (U.S. Fish and Wildlife Service 2011a). The project area occurs within a portion of the Superior-Cronese DWMA (see Figure 3.7-2).

The recovery plan is considered by regulatory agencies in establishing compensatory mitigation or other requirements during the ESA permitting process. The recovery plan is used in this capacity in this EIR as a guide in developing mitigation ratios in the impact analysis.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 USC 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, and Japan; and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703; 50 CFR 10

21). Most actions that result in taking or in permanent or temporary possession of a protected species constitute violations of the MBTA. Examples of permitted actions that do not violate the MBTA are the possession of a hunting license to pursue specific game birds, legitimate research activities, display in zoological gardens, bird-banding, and other similar activities. USFWS is responsible for overseeing compliance with the MBTA, and the U.S. Department of Agriculture's Animal Damage Control Officer makes recommendations on related animal protection issues.

The project area supports habitat for the presence of nesting birds and migratory birds protected under the MBTA.

The Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c), enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from "taking" bald eagles, including their parts, nests, or eggs. The Act provides criminal penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any bald eagle … [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." For purposes of these guidelines, "disturb" means: "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment.

The project area does not include suitable nesting or foraging habitat for bald eagles. The project area also does not include any nesting habitat for golden eagles, although the project area does include potential foraging habitat for golden eagles.

Federal Noxious Weed Act

Public Law 93-629 (7 U.S.C. 2801 et seq.; 88 Stat. 2148), enacted January 3, 1975, established a Federal program to control the spread of noxious weeds. The Secretary of Agriculture was given the authority to designate plants as noxious weeds by regulation, and the movement of all such weeds in interstate or foreign commerce was prohibited except under permit. The Secretary was also given authority to inspect, seize and destroy products, and to quarantine areas, if necessary to prevent the spread of such weeds. The Secretary was also authorized to cooperate with other Federal, State and local agencies, farmers associations and private individuals in measures to control, eradicate, or prevent or retard the spread of such weeds.

Section 1453 of P.L. 101-624, the 1990 Farm Bill, enacted November 28, 1990 (104 Stat 3611) amended the Act by requiring each Federal land-managing agency to:

- Designate an office or person adequately trained in managing undesirable plant species to develop and coordinate a program to control such plants on the agency's land;

- Establish and adequately fund this plant management program through the agency's budget process;
- Complete and implement cooperative agreements (requirements for which are provided) with the States regarding undesirable plants on agency land; and
- Establish integrated management systems (as defined in the section) to control or contain undesirable plants targeted under the cooperative agreements.

The law also requires that any environmental assessments or impact statements that may be required to implement plant control agreements must be completed within 1 year of the time the need for the document is established.

The project area contains noxious weeds and potential for the proliferation of noxious weeds due to project implementation.

The Federal Noxious Weed Act does not require specific permits to conduct actions where noxious weeds are present, provided that noxious weeds are not moved. However, the assessment of impacts in this EIR takes into account the concerns in the analysis. BLM implements the Federal Noxious Weed Act for the portions of the project area that are on federal land.

Clean Water Act

The federal Clean Water Act (CWA) is the primary federal law that protects the quality of the nation's surface waters when they are traditionally navigable waters, are tributary or adjacent to traditionally navigable waters, or are interstate waters. Waters under the jurisdiction of the CWA are referred to as "waters of the United States." The U.S. Army Corps of Engineers regulates fill in waters of the United States under Section 404 of the Clean Water Act. Point discharges to waters of the United States are regulated under Section 402 of the Clean Water Act through National Pollutant Discharge Elimination System (NPDES) permits; in California the regional Water Boards have been delegated the authority to issue NPDES permits. Under Section 401 of the Clean Water Act, state agencies review permits issued by the U.S. Army Corps of Engineers for their effects on water quality. In general, the U.S. Army Corps of Engineers takes jurisdiction over waters that are traditionally navigable, that drain to a traditionally navigable water, or that are adjacent or otherwise have a significant nexus to a traditionally navigable water.

The U.S. Army Corps of Engineers has previously identified that the Mojave River is a water of the United States. For this EIR, waters that drain to the Mojave River, including project area desert washes, are considered to be potential waters of the United States. Most of the project area that would be affected by remedial actions drains northward to nearby Harper Lake. The U.S. Army Corps of Engineers has previously identified that Harper Lake is an intrastate water, and that its tributaries, including project area desert washes, are not considered waters of the United States. However, tributaries to Harper Lake are considered waters of the state and discharges to them would be regulated under the state Porter-Cologne Water Quality Control Act. Section 3.7.5.8 below describes the jurisdictional waters within the project area.

The West Mojave Plan

The West Mojave Plan is a federal land use plan that outlines the strategy to conserve and protect more than 100 sensitive plant and animal species, as well as provide guidance for compliance with requirements of the State and federal Endangered Species Acts, respectively (Bureau of Land

Management 2005). The West Mojave Plan planning area extends through portions of San Bernardino, Los Angeles, Kern, and Inyo Counties. The West Mojave Plan originally started as a broader effort to establish a Habitat Conservation Plan that would cover activities on both private and public land throughout the western Mojave Desert. However, the West Mojave Plan was only adopted as a federal land management plan for federal lands under the jurisdiction of the BLM. The West Mojave Plan does not apply to areas outside of federal land.

The West Mojave Plan includes, but is not limited to, the following species for conservation:

- Desert tortoise (*Gopherus agassizii*).
- Mohave ground squirrel (*Xerospermophilus mohavensis*).
- Burrowing owl (*Athene cunicularia*).
- Mojave fringed-toed lizard (*Uma scoparia*).
- Desert cymopterus (*Cymopterus deserticola*).
- Mojave monkeyflower (*Mimulus mohavensis*).

The project area partially overlaps habitat conservation areas on BLM land designated for desert tortoise and Mohave ground squirrel by the West Mojave Plan. Within the project area, the desert tortoise and Mohave ground squirrel conservation areas in the West Mojave Plan are those portions of the Superior-Cronese DWMA located on federal land.

The West Mojave Plan lists certain requirements for implementing projects within habitat conservation areas on federal land (BLM Management 2006). These requirements are considered in the identification of mitigation for conservation areas on federal land that fall within the project area.

3.7.2.2 State Regulations

California Endangered Species Act

The California Endangered Species Act (CESA) (Fish and Game Code Sections 2050–2097) is administered by the California Department of Fish and Game (CDFG) and prohibits the take of plant and animal species designated by CDFG as either threatened or endangered in the state of California. "Take" in the context of the CESA means to hunt, pursue, kill, or capture a listed species, as well as any other actions that may result in adverse impacts when attempting to take individuals of a listed species.

Sections 2091 and 2081 of the CESA allow CDFG to authorize exceptions to the state's prohibition against take of a listed species. Section 2091 allows state lead agencies that have formally consulted with CDFG to take a listed species, if the take is incidental to carrying out an otherwise lawful project that has been approved under CEQA. Section 2081 allows CDFG to authorize take of a listed species for educational, scientific, or management purposes. Private developers whose projects do not involve a state lead agency under CEQA may not take a listed species without formally consulting with CDFG and agreeing to strict measures and standards for managing the listed species.

The CESA applies to the project area due to the presence of two CESA listed threatened species, the Mohave ground squirrel and desert tortoise, which have been documented in the project area and suitable habitat for these species is found in many parts of the project area.

California Department of Fish and Game Regulations

Protected Species in the Fish and Game Code

The California Fish and Game Code provides protection from take for a variety of species, referred to as fully protected species. Section 5050 lists fully protected amphibians and reptiles and prohibits the take of such reptiles and amphibians except as provided in Sections 2081.7 or 2835. Section 5515 prohibits take of fully protected fish species except as provided in Sections 2081.7 or 2835. Fully protected birds are listed under Section 3511, and fully protected mammals are listed under Section 4700; both of these sections prohibit take except as provided in Sections 2081.7 and 2835. Except for take related to scientific research, all take of fully protected species is prohibited.

The project area does not include habitat for any fully protected species.

Mammal Hunting Regulations

The Mammal Hunting Regulations 2011–2012, Subdivision 2. Game and Furbearers, Chapter 5. Furbearing Mammals, §460 states that fisher, marten, river otter, desert kit fox and red fox may not be taken at any time.

The project area has suitable habitat for desert kit fox.

California Native Plant Protection Act and Natural Community Conservation Planning Act

The California Native Plant Protection Act (Fish and Game Code Sections 1900–1913) and the Natural Community Conservation Planning Act provide guidance on the preservation of plant resources; these two acts underlie the language and intent of Section 15380(d) of the CEQA Guidelines.

The project area plant communities have the potential to support California Native Plant Protection Act–qualifying plants, which are described in Section 3.7.5.3 below.

Streambed Alteration Agreements

CDFG has jurisdictional authority over rivers, streams, and lakes under California Fish and Game Code Section 1602. CDFG has the authority to regulate all work under the jurisdiction of California that would: substantially divert, obstruct, or change the natural flow of a river, stream, or lake; substantially change the bed, channel, or bank of a river, stream, or lake; or use material from a streambed.

In practice, CDFG marks its jurisdictional limit at the top of the stream or lake bank or the outer edge of the riparian vegetation, where present, and sometimes extends its jurisdiction to the edge of the 100-year floodplain. Because riparian habitats do not always support wetland hydrology or hydric soils, wetland boundaries, as defined by CWA Section 404, sometimes include only portions of the riparian habitat adjacent to a river, stream, or lake. Therefore, jurisdictional boundaries under Section 1602 may encompass a greater area than those regulated under CWA Section 404.

CDFG enters into a Streambed Alteration Agreement with an applicant and can request conditions to ensure that no net loss of wetland values or acreage will be incurred. The streambed or lakebed alteration agreement is not a permit but, rather, a mutual agreement between CDFG and the applicant.

California Fish and Game Code Section 1602 may apply to the project area if the project includes construction or operation of facilities in state jurisdictional waters, such as drainage channels and desert washes, which are potentially present at the project site.

Bird/Raptor Protections in the Fish and Game Code

Similar to the federal MBTA, Section 3503 of the California Fish and Game Code prohibits take, possession, or destruction of eggs and nests of all birds. Section 3503.5 prohibits the killing of raptor species and the destruction of raptor nests. Take or possession of any migratory non-game bird as designated in the MBTA is prohibited under Sections 3513 and 3800. Section 86 of the Fish and Game Code defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

The project area includes habitat that supports raptor species.

California Desert Native Plants Act

The California Desert Native Plants Act (Division 23 of the California Food and Agriculture Code) regulates the unlawful harvesting on both public and privately owned lands of specified desert native plants. Any specified desert native plants require a permit issued by the commissioner of the county in which the plants are growing.

The California Desert Native Plants Act regulates the following desert native plants which cannot be harvested except under a permit:

- All species of Burseraceae family (*elephant tree*).
- Saguaro cactus (*Carnegiea gigantea*).
- California barrel cactus (*Ferocactus cylindraceus synonym Ferocactus acanthodes*).
- Crucifixion thorn (*Castela emoryi*).
- Panamint dudleya (*Dudleya saxosa*).
- Bristlecone pine (*Pinus longaeva*).
- California fan palm (*Washingtonia filifera*).
- Although a complete survey has not been conducted of the project area, to date none of the species regulated by the California Desert Native Plants Act have been observed in the project area.

Porter-Cologne Water Quality Control Act of 1969

The Porter-Cologne Water Quality Control Act established the State Water Resources Control Board (SWRCB) and divided the state into nine regional basins, each with a regional water quality control board. The SWRCB is the primary state agency responsible for protecting the quality of the state's surface- and groundwater supplies, while the regional boards are responsible for developing and enforcing water quality objectives and implementation plans (as discussed in detail in Section 3.1, *Water Resources and Water Quality*). This act is relevant to biological resources that may be affected in state waters because the Water Board regulates discharges, including construction runoff and sediment, into state waters, including waters that may be outside federal jurisdiction under the CWA. See Section 3.7.5.9 below for a description of waters within the project area.

3.7.2.3 Local Regulations

San Bernardino County Plant Protection and Management

Chapter 88.01 (Plant Protection and Management) of the San Bernardino County Plant Protection and Management chapter regulates the removal or harvesting of specified desert native plants and the removal of vegetation within 200 feet of the bank of a stream, or in an area indicated as a protected riparian area on an overlay map or Specific Plan. Any Removal of specified desert native plants or vegetation within 200 feet of a bank or stream requires approval of a Tree or Plant Removal Permit in compliance with § Section 88.01.050 (Tree or Plant Removal Permits).

The following desert native plants, or any part of them, except fruit, shall not be removed except under a Tree or Plant Removal Permit in compliance with §Section 88.01.050:

- The following desert native plants with stems two 2 inches or greater in diameter or six 6 feet or greater in height: Smoke tree (*Psorothamnus spinosa synonym Dalea spinosa*) and all species of the genus Prosopis (*mesquites*).
- All species of the family Agavaceae (*century plants, nolinas, yuccas*).
- Creosote rings, ten 10 feet or greater in diameter.
- All Joshua trees (*Yucca brevifolia*).
- Any part of the following species, whether living or dead: desert ironwood (*Olneya tesota*), all species of the genera Prosopis (*mesquites*) and Cercidium (*palos verdes*).

The San Bernardino County Plant Protection and Management ordinance applies to the project area due to the presence of Joshua trees. The other locally-protected desert native plants were not observed during field surveys. However, many of the project area vegetation communities (such as the creosote bush scrub that may support creosote rings) have the potential to support the species regulated by the San Bernardino County Plant Protection and Management ordinances.

3.7.3 Environmental Setting

The project area is located within the unincorporated community of Hinkley with a small area extending into the city limits of Barstow. The project area is situated in Hinkley Valley east and southeast of Lynx Cat Mountain, west and southwest of Mount General, and south of Black and Opal Mountains. The majority of the project area is under private ownership (including lands owned by PG&E) but also includes a smaller portion within BLM-managed lands, State Route 58 which is a Caltrans right of way, a number of County-maintained roadways, and the Hinkley School. Topographically, the project area is relatively flat and contains one high point in the north, Red Hill. (U.S. Geological Survey 1971). Elevations within the project area range from approximately 2,100 to 2,300 feet above mean sea level (amsl). Additionally, the Mojave River is located in the southern portion of the project area.

The project area is vegetated with a mosaic of desert scrub communities (which contain a variety of scrub community types) mixed with agricultural areas, developed residential areas and small private property holdings. The lands located northeast, north and west of the project area are primarily undeveloped. The West Mojave Desert Ecological Reserve, owned and managed by CDFG, occurs north of, but outside, the project area.

3.7.3.1 Vegetation Communities

Thirteen distinct vegetation communities were mapped within the project area (Figure 3.7-1 and Table 3.7-2). A detailed description for each vegetation community is provided below.

Table 3.7-2. Vegetation Communities

Vegetation Community	Acres
Allscale Scrub	10,143
Allscale Scrub-Sparse Playa	1,736
Allscale Scrub-Disturbed	428
Fourwing Saltbush Scrub	2
Creosote Bush Scrub	2,306
California Joint Fir Scrub	263
Mojave River Wash	702
Desert Dunes	721
Tamarisk Thickets	22
Red Brome or Mediterranean Grass Grassland Semi-Natural Herbaceous Stands	25
Ruderal/Disturbed/Barren	2,157
Agriculture	1,263
Developed	1,264
Total	21,032

Allscale Scrub

This vegetation community is present throughout the project area (Figure 3.7-1). Typical conditions where allscale scrub occurs within the project area include washes (or surface drainages, primarily seasonal in the project area), dissected alluvial fans, rolling hills, terraces, and edges of large, low-gradient washes. Soils are carbonate rich, alkaline, sandy, or sandy clay loams. Within the project area allscale scrub (*Atriplex polycarpa*) is characterized as dominant in the shrub canopy. Other shrubs include creosote bush (*Larrea tridentata*), white bur-sage (*Ambrosia dumosa*), four-wing saltbush (*Atriplex canescens*), burrobush (*Ambrosia salsola*), spiny hopsage (*Grayia spinosa*), sticky snakeweed (*Gutierrezia microcephala*), and peach desert thorn (*Lycium cooperi*). The herbaceous layer is variable with seasonal annuals and non-native grasses such as Eriastrum (*Eriastrum* sp.), red-stemmed filaree (*Erodium cicutarium*), red brome (*Bromus madritensis* ssp. *rubens*), cheat grass (*Bromus tectorum*), and common Mediterranean grass (*Schismus barbatus*).

Allscale Scrub — Sparse Playa

This vegetation community is present in the northern and eastern portions of the project area and is associated with an unnamed wash that conveys flows northwest through the project area to Harper Dry Lake (Figure 3.7-1). This community generally comprises the same species composition as the allscale scrub vegetation community; however, the density of shrub and herb cover is notably less. In addition, this community contains areas of washes and playa lakebeds and shores that contain fine silty, cracked, alkaline soils supporting only a few scattered shrubs (e.g., allscale) and herbs (e.g., red-stemmed filaree, cheat grass, and common Mediterranean grass). Mojave spineflower (*Chorizanthe spinosa*) was observed within several of the northern playa features within this habitat.

Allscale Scrub — Disturbed

This vegetation community is present in the northern portion of the project area where there are developed lands (Figure 3.7-1). Based on field observations, the disturbed area has been cleared to various degrees with re-vegetation of allscale scrub occurring presently. This community generally comprises the same species composition as the un-disturbed allscale scrub vegetation community; however, the density of shrub and herb cover is notably less due to the disturbed nature of the area.

Fourwing Saltbush Scrub

The Fourwing Saltbush Scrub vegetation community is distributed in a small area in the central portion of the project area immediately north of Santa Fe Ave (Figure 3.7-1). Habitats within the project area include playas, dissected alluvial fans, and rolling hills. Soils are carbonate- rich, alkaline, sandy, or sandy clay loams. Four-wing saltbush is the dominant or co-dominant vegetation in the shrub canopy with creosote bush, white bur-sage, or allscale. Other shrubs include burrobush, spiny hopsage, sticky snakeweed, winterfat (*Krascheninnikovia lanata*), peach desert thorn, and bush seepweed (*Suaeda moquinii*). The shrub layer canopy is open or intermittent. The herbaceous layer is variable with seasonal herbs and non-native grasses such as galleta grass (*Pleuraphis rigida*), Indian ricegrass (*Stipa hymenoides*), red brome, cheat grass, and common Mediterranean grass.

Creosote Bush Scrub

Creosote bush scrub is distributed in the northern and southwestern portions of the project area (Figure 3.7-1). Habitats within the project area include alluvial fans, upland slopes, and minor intermittent washes with well-drained soils. This vegetation community is characterized by the presence of creosote bush as the dominant or co-dominant in the shrub canopy with four-wing saltbush, white bur-sage, or allscale. Other shrubs include burrobush, spiny hopsage, sticky snakeweed, California joint fir (*Ephedra californica*), and peach desert thorn. Canopy of the shrub layer is intermittent to open. The herbaceous layer is variable with seasonal annuals or perennial grasses such as galleta grass, Indian ricegrass, red brome, cheat grass, and common Mediterranean Grass grassland.

California Joint Fir Scrub

This vegetation community is distributed in the southern portion of the project area (Figure 3.7-1). Habitats within the project area include intermittently flooded arroyos, washes, and adjacent alluvial fans. Soils are coarse to medium sands, loamy sands, and sandy clay loams. This vegetation community is characterized with California joint fir as the dominant or co-dominant in the shrub canopy with four-wing saltbush, white bur-sage, or allscale. Canopy of the shrub layer is open to intermittent. The herbaceous layer is variable with seasonal annuals or perennial grasses such as galleta grass, Indian ricegrass, red brome, cheat grass, and common Mediterranean grass.

Mojave River Wash

Mojave River wash is located along the southern end of the project area (Figure 3.7-1). The area surrounding the Mojave River is subject to annual rainfall events that can cause heavy flooding and scouring, thereby keeping the channel largely clear of vegetation.

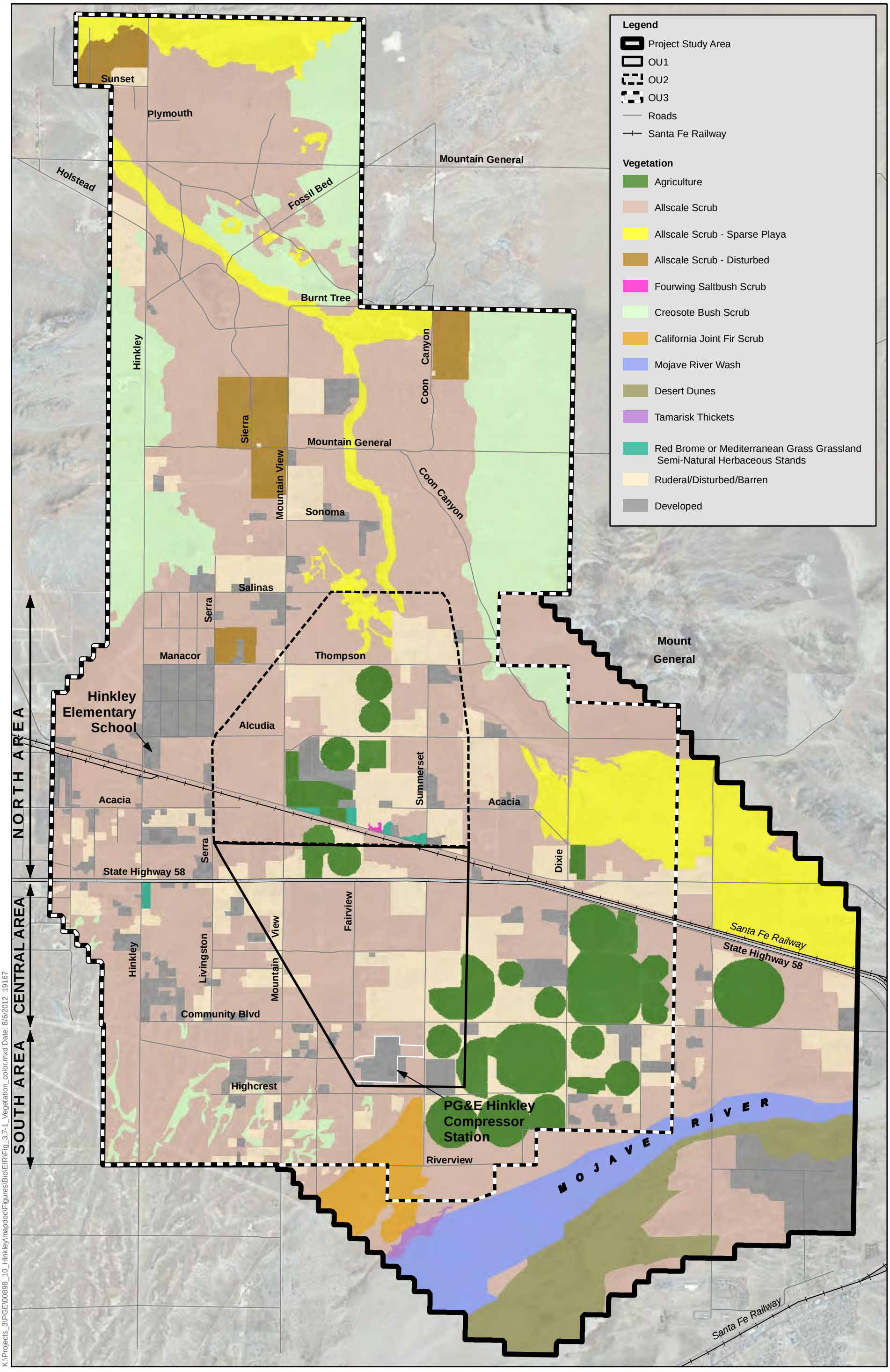

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Figure 3.7-1
Existing Vegetation Communities

Sources: Based on information from PG&E 2011.

Desert Dunes

This vegetation community is distributed adjacent and south of the Mojave River. These wind-blown sand formations range from sparsely vegetated to moderately vegetated. The aerial photography analysis revealed that this community can be highly variable on the amount of vegetation that is supported from year to year (based on major flood and wind events). Vegetative cover ranged from low to moderate during the field assessment for this EIR.

Tamarisk Thickets

This vegetation community is distributed within the Mojave River in the project area. This vegetation community is characterized by saltcedar (*Tamarix ramosissima*) as the dominant shrub. Canopy of the shrub layer is open and the herbaceous layer is sparse.

No remedial activities are proposed in this community.

Red Brome or Mediterranean Grass Grassland Semi-Natural Herbaceous Stands

This vegetation community is distributed in the central portion of the project area north of Santa Fe Avenue and is characterized by red brome, common Mediterranean grass, or Arabian schismus (*Schismus arabicus*) as dominant or co-dominant with other non-natives in the herbaceous layer. Within the project area, these areas are typically on or adjacent to developed areas and/or have been exposed to anthropogenic disturbances including grazing and off-road vehicles.

Ruderal/Disturbed/Barren

This vegetation community is distributed throughout the project area and characterized by mostly bare disturbed soils dominated by low growing ruderal (weedy) vegetation and few native species. This vegetation community is associated with anthropogenic disturbances, including agricultural practices, residential clearing and grubbing, refuse dumping, dirt roads, and powerline easements.

Agriculture

Agricultural lands are distributed in the central and southern portions of the project area. There are both active or recently active agricultural fields and orchards currently in operation. These lands include the existing agricultural treatment units, which currently support alfalfa.

Developed

Developed areas are distributed throughout the project area. These areas have been physically altered and typically include hardscape features and adjacent land commonly observed in association with the various development types located within the project area (i.e., such as houses, yards, barns and stock ponds), as well as ornamental planting associated with such features.

3.7.3.2 Sensitive Natural Communities

Sensitive natural communities are those that are known to have limited distribution in the region, support special-status plant or wildlife species, or receive protection from local ordinances. The California joint fir scrub and desert dunes plant communities are located in the project area and listed by CDFG as high priority for inventory, which typically means they are rare. For this reason, these communities are considered sensitive natural communities.

No remedial activities are proposed within the area of California joint fir scrub. However, if freshwater wells and pipelines are constructed to provide fresh water for remedial activities, those wells and pipelines may be within areas of California joint fir scrub south of the PG&E Compressor Station. New freshwater wells and pipelines would be constructed to provide water supply for replacement of domestic or agricultural wells that might be affected by remediation.

State and federal regulatory agencies also consider riparian habitats and wetlands to be sensitive and declining resources. No riparian habitat was observed within the project area during field surveys.

3.7.3.3 Common Species

The project area supports habitat for several common plant and wildlife species, Appendix C of the *Biological Resources Study* summarizes these species. Common species are able to adapt to changing environmental conditions and as such their population and distribution are readily available within large areas.

3.7.3.4 Biological Resources with Special Status

For the purpose of this document, special-status species are plants and animals are those that are legally protected under the federal ESA, CESA, or other regulations, as well as species considered sufficiently rare by the scientific community to qualify for such listing. Special-status species are defined as species that are:

- listed, proposed for listing, or candidates for listing under the federal ESA as threatened or endangered;
- listed or candidates for listing under the CESA as threatened or endangered;
- listed as rare under the Native Plant Protection Act; and
- a state species of special concern or fully protected species
- A state species of special concern is a species, subspecies, or distinct population of a fish, amphibian, reptile, bird, or mammal native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria:
    - is extirpated from the State or, in the case of birds, in its primary seasonal or breeding role;
    - is listed as Federally-, but not State-, threatened or endangered or meets the State definition of threatened or endangered but has not formally been listed;
    - is experiencing, or formerly experienced, serious (non-cyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status;
    - has naturally small populations exhibiting high susceptibility to risk from any factor(s) that, if realized, could lead to declines that would qualify it for State threatened or endangered status.

The California Native Plant Society (CNPS) maintains lists of plants as rare or endangered. Unless separately listed by the state or federal government the plants on the CNPS' lists are not formally protected in law. The CNPS lists are as follows:

- California Rare Plant Rank List 1A: plants presumed extinct
- California Rare Plant Rank List 1B: plants rare, threatened, or endangered in California and elsewhere
- California Rare Plant Rank List 2: plants rare, threatened, or endangered in California, but more numerous elsewhere
- California Rare Plant Rank List 3: plants about which more information is needed—a review list
- California Rare Plant Rank List 4: plants of limited distribution—a watch list

Plants listed on CNPS List 1A, 1B, or 2 meet the definition of Section 1901, Chapter 10 (Native Plant Protection Act) and Sections 2062 and 2067 (CESA) of the California Fish and Game Code. Thus, for the purposes of this EIR, plants on CNPS List 1A, 1B, or 2 are considered "rare" plants for the purposes of impact evaluation.

Special-status species are thus also defined as including plant species with California Rare Plant Ranks (CRPR) of 1A, 1B, or 2 species.

State- and Federally-Listed Plants

One federally threatened plant species was identified as having potential to occur in the project area: Lane Mountain milk-vetch (*Astragalus jaegerianus*). A detailed species description is provided in the *Biological Resources Study* (Appendix C).

There likely are no state-listed endangered or threatened plant species with potential to occur in the project area.

Lane Mountain Milk-Vetch

Lane Mountain milk-vetch is known to occur at three distinct locations north of Barstow on the slopes of Lane Mountain and within Paradise Valley (California Department of Fish and Game 2011, Consortium of California Herbaria 2012). Critical habitat for milk-vetch was designated on May 19, 2011. Critical habitat consists of the mixed desert scrub community within the range of milk-vetch that is characterized by shallow soils at elevations between 3,100 and 4,200 feet (945 to 1,280 m) and host shrubs at those same elevations (Final Revised Designation of Critical Habitat for *Astragalus Jaegerianus*, 76 Fed. Reg. 29,108, 29,127 (May 19, 2011) (to be codified at 50 C.F.R. pt. 17)). The designated critical habitat for milk-vetch is located several miles from the project area.

The project area provides potentially suitable desert scrub, which supports these plants; however, the project area is below the known elevation range of the species. Due to the close proximity of the historical records and given the relatively large amount of desert scrub on the site, it was determined that Lane Mountain milk-vetch has a low to moderate potential to occur within the allscale and creosote scrub habitats within the project area, particularly on the eastern side of the project area in association with lower Coon Canyon and the western slopes of Mount General (see Figure 3.7-1). However, remedial activities are likely limited to the lower elevations of Hinkley Valley, which may limit potential to actually affect this species.

Non-Listed Special-Status Plants

Non-listed special-status species are species that are not listed under the California Endangered Species Act or the federal Endangered Species Act, but are sufficiently rare to require special

consideration and are either tracked in the California Natural Diversity Database (CNDDB) or designated as "sensitive" by the Bureau of Land Management. Thirteen non-listed special-status plants were identified in the literature search and habitat assessment as occurring in the vicinity of the project area (Consortium of California Herbaria 2012, California Department of Fish and Game 2011, California Native Plant Society 2011). Based on observed conditions during the field survey, eight were determined to have a moderate or higher potential to occur within the project area:

- Clokey's cryptantha (*Cryptantha clokeyi*),
- Desert cymopterus (*Cymopterus deserticola*),
- Barstow woolly sunflower (*Eriophyllum mohavense*),
- Mojave menodora (*Menodora spinescens* var. *mohavensis*),
- Creamy blazing star (*Mentzelia* tridentata),
- Mojave monkeyflower (*Mimulus mohavensis*),
- Beaver Dam breadroot (*Pediomelum castoreum*), and
- Parish's phacelia (*Phacelia parishii*).

Clokey's Cryptantha

Several collections of this species were made in the 1930s immediately north of Barstow; however, no new collections have been made in the area since (Consortium of California Herbaria 2012, California Department of Fish and Game 2011). The project area supports potentially suitable desert scrub which can support this plant species. As such, it was determined that this species has low to moderate potential to occur within the project area, particularly in association with the allscale scrub habitat on the west facing slopes of Mount General.

Desert Cymopterus

Several collections of desert cymopterus have been made in the vicinity of the project area. In particular, desert cymopterus was collected north of the project area east of Harper's Dry Lake (Consortium of California Herbaria 2012; California Department of Fish and Game 2011). The project area supports potentially suitable desert scrub. As such, due to the close proximity of Harper's Dry Lake to the project area, and the relatively large amount of desert scrub habitat on site, it was determined that this species has moderate to high potential to occur in the allscale and creosote scrub habitats within the project area.

Barstow Woolly Sunflower

Several collections of this species have been made east and north of the project area near Barstow (Consortium of California Herbaria 2012; California Department of Fish and Game 2011). The project area supports potentially suitable allscale and creosote scrub habitat for this species. As such, it was determined that this species has moderate to high potential to occur within the allscale and creosote scrub habitats in the project area.

Mojave Menodora

This species has been collected northeast of the project area at the highpoint of Waterman Hills (Consortium of California Herbaria 2012; California Department of Fish and Game 2011). The

project area supports potentially suitable desert scrub habitat. As such, it was determined that this species has low to moderate potential to occur on site within the allscale and creosote scrub habitats, particularly the eastern portion of the project area associated with the western slopes of Mount General.

Creamy Blazing Star

This plant has been collected east of the project area in the Waterman Hills (Consortium of California Herbaria 2012; California Department of Fish and Game 2011). The project area supports potentially suitable desert scrub in association with rocky, gravelly, and sandy substrates. As such, it was determined that this species has a moderate potential to occur within the project area in the allscale and creosote scrub habitats, particularly the eastern portion of the project area associated with the western slopes of Mount General.

Mojave Monkeyflower

This species is known to occur in the project area from a single 1941 collection. This collection was made just east of the intersection of Lenwood Road and Santa Fe Avenue on the eastern side of the project area. Several other occurrences are mapped in the vicinity of the project area (California Department of Fish and Game 2011). The project area supports potentially suitable rocky to sandy desert scrub. As such, it was determined that this species has moderate to high potential to occur on the site in the allscale and creosote scrub as well as in the desert dune and Mojave river wash habitats within the project area.

Beaver Dam Breadroot

Several collections of this species have been made both south and east of the project area (Consortium of California Herbaria 2012; California Department of Fish and Game 2011). The project area supports potentially suitable desert scrub. As such, it was determined that this species has moderate potential to occur within the allscale and creosote scrub habitat in the project area.

Parish's Phacelia

Several collections of this species have been made east of the project area in the vicinity of Barstow (Consortium of California Herbaria 2012; California Department of Fish and Game 2011). The project area contains potentially suitable desert scrub and playa habitat. As such, it was determined that this species has low to moderate potential to occur within the allscale and creosote scrub habitats within the project area.

State- and Federally Listed Wildlife

Six federally and/or state-listed threatened and endangered wildlife species have a potential to occur within the geographical vicinity of the project area based on background research (California Department of Fish and Game 2011) but only two were determined to have some potential to occur based on observed conditions during the field evaluation. These were the desert tortoise and the Mohave ground squirrel. Detailed species descriptions are provided in the *Biological Resources Study* (Appendix C).

Desert Tortoise

The Mojave population of desert tortoise (*Gopherus agassizii*) was listed as threatened under the federal Endangered Species Act on April 2, 1990 (U.S. Fish and Wildlife Service 1990) and was listed

as threatened under the California Endangered Species Act in 1989. Throughout most of the Mojave Desert, tortoises occur most commonly on gently sloping terrain with sandy-gravel soils and where there is sparse cover of low-growing shrubs, which allows establishment of herbaceous plants. Soils must be loose enough for digging of burrows, but firm enough so that burrows do not collapse.

The project area partially overlaps portions of the Superior-Cronese DWMA, which is designated by BLM as Areas of Critical Environmental Concern (ACEC) (Figure 3.7-2), and is located within the western recovery unit for desert tortoise (U.S. Fish and Wildlife Service 2011a).

Desert tortoise is thought to have the potential to occur throughout the project area (California Department of Fish and Game 2011) (Figure 3.7-3). CNDDB also included two locations for desert tortoise sightings: one occurring just east of the project area on the western slopes of Mount General, and the second occurring west of the project area on the east side of Indian Wells Road just north of State Highway 58 (Hwy 58).

Desert tortoise observation data were also provided by Haley & Aldrich on February 15, 2012, based on biological surveys completed by PG&E in the project area. It is noted that some of the observed desert tortoise could be domesticated individuals (not wild). Figure 3.7-3 shows these desert tortoise sightings.

Based on the habitat conditions within the project area and the previous desert tortoise locations, the desert tortoise was determined to have low to high potential to occur throughout the undeveloped portions of the project area, with some areas being occupied by the species. Figure 3.7-2 shows a broad overview of the suitability of the habitat based on the following breakdown of mapped plant communities: moderate-quality to high-quality suitable habitat includes allscale scrub, allscale scrub—sparse playa, allscale scrub—disturbed, fourwing saltbush scrub, creosote bush scrub, and California joint fir scrub; low-quality suitable habitat includes, Mojave River wash, desert dunes, tamarisk thickets, red brome or Mediterranean grass grassland, semi-natural herbaceous stands, and ruderal/disturbed/barren; unsuitable desert tortoise habitat includes developed and agriculture areas.

Vegetation communities considered to have a low potential lack the quantity and quality of characteristics typically associated with occupied desert tortoise habitats. For example, desert tortoise require a burrowing substrate; however, communities such as Mojave River Wash and desert dunes are dynamic and may lack stabilized soils suitable for burrowing, although burrowing remains possible in these areas. Although these conditions might preclude an occupied burrow, foraging and movement may occur. Other vegetation communities within the project area, such as tamarisk thickets, red brome or Mediterranean grass grasslands, semi-natural herbaceous stands, and ruderal/disturbed/barren, are of such poor quality in terms of foraging material, soils, and magnitude of disturbances that occupation might be precluded or occur at a low level. However, if these low-quality habitats are located adjacent to and interspersed with moderate- to high-potential vegetation communities, as is the case in the project area, the likelihood of occurrence is increased.

Critical habitat for the desert tortoise was designated in 1994. This critical habitat consists of the following primary constituent elements: (1) sufficient space to support-viable populations and provide for movements, dispersal. and gene flow; (2) sufficient quantity and quality of forage species and the proper soil conditions to provide for the growth of such species; (3) suitable substrates for burrowing, nesting, and overwintering; (4) burrows, caliche caves, and other shelter sites; (5) sufficient vegetation for shelter from temperature extremes and predators; and (6) habitat protected from disturbance and human-caused mortality. Designated critical habitat for the desert-

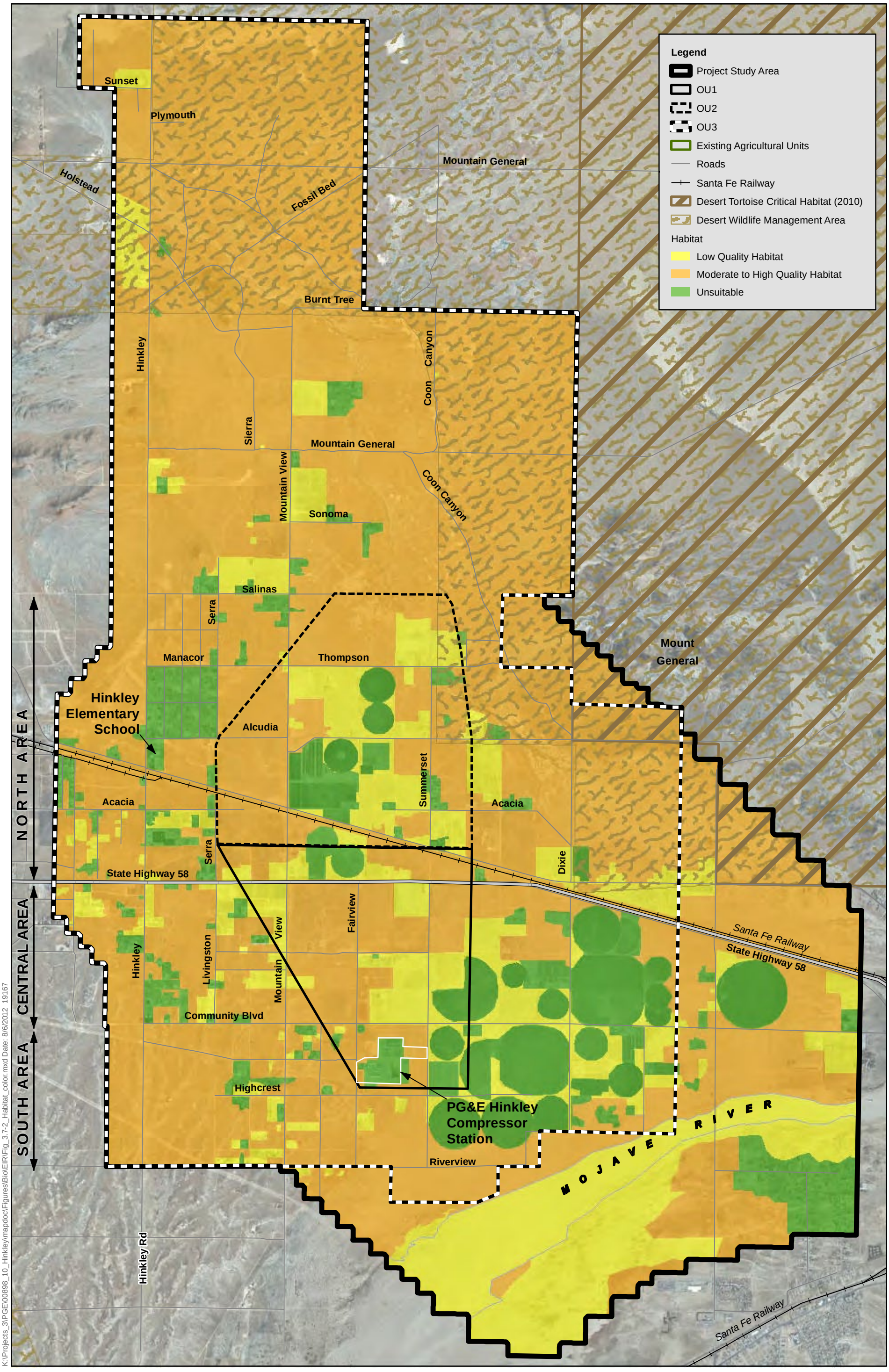

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Figure 3.7-2
Suitable Desert Tortoise and Mohave Ground Squirrel Habitat

Sources: Based on information from PG&E 2011.

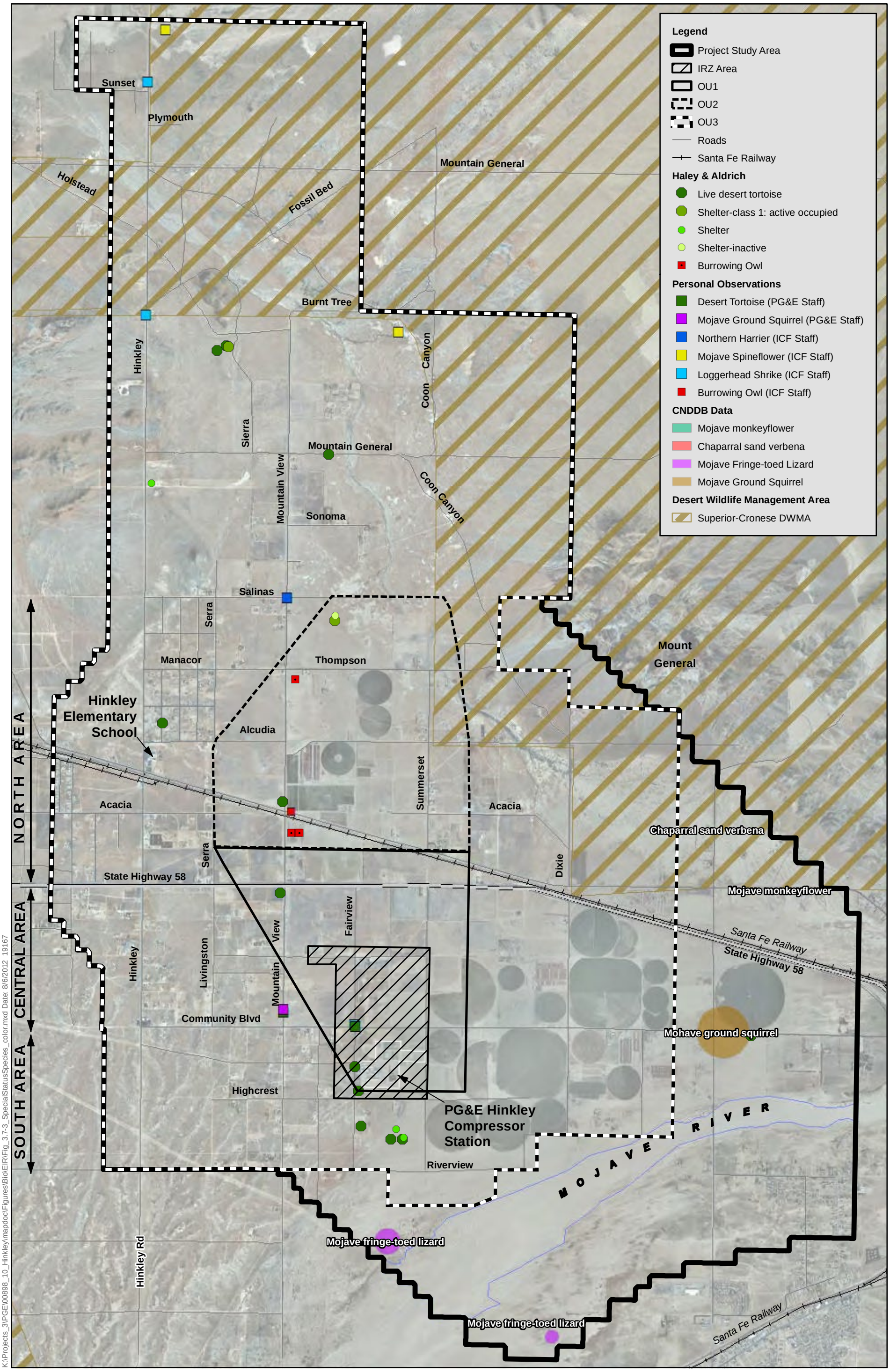

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Figure 3.7-3
Special-Status Species Occurrences

Sources: Based on information from PG&E 2011.

tortoise encompasses portions of the Mojave and Colorado Deserts (59 Fed. Reg. 5,820, 5,822 (Feb. 8, 1994)). Based on a review of USFWS Critical Habitat documentation and maps, critical habitat for the desert tortoise is mapped within a small portion of the project area located on the eastern boundary just south of Mount General (Figure 3.7-2) (U.S. Fish and Wildlife Service 2011b).

Mohave Ground Squirrel

Mohave ground squirrel (*Xerospermophilus mohavensis*) was listed as threatened under CESA in 1993. There is currently no federal listing for this species. The Mohave ground squirrel does not appear have a plant community preference, as it occurs in the exact proportion as the distribution of plant communities within its range (Bureau of Land Management 2005). The plant communities with the highest percentage of occurrence and therefore the highest percentage of Mohave ground squirrel occurrence are Mojave creosote brush scrub, desert saltbush scrub, and Mojave mixed woody scrub (Bureau of Land Management 2005). The Mohave ground squirrel is absent from steep, very rocky areas and playas (i.e., a sandy, salty, or mud-caked flat floor of a desert drainage basin that is periodically covered with water). Soil characteristics are important because Mohave ground squirrels construct burrows to shelter from temperature and humidity extremes, to escape predators, and to give birth (U.S. Fish and Wildlife Service 2010a).

Mohave ground squirrel has been recorded nearby and in the project area. The CNDDB lists two historic records for this species as occurring within the Barstow, Hinkley and Water Valley USGS quads (California Department of Fish and Game 2011). One record dated 1982 is from the Barstow area, where one Mohave ground squirrel was detected just northwest of the Fort Irwin Road/SR 58 junction. A second report dated 1990 was recorded as occurring within the project area at the junction of Lenwood Road and Community Boulevard (Figure 3.7-3) where allscale scrub was mapped during this habitat assessment. This record states that an unknown number of individuals were recorded in the area between March 1 and April 30. A biological consultant working for PG&E biologists observed an animal that was potentially a Mohave ground squirrel in early 2012 near Frontier Road within the project area. Finally, Leitner (2008) describes a non-specific location of Mohave ground squirrel detected at the edge of an alfalfa field near Harper Dry Lake. Due to the historic records and the presence of suitable habitat, it is concluded that Mohave ground squirrel has the potential to occur throughout the project area.

Non-Listed Special-Status Wildlife

There are five non-listed special-status species with potential to occur within the project area (California Department of Fish and Game 2011) (Appendix C). Burrowing owl, loggerhead shrike, northern harrier, American badger (*Taxidea taxus*), Mojave river vole(*Microtus californicus mohavensis*), and Mojave fringe-toed lizard were determined to have moderate to high potential for occurrence based on current habitat conditions within the project area. Non-listed special-status species detected within the project area during field surveys in December 2011 include loggerhead shrike and northern harrier. Detailed species descriptions are provided in the *Biological Resources Study* (Appendix C). These species are summarized below.

Burrowing Owl

Burrowing owl is designated a California species of special concern by CDFG and a BLM sensitive species. The burrowing owl requires habitat with three basic soil and vegetal attributes: open, well-drained terrain; short, sparse vegetation; and underground burrows or burrow-like openings.

Throughout their range, most burrowing owls rely on burrows excavated by ground squirrels, badgers, foxes, desert tortoise, and coyotes.

Burrowing owls have been recorded in the vicinity of the project area, with several recorded to the west and south of the project area in 2007 (California Department of Fish and Game 2011). They have also been observed within the project area near the intersection of Acacia Street and the Santa Fe Railroad (Knutson pers. comm.). In addition, burrowing owl occurrence data were provided by Haley & Aldrich on February 15, 2012, based on biological surveys implemented by PG&E and conducted by CH2MHill in the project area (see Figure 3.7-3).

The majority of the project area (outside of developed areas but including alfalfa fields) provides low- to high-quality foraging habitat for this species, and any areas with suitable burrows would provide potential nesting habitat, shelter, and refuge. Alfalfa fields can provide high-quality foraging habitat for burrowing owl: such fields might be particularly attractive to burrowing owl as foraging areas in the project area.

Loggerhead Shrike

Loggerhead shrike is designated a species of special concern by CDFG only when nesting. All other non-nesting occurrences of loggerhead shrike are not considered sensitive. Loggerhead shrikes breed mainly in shrublands or open woodlands with a fair amount of grass cover and areas of bare ground. They require tall shrubs or trees (and also use fences or power lines) for hunting perches, territorial advertisement, and pair maintenance; open areas of short grasses, forbs, or bare ground for hunting; and large shrubs or trees for nest placement. They also need impaling sites for prey manipulation or storage; such sites can include sharp, thorny, or multi-stemmed plants and barbed-wire fences (Yosef 1996). Nests are generally well hidden in taller shrubs or low in trees, and are often located in areas where there is a break in the landscape, such as at the base of slopes or edge of a woodland or clump of trees (Yosef 1996).

The literature search provided two observation records for loggerhead shrikes located south of Harper Dry Lake approximately six miles east of the project area (California Department of Fish and Game 2011). During the December 20, 2011 field survey, ICF staff observed loggerhead shrikes in two separate locations in the northern portion of the project area along Hinkley Road (Figure 3.7-3). These individuals were observed perched on the overhead telephone line located on the west side of Hinkley Road and appeared to be foraging to the east within the project area.

The majority of the project area (outside of the developed areas) provides high-quality foraging and nesting habitat for loggerhead shrike.

Northern Harrier

Northern harrier is designated a species of special concern by CDFG only when nesting. All other non-nesting occurrences of northern harrier would not be considered to be sensitive. This species is known to breed and forage in a variety of habitats that provide appropriate vegetation cover, abundance of prey and suitable perch sites (Gardali and Shuford 2008). These habitats typically include fresh, brackish, and saltwater marshes; meadows, lake margins, rivers, and streams; grasslands, open fields, pastures, and some croplands such as alfalfa and grain; sagebrush flats, and desert sinks (Gardali and Shuford 2008). The northern harrier is a ground-nesting bird and often nests within areas of dense, tall undisturbed vegetation. The northern harrier preys on a variety of small- to medium-sized vertebrates such as rodents and passerines.

During the field survey, a single male northern harrier was observed within the northern portion of the project area at the intersection of Mountain View Road and Tindall Road (Figure 3.7-3). Gardali and Shuford (2008) conclude that while northern harrier is historically known to breed northwest of the project area at Harper's Dry Lake, no breeding activity has been observed at the lake since the mid-1990s. It is possible that northern harriers might occasionally nest in agricultural areas in the West Mojave (Garrett and Molina undated).

The majority of the project area provides suitable foraging habitat for the northern harrier. Suitable nesting habitat in the project area is nearly absent due to the lack of dense, tall-undisturbed vegetation, although the agricultural areas may provide suitable nesting habitat.

American Badger

American badger is also designated a species of special concern by CDFG that is most abundant in drier open stages of most shrub and herbaceous habitats, with friable soils (Ahlborn 1988–1990). Badgers dig burrows in friable soil for cover and frequently reuse old burrows, although some may dig a new den each night, especially in summer (Messick and Hornocker 1981). Long (1973) and Jager et al. (2006) have shown that badgers are born approximately in late March and early April and leave the natal den in late June and early July.

The literature search provided two observation records for American badger located approximately 2.5 and 3 miles west of the project area and north of Hwy 58.

The majority of the project area (outside of developed areas) provides moderate quality foraging and denning habitat for this species.

Mojave River Vole

Mojave River vole is designated a species of special concern by CDFG. This species occurs in habitat that is moist, including meadows, freshwater marshes, and irrigated pastures, in locations in the vicinity of the Mojave River. Suitable habitat is associated with ponds and irrigation canals along with the Mojave River proper, as well as adjacent irrigated land, such as alfalfa fields (Williams 1986). In the Mojave River, this vole has been recorded in cattail marsh/wetland habitat that is subjected to annual flooding and riparian-associated habitats that provide refuge during annual flooding. They also utilize adjoining upland habitat during unusually high water levels.

The closest recorded location of Mojave River vole is 7 miles to the northwest of the project area (California Department of Fish and Game 2011). The closest suitable native habitat in the Mojave River (based on aerial photography analysis) appears to be approximately 5 miles to the southwest. Alfalfa fields located 1.6 miles southwest of the Mojave River could provide suitable habitat for this vole.

The observed areas of the Mojave River that occur in the project area provide do not provide suitable moist habitats for the Mojave River vole. However, numerous areas of alfalfa fields and other fallow fields in close proximity to the Mojave River could provide suitable habitat. Within the project area, irrigated land in pasture or used to grow alfalfa have low potential to support Mojave River vole.

Mojave Fringe-Toed Lizard

Mojave fringe-toed lizard is designated an species of special concern and a BLM sensitive species. This species is restricted to areas with fine, aeolian sand (or sands that are formed by winds), including both large and small dunes, margins of dry lakebeds and washes, and isolated pockets against hillsides. These areas are generally within creosote scrub desert between elevations of 300–3,000 feet (90–10 m). Sand dune ecosystems, including their source sand and sand corridors, are necessary for the long-term survivorship of aeolian sand specialists, such as fringe-toed lizards (Barrows 1996). Breeding activity occurs between April and July (Mayhew 1964). Females lay 1 to 5 eggs in hummocks or sandy hills during the months of May through July. Hatchlings appear in September (Miller and Stebbins 1964).

As shown in Figure 3.7-3, Mojave-fringe-toed lizards were recorded at two locations in the southwestern portion of the project area in 2010 (California Department of Fish and Game 2011), specifically within California joint fir scrub and desert dunes communities (Figure 3.7-1).

Based on information in recent records, areas within the study area classified as California joint fir scrub, desert dunes, and the intervening Mojave river wash are considered highly suitable habitat for Mojave-fringe-toed lizards.

Other Wildlife Species

Raptors

A variety of raptor species were observed during the field survey, including red-tail hawk (*Buteo jamaicensis*), prairie falcon (*Falco mexicanus*) and American kestrel (*Falco sparverius*). The primary agricultural crop grown in the study area is alfalfa, which has been shown to have a positive relationship with raptor species such as Swainson's hawk (Smallwood 1995, Pandolfino et al. 2011). Due to the relatively open nature of the desert scrub within the project area in combination with the patchwork of active agricultural and non-active disturbed fields, the project area was determined to provide quality foraging opportunities for raptor species in the region.

Desert Kit Fox

Desert kit fox occurs in desert areas with annual grasslands or grassy open stages of vegetation dominated by scattered brush, shrubs, and scrub. Cover is provided by dens that are dug in open, level areas with loose-textured, sandy and loamy soils. Egoscue (1962) reports that most pups born February through April, following a gestation period of 49 to 55 days.

The majority of the project area (outside of developed areas) provides moderate quality foraging and denning habitat for this species.

3.7.3.5 Wildlife Corridors

The open nature of the project area provides the opportunity for wildlife movement. The species expected to move across the project are include small- to medium-sized mammals, birds, and reptiles, including the desert tortoise and Mohave ground squirrel. Wildlife movement is expected to be higher along the natural corridors of the project area, such as the east-west corridor along the Mojave River. Additionally, the large open areas of desert scrub habitat provide relatively unrestricted movement across the project area.

3.7.3.6 Jurisdictional Waters

The only surface waters in the project area are the Mojave River, small desert washes that flow south to the Mojave River and desert washes that flow north to Harper Lake. As described in Section 3.1, *Water Resources and Water Quality*, nearly all of the project area where remedial activities would occur drain to the north. In addition, tributary washes collect to a desert wash in the center of the Hinkley Valley where water collects during infrequent large rain events and flows to Harper Lake. Harper Lake is a dry lake except immediately during and after storm events and surface water either evaporates or percolate.

Tributaries to the Mojave River, including desert washes, may be waters of the United States, but no jurisdictional determination for the project has been prepared to date (delineations and determinations are usually done at the permitting phase following CEQA). The U.S. Army Corps of Engineers has previously determined that the Mojave River is a water of the United States, but has not made a formal determination relative to this project. Drainages to Harper Lake, which are the bulk of the drainages in the project area, are considered state waters and are subject to state jurisdiction under the Porter-Cologne Water Quality Control Act. The U.S. Army Corps of Engineers has previously determined that Harper Lake and tributaries to it are not waters of the United States.

3.7.4 Significance Criteria

The State CEQA Guidelines Appendix G (14 CCR 15000 et seq.) have identified significance criteria to be considered when determining whether a project could have significant effects on existing biological resources within the project area. For this analysis, an impact pertaining to biological resources was considered significant under CEQA if it would result in:

- 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 DFG or USFWS.
- A substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by DFG or USFWS
- A substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marshes, vernal pools, etc.) through direct removal, filling, hydrological interruption, or other means.
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan.

3.7.5 Methodology

The significance criteria listed above were used to determine whether an impact would be significant. The entire area of Operable Unit 3 (OU3, including OU1 and OU2) was considered the geographical extent of physical disturbance related to remedial actions. Potential effects on special-

status species and natural communities within the project area were evaluated according to the highest likelihood of occurrence of each resource.

The impact analysis compares all project alternatives to existing conditions, which is the CEQA baseline. Both direct and indirect impacts to biological resources were considered in the analysis. Direct impacts are those impacts that are caused by the project and occur at the same time and place as the actions that may cause the impacts (Cal. Code Regs § 15358). Indirect impacts are impacts caused by the project and are later in time or farther removed in distance from the actions that cause the impacts, but are still reasonably foreseeable (Cal. Code Regs. § 15358). For example, indirect impacts include changed land conditions that induce foreseeable physical effects on natural systems including ecosystems.

In OU1 and OU2 where the footprint for remedial activities was defined in the Feasibility Study/Addenda, spatial analysis was used to identify habitat impacts for the desert tortoise and Mohave ground squirrel (as noted above many of the other wildlife species have habitat requirements that overlap with these two species). Spatial data based on the feasibility study/addenda alternative designs was used to estimate the habitat impacts of the agricultural units, pipelines and wells for all alternatives. The Feasibility Study/Addenda documents only included activities in OU1 and OU2 to address the plume as it existed in February 2011. In order to account for the expansion of infrastructure to address the potential expansion of the plume (assumed to be 15% larger than the Q4/2011 plume), additional acreage was added to the Feasibility Study/Addenda spatial data based on the total infrastructure amounts by alternative (as summarized in Chapter 2, *Project Description*) including acreage for agricultural units, piping, wells and roads. For the expansion areas or where spatial data was not available, two scenarios were used The first scenario assumed the character of the vegetation communities/species habitat in the expansion areas would have the same percentage habitat characteristics as in the areas identify by the Feasibility Study/Addenda spatial data). The second scenario assumed that the expansion areas would all be suitable, moderate to high quality suitable species habitat and is the worst-case scenario. The worst-case scenario may overstate the level of impact to areas of habitat for the desert tortoise and Mojave ground squirrel as some areas of low quality habitat and unsuitable habitat occur within areas where potential infrastructure may be constructed as shown in Figure 3.7-2 but this range is thought to be appropriate for disclosure purposes in this EIR. Table 3.7-3 shows the estimated vegetation community impacts by type, using a proportional scaled scenario.

Due to the long timeframe required when restoring vegetation and soil characteristics in the desert, all areas of disturbance are assumed to be permanent impacts to habitat. In addition, since the action alternatives all have 30 to 40 year durations or longer and new infrastructure will require maintenance over the duration of remedial activities, for the purposes of the impact analysis it is reasonable to assume permanent loss of habitat where disturbance of native habitats is necessary.

Table 3.7-3. Potential Vegetation Impacts by Community, Proportional Scaled Scenario (Acres)

	Allscale Scrub (all types)	Fourwing Saltbush Scrub	Ruderal/ Disturbed/ Barren	Agricultural	Developed	Total
No Project Alternative	4	0	3	0	1	9
Alternative 4B	33	1	247	6	17	304
Alternative 4C-2	292	0	130	2	10	434
Alternative 4C-3	301	0	136	2	11	450
Alternative 4C-4	831	0	446	1	1	1,278
Alternative 4C-5	294	0	131	1	10	436

Notes:

Totals may not add due to rounding.

For the action alternatives, the areas of potential impact were scaled up from footprint acres from the Feasibility Study/Addenda spatial data as described in the methodology. Thus, for the action alternatives, these acreages will not match the footprint areas shown in Figures 3.7-5 through 3.7-9 as the figures only show the areas identified based on Feasibility Study/Addenda spatial data. Areas scaled up were assumed to contain the same proportion of vegetation communities as in the Feasibility Study/Addenda spatial data.

It should be noted that the project may affect other native vegetation types present within the project area overall (such as creosote bush scrub, California joint fir scrub) and non-native vegetation types (such as tamarisk thickets, or red brome or Mediterranean grass grassland and semi-natural herbaceous stands). These vegetation types are not present within the disturbance areas based on the Feasibility Study/Addenda spatial data, but may nevertheless be affected by remedial actions in the expansion area.

3.7.6 Impacts

This section provides the impact analysis and mitigation measures related to biological resources. The impacts are organized by topic, which correspond with the significance criteria.

3.7.6.1 Special-Status Species

Impact BIO-1a: Disturbance, Mortality, and Loss of Habitat for Desert Tortoise (Less than Significant with Mitigation, No Project Alternative; Significant and Unavoidable for Tortoise Movement, All Action Alternatives)

Overview of Impact

The proposed remediation activities under all alternatives have the potential to remove habitat that supports the federally protected desert tortoise thereby resulting in potentially significant impacts. Desert tortoise habitat is distributed throughout the project area (as shown in Figure 3.7-2). As explained in section 3.7.5.5 above, critical habitat has been designated for the desert tortoise.

Both construction-related and operations and maintenance activities may contribute to potentially significant impacts that could result in the loss of desert tortoise individuals and removal of desert tortoise habitat. Specifically, these impacts to desert tortoise could occur to potentially occupied burrows as a result of collision, crushing, entrapment, and removal of habitat due to human activities during project implementation.

Table 3.7-4a and 3.7-4b below summarize the potential acreages of habitat loss of this species under all alternatives, and Figures 3.7-4 through 3.7-9 show the habitat impact areas of each alternative. These acreages are scaled to capture the potential extent of both known and unknown areas where remediation activities could occur, including potential future activities (as described above in the methodology). In the text below the tables, only the worst-case acreages are cited.

Table 3.7-4a. Potential Desert Tortoise and Mohave Ground Squirrel Habitat Impacts, Proportional Scaled Scenario (Acres)

Alternative	Suitable, Low Quality	Suitable, Moderate to High Quality	Total Habitat (low, Moderate, High)	Unsuitable
No Project Alternative	3	5	7	2
Alternative 4B	247	34	281	23
Alternative 4C-2	130	292	423	12
Alternative 4C-3	136	301	437	13
Alternative 4C-4	446	831	1,276	1
Alternative 4C-5	131	294	425	11

Notes:

Totals may not add due to rounding.

For the action alternatives, the areas of potential impact were scaled up from footprint acres from the Feasibility Study/Addenda spatial data as described in the methodology. Thus, for the action alternatives, these acreages will not match the areas shown in Figures 3.7-5 through 3.7-9 as the figures only show the areas identified based on Feasibility Study/Addenda spatial data. Areas scaled up were assumed to contain the same proportion of habitat types (unsuitable, low quality, moderate to high quality) as in the Feasibility Study/Addenda spatial data.

Table 3.7-4b. Potential Desert Tortoise and Mohave Ground Squirrel Habitat Impacts, Worst-Case Scaled Scenario (Acres)

	Suitable, Low Quality	Suitable, Moderate to High Quality	Total habitat (low, Moderate, High)	Unsuitable
No Project Alternative	3	5	7 (rounded)	2
Alternative 4B	30	271	301	3
Alternative 4C-2	51	378	430	5
Alternative 4C-3	53	392	445	5
Alternative 4C-4	254	1,023	1,277	1
Alternative 4C-5	51	381	432	4

Note:

For the No Project Alternative, areas of potential impact are known, so this scenario is the same as the proportional case.

For the action alternative, the areas of potential impact were scaled up from footprint acres from the Feasibility Study/Addenda as described in the methodology. Thus, for the action alternatives, these acreages will not match the areas shown in Figures 3.7-5 through 3.7-9 as the figures only show the areas identified based on Feasibility Study/Addenda spatial data. Areas scaled up were assumed to contain moderate to high quality suitable habitat.

Construction Impacts

Construction of new wells and all associated infrastructure (i.e., well pads, extraction pumps, transmission pipelines, in-situ treatment equipment such as pumps and dosing equipment, fencing to secure equipment areas), new access roads, above-ground treatment facilities, and new agricultural treatment units would require land clearance, trenching, paving, concrete laying, and crop planting. These activities would also increase presence of construction workers and storage and use of large construction vehicles and equipment that may conflict with the existing open, undisturbed areas and adjacent areas that are inhabited by desert tortoise or which could serve as future suitable habitat for desert tortoise.

The majority of construction impacts would occur during the initial buildout of wells (all alternatives), agricultural land treatment units (all action alternatives), and above-ground treatment facilities (Alternatives 4C-3 and 4C-5 only). As a result, desert tortoise may enter the disturbed areas or become entrapped, leading to short-term and long-term removal or loss of individuals and burrowing areas. Continued construction of these components (in subsequent phases) would also result in the same impacts.

Construction of wells and associated above-ground infrastructure and above-ground treatment facilities has the potential to increase the area where disturbed landscapes and native habitats interface. This interface area is subjected to edge effects[1], which would be unfavorable to desert tortoise occupancy if the edge effect is adjacent to desert tortoise habitat.

Construction could attract predators by providing potential sources of food and water due to trash, and construction watering, as well as perches provided by new structures and perimeter fencing. Increased predators in the project area, especially the common raven, could result in increased predation rates on desert tortoise that are occupying areas within and adjacent to direct areas of disturbance.

Construction of new access roads (both paved and unpaved gravel), as well as increased use of existing access roads for equipment hauling and worker access, would contribute to an increase in disturbance and infringement of areas occupied by desert tortoise, interrupt crossing and potentially result in vehicle-collisions with individuals.

Use of construction equipment would create new sources of noise and/or vibration above existing conditions. The sensitivity of desert tortoise to noise is not well documented, but Bowles et al. (1999) showed very little behavioral or physiological effect on tortoises of loud noises that simulated jet fly-overs and sonic booms. In addition, desert tortoise largely reside underground, which would increase sound attenuation. Finally, the project is not expected to produce sound levels that would be above 93 L_{eq} at 50 feet. Thus there would be less than significant impact to desert tortoise from construction noise. It is possible that there could be adverse vibration impacts as a result of equipment and vehicle operations (Section 3.6, *Noise*, discusses noise and vibration impacts of project implementation) since ground vibrations can cause desert tortoise to emerge from their burrows (USFWS 1994). However, the specific vibration threshold that may cause a behavioral response in desert tortoise has not been studied.

[1] Edge effects are the unfavorable interaction between native and disturbed/developed habitat edges where aspects of the disturbed/developed area spills into the native/natural area.

Construction of all new remediation facilities also has the potential to result in introduction and colonization of non-native species. Proliferation of invasive plants (particularly non-native grasses) is recognized as a threat to desert tortoise habitat because they have a lower nutritional value when compared to native forbs and other plants, and can negatively change the natural fire regime by increasing fire frequency (due to presence of new vegetation).

Construction-related impacts (other than noise, but including vibration as a potential impact) are considered significant for all alternatives due to the potential for direct and indirect loss of individual desert tortoise and their existing habitats in the project area. However, implementation of the **Mitigation Measures BIO-MM-1a through BIO-MM-1h** would avoid or minimize species loss and habitat disturbance impacts through requirements to follow federal protocols for protection, limiting areas of disturbance, eliminating or reducing construction hazards and opportunities for predator establishment, and construction worker training and construction monitoring. Compensatory mitigation ratios are proposed to mitigate for permanent removal of suitable habitat for this species as described in **Mitigation Measure BIO-MM-1h**. With implementation of mitigation, the potentially significant construction-related impacts to desert tortoise are considered less than significant.

Operations and Maintenance

Operations and maintenance activities would be generally similar across all treatment methods. These activities primarily involve the following activities, and all facilities would be accessed from existing or newly constructed access roads.

- Daily system checks, potential trouble shooting and repair (and replacement of components) and general maintenance of all equipment, and infrastructure associated with remediation facilities.
- Periodic well rehabilitation and redevelopment.
- Removal, cleaning, and maintenance of well pumps, valves, pipelines, tanks, and appurtenances.
- Planting, coordinating harvest scheduling and evaluating crop health.
- Collection of operating data of all operating components at all facility sites.
- Measuring, tracking and adjusting of in-situ, agricultural land treatment and ex-situ operational processes (pumps, flow rates, etc.).
- Collection of water quality samples for laboratory analysis.
- Completing in-situ remediation carbon injection.
- Materials deliveries.
- Trash and lab waste pick up for off-site transportation.

Desert tortoise are not expected to be regular occupants of the agricultural treatment units (included in all action alternatives) because they are largely unsuitable for the species. However, there is the possibility that tortoises could on rare occasion move through these areas and become exposed to agricultural-related herbicides, pesticides, and/or rodenticides if they are used.

At present, there is no data on long-term exposure of wildlife to waterborne hexavalent chromium and potential adverse effects. Impact on animals has only been demonstrated in laboratory studies where the exposure has been in the range of 20,000 parts per billion, which is many thousands of

times more concentrated than any concentration of chromium which might appear for a short time in any irrigation water used for agricultural treatment. Given the lack of evidence for this impact, it is not identified as a significant impact.

Above-ground treatment facilities (included in Alternatives 4C-3 and 4C-5) would be staffed 24 hours a day at all times, and there would be nighttime lighting of all buildings at these facilities. There could be emergency maintenance activities during nighttime hours requiring introduction of new lighting at the affected facilities. Since the entire project area is interspersed with moderate to high quality desert tortoise habitat, it is possible that there could be direct and indirect disturbance to both individual tortoises and habitat as a result of collision, crushing, and entrapment due to operations and maintenance activities. The frequency of operations and maintenance activity may decrease as certain facilities are brought offline in later years; however, the potential for adverse impacts to desert tortoise would still exist.

Therefore, these impacts are considered potentially significant for all alternatives. **Mitigation Measures BIO-MM-1i through BIO-MM-1j** would minimize potential exposure of tortoises to agricultural treatment-related contaminants and disturbance from nighttime activities. In addition, aspects of **Mitigation Measures BIO-MM-1a through BIO-MM-1f** could continue to be used whenever there are pre-planned operations or maintenance activities thought to possibly affect tortoises or their habitat as determined by a qualified biologist. With implementation of these measures, this impact would be considered less than significant, with the exception of desert tortoise movement.

As explained in Impact BIO-4, the No Project Alternative would result in less than significant impacts on tortoise movement, but all action alternatives would result in perhaps a 2-mile contiguous corridor of active agriculture which may impede east-west movement of desert tortoise across the central part Hinkley Valley In addition, the new agricultural areas would be contiguous to other areas of existing non-project agriculture along the Mojave River, which would increase the area of potential obstacles to desert tortoise movement. Thus, relative to wildlife movement, all action alternatives are considered to result in a significant impact to the desert tortoise. Feasible mitigation was considered for this impact (see Impact BIO-4), but no feasible mitigation was identified that would meet most of the project goal objectives and would reduce this impact to a less than significant level. As such, the action alternatives are considered to result in a significant and unavoidable impact related to desert tortoise movement.

No Project Alternative

The No Project Alternative would involve continued implementation of plume containment and reduction of the Cr[VI] plume concentrations. The primary differences between the No Project Alternative and existing conditions are increased in-situ remediation and associated wells and well infrastructure. The No Project Alternative would not increase agricultural treatment units or agricultural treatment operations above existing conditions.

Although the No Project Alternative would be limited to the existing authorized area of remedial activity, there is potential for adverse impacts to desert tortoise because new occurrences of desert tortoise observances have been recorded in the project area since 2008 (see Figure 3.7-3). The primary area where new wells would be constructed is within OU1 where three SCRIA extraction wells would be constructed as shown in Figure 3.7-4. These areas are currently disturbed and /or urbanized, and there is currently a high degree of wildland interface. There are also both low and

moderate to high quality suitable habitat areas interspersed between the urbanized locales. As shown in Table 3.7-4b, there could be a worst-case loss of an estimated 7 acres of suitable habitat under continued remediation activities. Additionally, recent observations confirm that desert tortoise could occur within or adjacent to the areas where new facilities would be constructed. These observations suggest that active, occupied and inactive shelters likely exist within or adjacent to the areas where new facilities may be constructed. Potential to encounter these species during construction, operations and maintenances activities is considered to be likely even though the degree of disturbed land-wildland interface would not change significantly from existing conditions. Implementation of the No Project Alternative is therefore considered to have potentially significant impacts on the desert tortoise and its supporting habitat. These impacts would be the same as described in the overview. With implementation of **Mitigation Measures BIO-MM-1a through BIO-MM-1j,** impacts to desert tortoise as a result of the No Project Alternative would be considered less than significant.

Alternative 4B

Alternative 4B would expand the area of agricultural land treatment (up to 264 new acres) and other remedial infrastructure in comparison to existing conditions and the No Project Alternative. It is possible that future remediation activities could occur in the northern, southwest and southeast areas of OU3. Areas within OU1 and OU2 where new agricultural extraction wells and the new agricultural unit would be constructed are fairly urbanized and there is a high degree of disturbed land-wildland interface under existing conditions. Areas of OU3 where future remediation activities could occur also contain urbanized or disturbed areas but also contain the majority of the moderate to high quality suitable desert tortoise habitat in the project area. Table 3.7-4b shows that there could be a worst-case direct loss of up to 301 acres of suitable habitat if Alternative 4B was implemented. Additionally, recent field observations have found occurrences of live tortoises and occupied and inactive shelters within or adjacent to the areas where the new agricultural treatment unit and extraction wells would be constructed as well as in the northern and southeastern areas within OU3. Figure 3.7-5 shows the known areas of habitat disturbance. Additional disturbance could occur in other areas generally.

Potential to encounter desert tortoise during construction, operations and maintenances activities is considered to be likely in the entire project area, even though the proposed expansion of agricultural treatment is limited to the existing disturbed areas of OU1 and OU2. Therefore, impacts to this species and its habitat would be the same as described in the overview, which are considered potentially significant. With implementation of **Mitigation Measures BIO-MM-1a through BIO-MM-1j**, impacts to desert tortoise as a result of Alternative 4B would be considered less than significant with the exception of desert tortoise movement, which is considered a significant and unavoidable impact (see Impact BIO-4).

Alternative 4C-2

Alternative 4C-2 includes additional agricultural land treatment units (up to 392 new acres) and other remedial infrastructure than under existing conditions. It involves similar components to Alternative 4B, with the exception of increased number of agricultural units and year-round operation of agricultural land treatment through the addition of winter crops (winter rye or similar crop) to most of the existing and new agricultural units. As such, the area of disturbance and encroachment onto moderate to high quality suitable desert tortoise habitat (both known and future unknown areas of new remedial activity) under this alternative is significantly expanded from

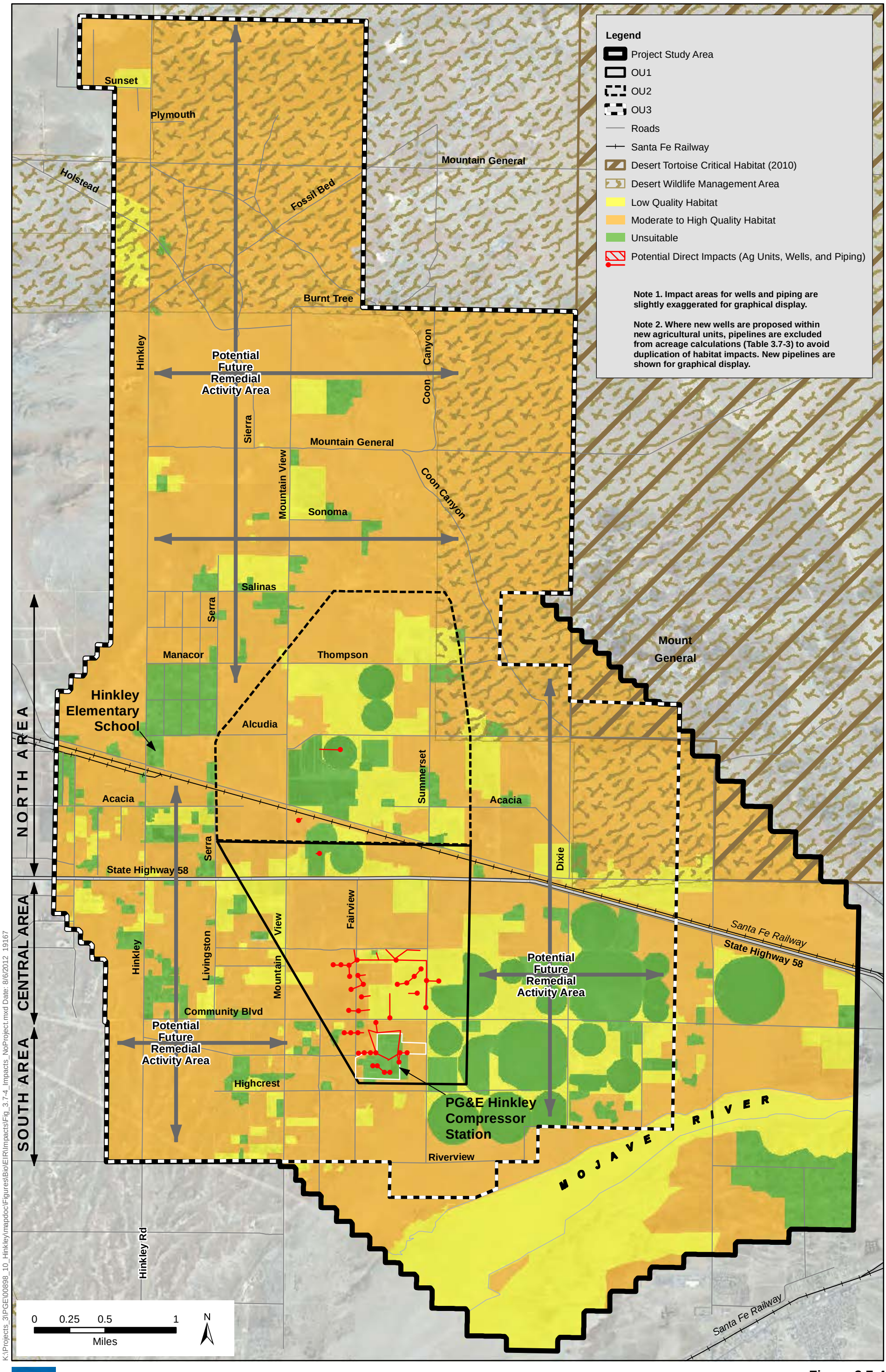

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Figure 3.7-4
No Project Alternative
Potential Areas of Direct Impacts

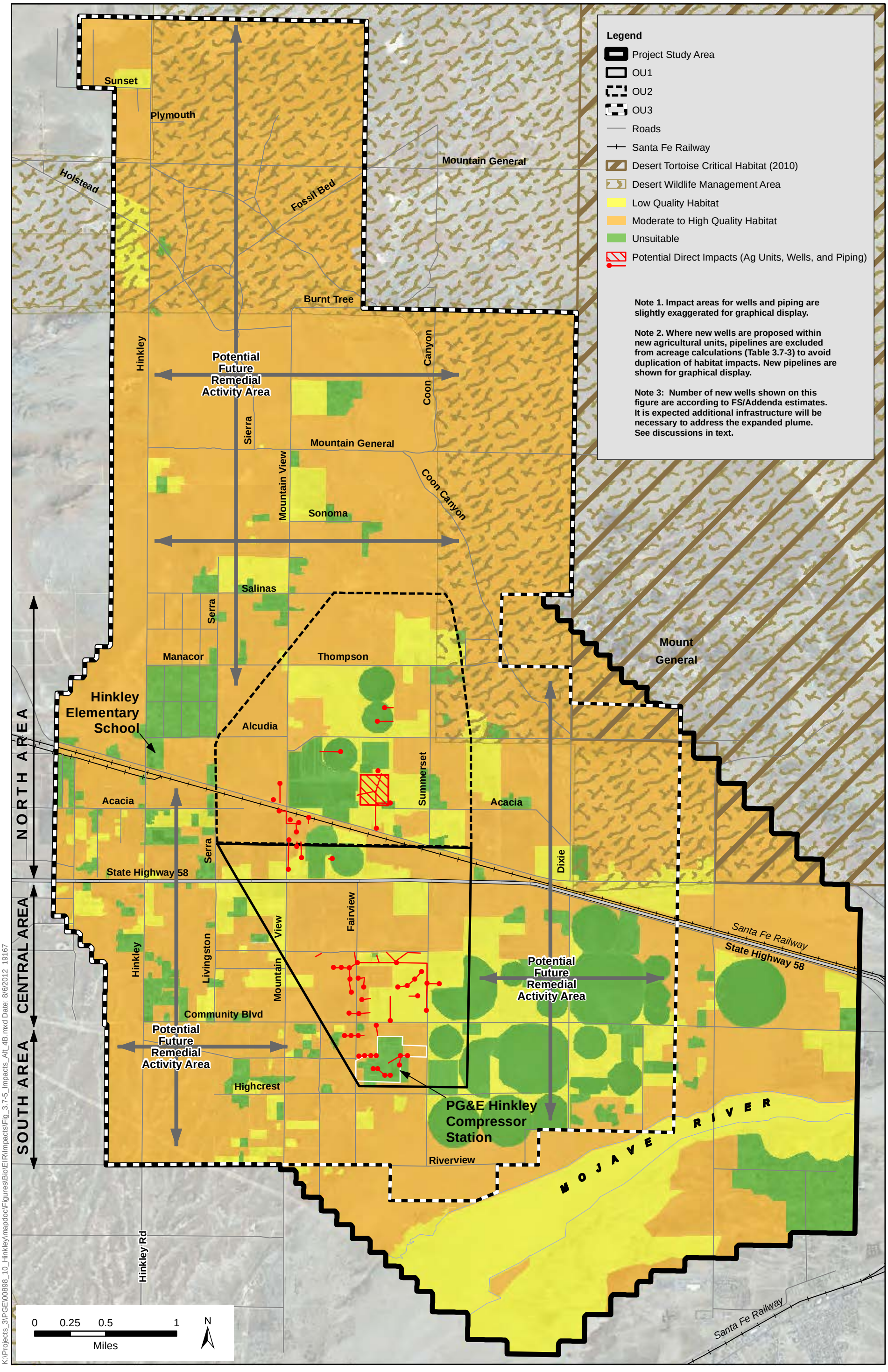

Figure 3.7-5
Alternative 4B
Potential Areas of Direct Impacts

existing condition. Figure 3.7-6 shows the known areas of habitat disturbance, but additional disturbance, only indicated in general on the figure, would also occur. As shown in Table 3.7-4b, there could be a worst-case loss of up to 430 acres of suitable habitat. Impacts to desert tortoise under this alternative would be similar to but greater than under Alternative 4B and substantially more than existing conditions; these impacts are considered potentially significant. Implementation of **Mitigation Measures BIO-MM-1a through BIO-MM-1j** would reduce these impacts to a less-than-significant level with the exception of desert tortoise movement, which is considered a significant and unavoidable impact (see Impact BIO-4).

Alternative 4C-3

Alternative 4C-3 includes all of the same new agricultural treatment units (up to 392 acres) and IRZ infrastructure as Alternative 4C-2, but adds ex-situ treatment at two above ground treatment facilities, one located in the Source Area in-situ remediation zone near the Compressor Station and one in OU2 adjacent to the existing Desert View Dairy land treatment unit. The proposed new treatment infrastructure significantly expands the area and intensity of remediation activities compared to existing conditions. Although the new above ground treatment facilities are both located in developed areas, the proximity to adjacent suitable habitat can still result in indirect impacts. Figure 3.7-7 shows the known areas of habitat disturbance, but additional disturbance, only indicated in general on the figure, would also occur. As shown in Table 3.7-4b, there could be a worst-case loss of up to 445 acres of suitable habitat. Impacts to desert tortoise under this alternative would be the similar to Alternative 4C-2 and are considered potentially significant. Implementation of **Mitigation Measures BIO-MM-1a through BIO-MM-1j** would reduce these impacts to a less-than-significant level with the exception of desert tortoise movement, which is considered a significant and unavoidable impact (see Impact BIO-4).

Alternative 4C-4

Alternative 4C-4 would significantly increase the area of agricultural treatment (by up to 1,212 acres) and would have other remedial infrastructure compared to existing conditions. This alternative would have the greatest amount of habitat impacts to desert tortoise within the OU1 and OU2 areas of known remedial activities and would also have the greatest likely impacts within areas of OU3 due to expanded agricultural treatment necessary to address the expanded plume. Figure 3.7-8 shows the known areas of habitat disturbance, but additional disturbance, only indicated in general on the figure, would also occur. As shown in Table 3.7-4b, there could be a worst-case loss of up to 1,277 acres of suitable habitat for desert tortoise. Therefore, impacts to this species under this alternative are considered potentially significant and implementation of **Mitigation Measures BIO-MM-1a through BIO-MM-1j** would reduce these impacts to a less-than-significant level for all impacts to this species other than wildlife movement with the exception of desert tortoise movement, which is considered a significant and unavoidable impact (see Impact BIO-4).

Alternative 4C-5

Alternative 4C-5 has all of the same agricultural land treatment (up to 392 new acres) as Alternative 4C-2 and 4C-3, but adds ex-situ treatment at one above-ground treatment facility located in the Source Area in-situ remediation zone. It would have similar impacts to Alternatives 4C-2 and 4C-3 in comparison to existing conditions. Figure 3.7-9 shows the known areas of habitat disturbance, but additional disturbance, only indicated in general on the figure, would also occur. As shown in Table 3.7-4b, there could be a worst-case loss of up to 436 acres of suitable habitat for desert tortoise.

Therefore, impacts to this species under this alternative are considered potentially significant and implementation of **Mitigation Measures BIO-MM-1a through BIO-MM-1j** would reduce these impacts to a less-than-significant level with the exception of desert tortoise movement, which is considered a significant and unavoidable impact (see Impact BIO-4).

Impact BIO-1b: Disturbance, Mortality, and Loss of habitat for Mohave Ground Squirrel (Less than Significant with Mitigation, All Alternatives)

Overview of Impact

Overall construction and operations and maintenance impacts of all alternatives on Mohave ground squirrel would be similar to those of the desert tortoise as proposed remediation activities under all alternatives have the potential to infringe on low and moderate to high quality Mohave ground squirrel habitat throughout the entire project area (as shown in Figure 3.7-2 and Table 3.7-4). Mohave ground squirrels are known to inhabit areas near agricultural fields to feed on crops such as alfalfa. Their inhabitance in these areas poses a significant adverse risk of loss of individuals and habitat since they construct and use burrows for shelter, which could be removed during land clearing activities for crop planting, mowing and harvesting. Establishment of new agricultural treatment units may also attract Mohave ground squirrel to a new food source thereby further increasing the risk of adverse impacts from collision, crushing, and entrapment due to human activities from project implementation. Predation risks are not as high as they are for the desert tortoise since Mohave ground squirrels spend most of the year dormant and underground.

As with desert tortoise, both construction-related and operations and maintenance activities may contribute to potentially significant impacts that could result in the loss of Mohave ground squirrel individuals and removal of Mohave ground squirrel habitat. Implementation of **Mitigation Measures BIO-MM-1b through BIO-MM-1k** would reduce these impacts to a less-than-significant level.

No Project Alternative

As shown in Table 3.7-4b, there could be an estimated loss of up to 7 acres of suitable habitat for Mohave ground squirrel (these areas are the same as for the desert tortoise as both species share the same type of suitable habitat requirements). Potential to encounter these species during construction, operations and maintenances activities is considered to be likely even though the degree of wildland interface would not change significantly from existing conditions. Implementation of the No Project Alternative is therefore considered to have potentially significant impacts on the Mohave ground squirrel and its supporting habitat. These impacts would be the same as described in the overview. With implementation of **Mitigation Measures BIO-MM-1b through BIO-MM-1k,** impacts to Mohave ground squirrel as a result of the No Project Alternative would be considered less than significant.

Alternative 4B

Alternative 4B would expand the area of agricultural land treatment and associated agricultural extraction wells between SR 58 and Thompson Road (within OU1 and OU2). It is possible that future remediation activities could occur in the northern, southwest and southeast areas of OU3. This alternative would also increase the amount of in-situ remediation and associated infrastructure. Table 3.7-4b shows that there could be a worst-case direct loss of up to 301 acres of suitable habitat for Mohave ground squirrel under this alternative. Figure 3.7-5 shows the known areas of habitat

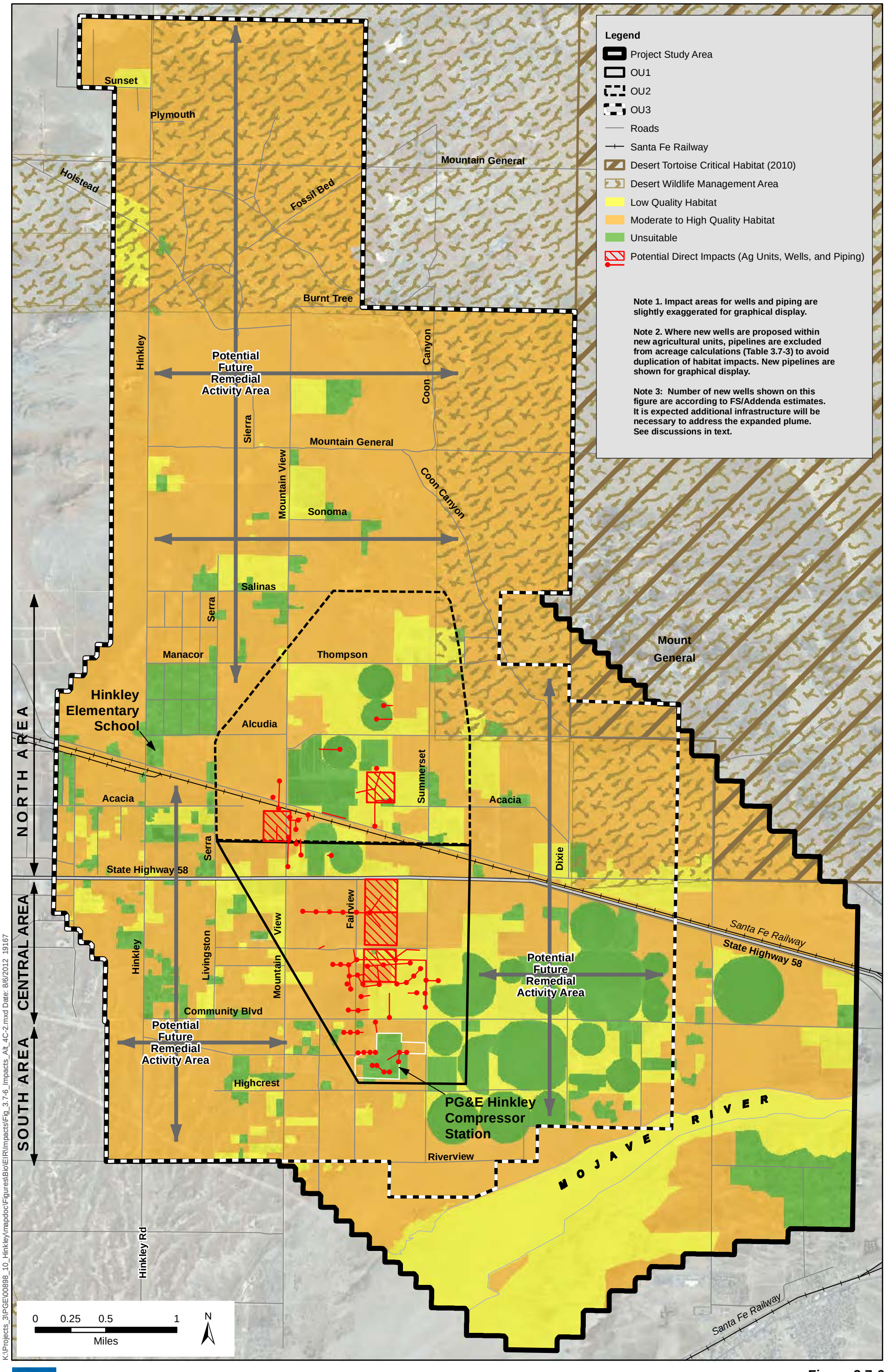

Figure 3.7-6
Alternative 4C-2
Potential Areas of Direct Impacts

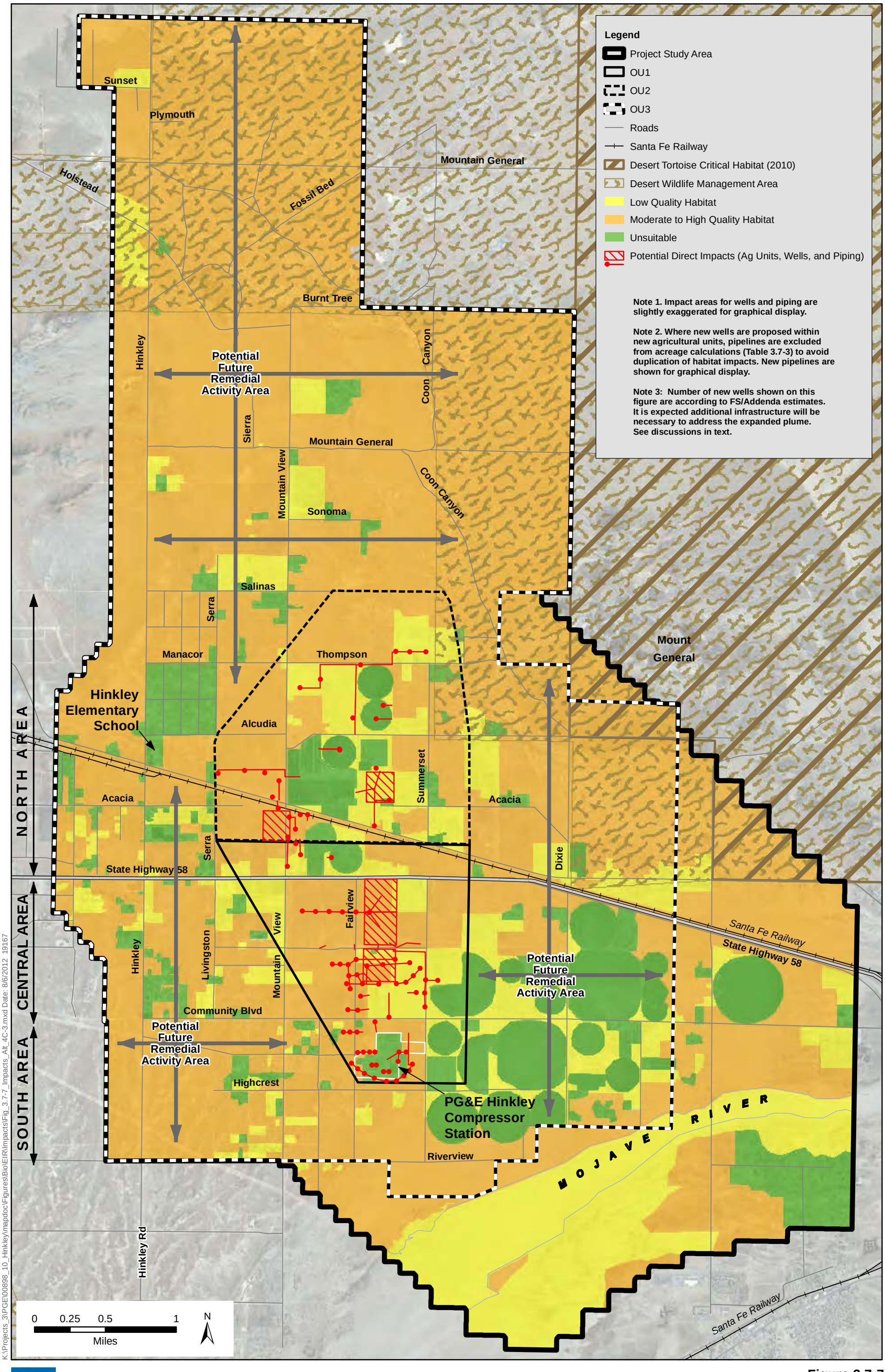

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Figure 3.7-7
Alternative 4C-3
Potential Areas of Direct Impacts

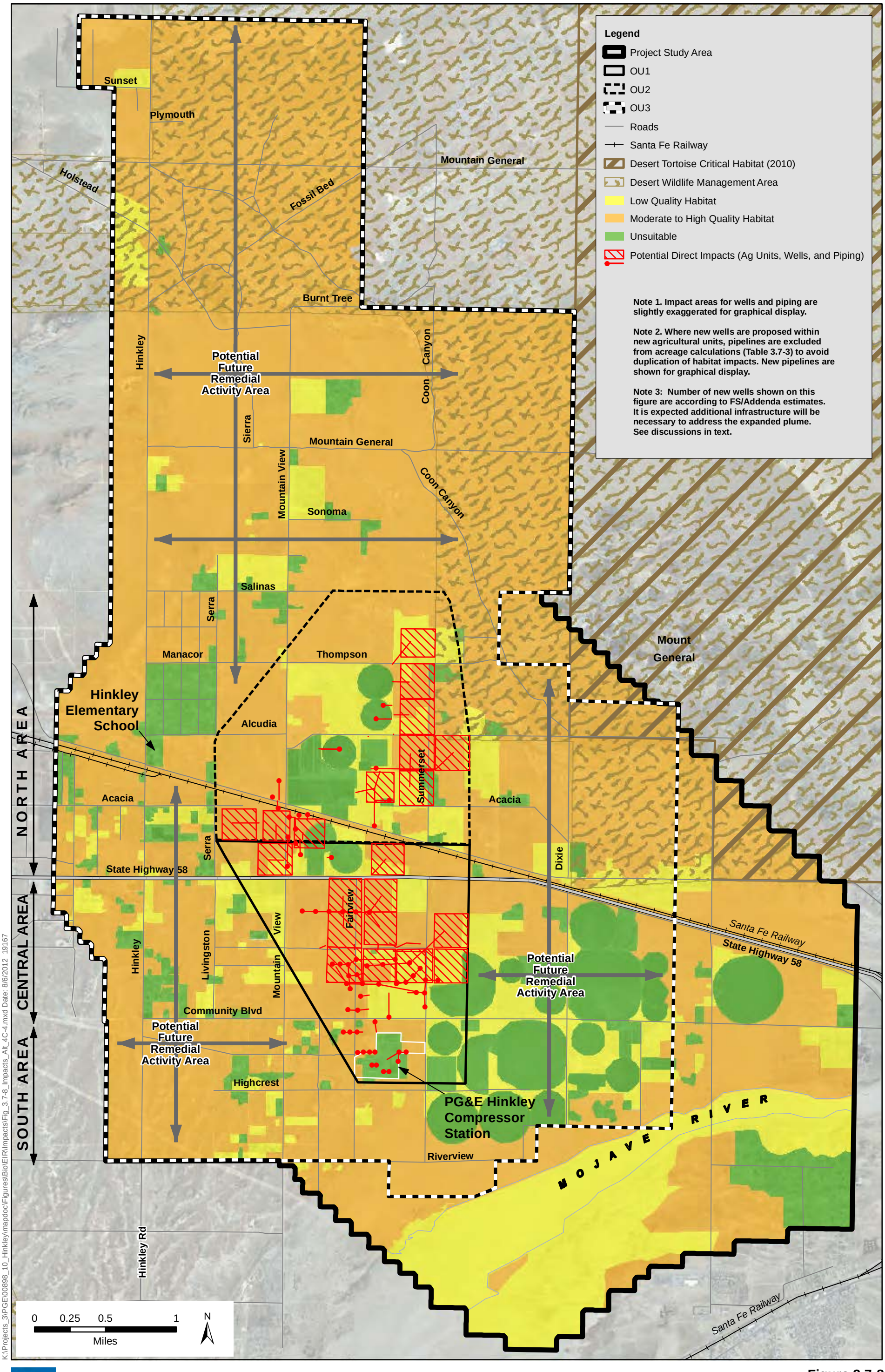

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Figure 3.7-8
Alternative 4C-4
Potential Areas of Direct Impacts

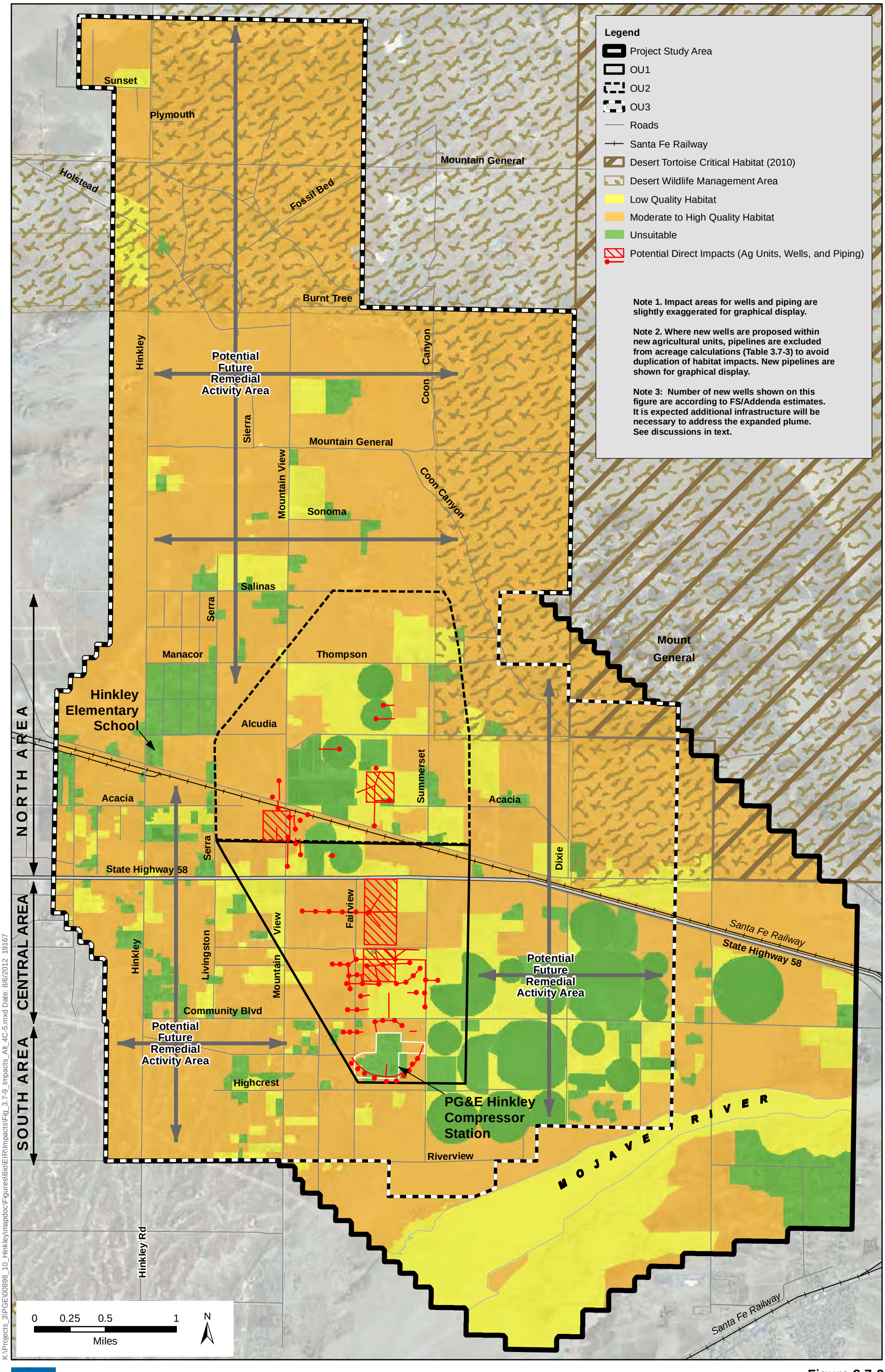

Figure 3.7-9
Alternative 4C-5
Potential Areas of Direct Impacts

disturbance, but additional disturbance, only indicated in general on the figure, would also occur. Because the Mohave ground squirrel is known to use alfalfa as a food source, the expansion of agricultural units within the known and future remedial activity areas could make the squirrel more susceptible to potentially significant impacts from increased agricultural treatment activities in comparison to existing conditions. Potential to encounter the species during construction, operations and maintenances activities is considered to be likely in the entire project area, even though the known expansion of agricultural treatment is limited to the existing disturbed areas of OU1 and OU2. Therefore, impacts to this species and its habitat would be the same as described in the overview and these impacts are considered potentially significant. With implementation of **Mitigation Measures BIO-MM-1b through BIO-MM-1k,** impacts to Mohave ground squirrel as a result of Alternative 4B would be considered less than significant

Alternative 4C-2

Alternative 4C-2 includes additional agricultural land treatment, and additional associated extraction and injection wells compared to existing conditions and adds year-round operation of agricultural land treatment, through the addition of winter crops (winter rye or similar crop) to most of the existing and new agricultural units. This alternative would also increase the amount of in-situ remediation and associated infrastructure. As such, the area of disturbance and encroachment onto moderate to high quality suitable Mohave ground squirrel habitat (both known and future unknown areas of new remedial activity) under this alternative is significantly expanded from existing conditions. Figure 3.7-6 shows the known areas of habitat disturbance, but additional disturbance, only indicated in general on the figure, would also occur. As shown in Table 3.7-4b, there could be a worst-case loss of up to 430 acres of suitable habitat. Impacts to Mohave ground squirrel under this alternative would be similar in character as Alternative 4B but at a greater level and significantly more than existing conditions; these impacts are considered potentially significant. Implementation of **Mitigation Measures BIO-MM-1b through BIO-MM-1k** would reduce these impacts to a less-than-significant level.

Alternative 4C-3

Alternative 4C-3 includes all of the same new agricultural treatment components and IRZ wells as Alternative 4C-2, but adds ex-situ treatment at two above ground treatment facilities, one located in the Source Area IRZ near the Compressor Station and one in OU2 adjacent to the existing Desert View Dairy land treatment unit. The new facilities significantly expand the area and intensity of remediation activities compared to existing conditions. The area of disturbance and encroachment onto moderate to high quality suitable habitat over existing conditions would be similar to that under Alternative 4C-2. Figure 3.7-7 shows the known areas of habitat disturbance, but additional disturbance, only indicated in general on the figure, would also occur. As shown in Table 3.7-5b, there could be a worst-case loss of up to 445 acres of suitable habitat. Impacts to Mohave ground squirrel under this alternative would be similar to Alternative 4C-2 and is therefore considered potentially significant. Implementation of **Mitigation Measures BIO-MM-1b through BIO-MM-1k** would reduce these impacts to a less-than-significant level.

Alternative 4C-4

Alternative 4C-4 significantly increases the number of agricultural treatment areas compared to existing conditions. This alternative would also increase the amount of in-situ remediation and associated infrastructure. Figure 3.7-8 shows the known areas of habitat disturbance, but additional

disturbance, only indicated in general on the figure, would also occur. As shown in Table 3.7-4b, this alternative would have the greatest potential amount of impacts to Mohave ground squirrel (worst-case direct loss of up to 1,277 acres of suitable habitat). It would have similar impacts as all other action alternatives within the future remedial activity areas in comparison to existing conditions. Therefore, impacts to this species under this alternative are considered potentially significant and implementation of **Mitigation Measures BIO-MM-1b through BIO-MM-1k** would reduce these impacts to a less-than-significant level.

Alternative 4C-5

Alternative 4C-5 has all of the same agricultural land treatment components as Alternative 4C-2 and adds ex-situ treatment at one above ground treatment facility located in the Source Area in-situ remediation zone. This alternative would also increase the amount of in-situ remediation and associated infrastructure. In comparison to existing conditions, similar impacts to Mohave ground squirrel would occur under this alternative as under Alternatives 4C-2. Figure 3.7-9 shows the known areas of habitat disturbance, but additional disturbance, only indicated in general on the figure, would also occur. As shown in Table 3.7-4b, there could be a worst-case loss of up to 432 acres of suitable habitat. Therefore, impacts to this species under this alternative are considered potentially significant and implementation of **Mitigation Measures BIO-MM-1b through BIO-MM-1k** would reduce these impacts to a less-than-significant level.

Impact BIO-1c: Disturbance, Mortality, and Loss of Habitat for Burrowing Owl and American Badger, and Mortality of Desert Kit Fox (Less than Significant with Mitigation, All Alternatives)

Overall construction and operations and maintenance impacts of all alternatives on both the burrowing owl and American badger would be similar to those of the desert tortoise as proposed remediation activities under all alternatives have the potential to infringe on low and moderate to high quality habitat of these species throughout the entire project area (as show in Figure 3.7-2).

As described in the Environmental Setting, burrowing owls are known to inhabit a wide variety of disturbed and natural habitat areas including active and non-active agricultural lands. They have moderate to high potential to occur within the project area and have been recorded in recent field observations within the central agricultural treatment areas as shown in Figure 3.7-3. Burrowing owls have the potential to use the project area for foraging, nesting and to use existing burrows excavated by ground squirrels, badgers and desert tortoise. Burrowing owls may also nest within or immediately adjacent to the agricultural areas. Agricultural units may attract and support populations of invertebrates and small mammals, which in turn may create high quality burrowing owl foraging habitat that could be a long-term beneficial impact. However, agriculture treatment-related activities such as land clearing for crop planting, routine mowing, and harvesting may result in potential direct and indirect permanent loss of burrowing owls and their supporting habitat. If burrowing owls utilize the agricultural treatment units for a portion of their life cycle, they may become exposed to waterborne hexavalent chromium, as well as exposure to herbicide/rodenticide and pesticide applications.

Similar to the desert tortoise and Mohave ground squirrel, the sensitivity of burrowing owl to noise (and vibration) is not well documented, but the male (who is largely above-ground during the nesting cycle) could exhibit negative reactions to increases in noise and vibration levels above existing conditions that could cause nest abandonment and death of young or loss of reproductive

potential at active nests. New facilities could also increases predation risks to the burrowing owl similar to the Desert tortoise and Mohave ground squirrel. Burrowing owls are also known to be active during both the daytime and nighttime and therefore may be disrupted in the event they are affected by night lighting of facilities or emergency operations and maintenance activities thereby further increasing the risk of adverse impacts from collision, crushing, and entrapment due to human activities from project implementation.

The American badger also was determined to have moderate to high potential to occur within the project area for both foraging and denning. Impacts to American badger would be similar to those of the burrowing owl; however, in regards to noise impacts, the American badger largely resides underground, which would increase sound attenuation and limit their exposure to noise-related disturbances. Ground-borne vibration may still cause adverse impacts to the badger. Overall, noise and vibration impacts are considered potentially adverse if they result in abandonment of nesting sites. American badgers have few natural predators and would not be subject to predation and harassment by a species such as the common raven. American badger is not expected to be a regular occupant of the agricultural treatment units because they are largely unsuitable habitat. Additionally, there is a high potential for desert kit fox to occur within the project area, and the loss of individuals would be considered a potentially significant impact because it would violate a CDFG mammal hunting regulation.

With the No Project Alternative, impacts to these species would still be considered higher than under existing conditions due to the increases in human related activities from new remediation facilities. Under Alternative 4B there would be more significant impacts than the No Project Alternative when compared to existing conditions due to the expanded agricultural treatment areas. Impacts under all other action alternatives would be more than Alternative 4B in comparison to existing conditions due to larger areas of agricultural treatment and other remedial activities. Alternative 4C-4 has the potential to have the greatest impacts to these species as it would implement the largest acreage of agricultural units within the central project area.

For American badger and desert kit fox, both construction-related and operations and maintenance activities would contribute to potentially significant impacts that could result in the loss of individuals. Habitat impacts to the American badger and desert kit fox are not considered significant due to the abundance of habitat for these species in the project vicinity and throughout the Mojave desert. Implementation of **Mitigation Measures BIO-MM-1b through BIO-MM-1e, BIO-MM-1i through BIO-MM-1j, and Mitigation Measure BIO-MM-1m** would reduce impacts to these two species to a less than significant level by reducing project disturbance areas, environmental education, minimizing construction hazards, predator, integrated pest management, light management, and surveys and avoidance of action badger and desert kit fox dens.

For the burrowing owl, both construction-related and operations and maintenance activities would contribute to potentially significant impacts that could result in the loss of individuals and removal of moderate to high quality habitat. Implementation of **Mitigation Measures BIO-MM-1b through BIO-MM-1j** would reduce construction-related and operations and maintenance impacts to burrowing owl to a less-than-significant level. **Mitigation Measure BIO-MM-1l** would require pre-construction surveys in coordination with regulatory agencies to identify presence or absence of burrowing owl within the project area to further avoid or minimize impacts to burrowing owl.

Impact BIO-1d: Disturbance, Mortality, and Loss of Habitat to Loggerhead Shrike and Northern Harrier (Less than Significant, No Project Alternative; Less than Significant with Mitigation, All Action Alternatives)

The loggerhead shrike typically inhabits shrublands such as those that are present through the project area. They also use fences and power lines as perching areas; the majority of the project area is high quality foraging and nesting habitat for the loggerhead shrike. This species was recently observed in the northwestern area of the project area (near Hinkley Road and Sunset Road/ Plymouth Road) (see Figure 3.7-3), and was identified as using the areas to the east for foraging.

The northern harrier is known to breed and forage in a variety of habitats, including agricultural areas, such as alfalfa fields. Northern harrier was observed in the area adjacent to the upper limit of OU2 at Salinas and Mountain View Roads (see Figure 3-7.3). Northern harrier has also been known historically to breed northwest of project area at Harper Lake, and also may occasionally breed in west the Mojave area, but no breeding activity has been recorded since the mid-1990s. Recent observations of northern harrier have occurred in the northwest portion of the project area. Subsequently, there is potential for these species to exist within the project area, though the quality of habitat present is considered low.

The No Project Alternative does not include expansion of agricultural activities and only includes limited ground disturbance for new remedial facilities so potential for adverse impacts to these species is considered to be less than significant. Both species have the potential to occur within future potential remedial activity areas; therefore, there would be an increased impact to these species if the No Project Alternative was implemented in comparison to existing conditions, but given the limited area of disturbance, it would still be a less than significant impact.

Overall construction and operations and maintenance impacts of the other alternatives on both the loggerhead shrike and northern harrier would be similar to those for burrowing owl and badger. Proposed remediation activities have the potential to remove habitat where these species currently occur or may occur in the project area (as show in Figure 3.7-2). One potential impact to loggerhead shrike, as well as other breeding birds, would be an increased threat to successful breeding from establishment of new agricultural treatment units that may attract the brown-headed cowbirds. The brown-headed cowbird is known to occupy similar agricultural areas and increased occurrences of the brown-headed cowbird can lead to a reduction in the ability for some bird species to produce young. Cowbird parasitism is known to decrease productivity of bird species in general, and expansion of agricultural treatment units under the action alternatives has the potential to increase significant adverse impacts to the existing bird species (Kus 1999). Compared to existing conditions and the No Project Alternative, this adverse effect would be greater with Alternatives 4C-2, 4C-3, and 4C-5 and the greatest with Alternative 4C-4 because it has substantially more new agricultural treatment.

For loggerhead shrike and northern harriers, both construction-related and operations and maintenance activities would contribute to potentially significant impacts that could result in the loss of individuals and removal of suitable foraging and nesting habitat for all action alternatives. Implementation of **Mitigation Measures BIO-MM-1b through BIO-MM-1f, and BIO-MM-1i** minimize overall impacts from project implementation. **Mitigation Measure BIO-MM-1n** would further avoid or reduce these impacts to a less-than-significant level by limiting construction to occur outside breeding season and establish exclusionary areas for project-related disturbance.

Impact BIO-1e: Potential Loss of Habitat to Mojave River Vole (Less than Significant All Alternatives)

The Mojave River vole is typically found in moist habitats such as wetland and marsh habitats associated with ponds and irrigated pastures as well as within the Mojave River. The Mojave River vole has been known to inhabit the Mojave River during annual flooding events. This species has the potential to inhabit alfalfa fields near the Mojave River, but suitable habitat is not present within observed portions of the Mojave River in the project. These areas are considered low to moderately-quality potential for supporting the Mojave River vole.

The active remedial agricultural treatment areas are currently located well north of the Mojave River, and it is assumed that current agricultural treatment activities (such as mowing and use of herbicides/rodenticides) would not result in significant adverse impacts to this species due to the low potential for their presence in existing agricultural treatment areas.

The No Project Alternative would not include expansion of agricultural treatment units; therefore, impacts to this species are not considered significant and adverse compared to existing conditions for this alternative.

Implementation of all action alternatives (4B 4C-2, 4C-3, 4C-4, 4C-5) could result in expansion of agricultural treatment units including within proximity to the Mojave River. The expansion of new agricultural treatment units may attract and support populations of Mojave River vole due to the introduction of suitable moist habitats of the agricultural units and resulting irrigation fields. Planting of alfalfa crops within new agricultural treatment units may also increase the potential for these species to inhabit these areas. Although it is possible that individuals of this species might be affected by agricultural equipment in new agricultural treatment areas, given that the project would, if anything, increase habitat for this species during project activities, the project would be expected to support increases in populations of this species, if anything and thus the project is not expected to result in a significant impact to this species.

Impact BIO-1f: Mortality and Loss of Habitat for Mojave Fringe-Toed Lizard (Less than Significant, All Alternatives)

As described in Section 3.7.4.1 above, two sensitive natural communities listed by CDFG are located in the project area: the California joint fir scrub and desert dunes (see Figure 3.7.1). The California joint fur scrub is located in the southern-central portion of the project area, generally between Highcrest Road and the Mojave River as it passes through the project area. Desert dunes habitat is located in the south below the Mojave (see Figure 3.7.1). The Mojave fringe-toed lizard has the potential to inhabit these California joint fir scrub and desert dunes plant communities of the project area (California Natural Diversity Database 2011).

Two existing freshwater extraction wells (FW-01 and FW-02) that are currently used to implement hydraulic control of the plume occur within the California joint fir scrub habitat area, which is suitable for Mojave fringe-toed lizard. There are currently no other existing remediation activities occurring within this area.

However, given that this location is upgradient of the chromium plume and where groundwater is most readily recharged from the Mojave River, it is possible that new wells and pipeline may be proposed in this area to provide alternative water supplies to domestic and agricultural wells that are currently affected by the plume or may be affected by future remedial actions (see discussion in

Section 3.1, *Water Resources and Water Quality*). As a result, remedial actions and mitigation may affect a small portion of California joint fir scrub habitat area and the Mojave fringe-toed lizard, if present. This impact will be small in area and would have the potential to affect only very few Mojave fringe-toed lizard individuals. Therefore, this impact is considered likely to be less than significant but **Mitigation Measures BIO-MM-1b through BIO-MM-1g and BIO-MM-2** are recommended to ensure that these impacts remain at a less than significant level.

This species also has known potential to occur in the desert dunes habitat (south of the Mojave River) (California Natural Diversity Database 2011). However, there are currently no remediation activities occurring within the desert dunes habitat and none are planned in any of the alternatives.

Impact BIO-1g: Loss of Other Special-Status Birds (Less than Significant with Mitigation, All Alternatives)

Several raptors have the potential to occur throughout the project area due to the presence of high quality foraging and potential nesting habitats for these species. Under all alternatives, construction and operations and maintenance of new remediation facilities would be expanded over existing conditions and may result in increased habitat modification and resulting impacts to the ability of raptor species to use the project area. Implementation of **Mitigation Measure BIO-MM-1i would** minimize overall impacts from project implementation. **Mitigation Measure BIO-MM-1n** would further avoid or reduce these impacts to a less-than-significant level by limiting construction to occur outside breeding season and establish exclusionary areas for project-related disturbance.

Impact BIO-1h: Loss of Individual Plants or Disturbance to Special-Status Plants (Less than Significant with Mitigation, All Alternatives)

The project area potentially contains one federally-threatened plant, the Lane Mountain milk-vetch, and eight special-status plants listed under the California Native Plant Protection Act. These plants primarily have the potential to occur within the allscale scrub (primarily allscale scrub – sparse playa) and creosote bush scrub communities. As shown in Figure 3.7-1, allscale scrub playa areas occur in the eastern and northern portions of the project area. This community is interspersed among the other allscale scrub desert scrub communities (including disturbed scrub), which encompass approximately 59 percent of the project area. Creosote bush scrub areas occur in the northeastern and northwestern areas and are in scattered areas in the southeastern locations of the project area (see Figure 3.7-1). Creosote bush scrub encompasses approximately 11 percent of the project area. Collectively these two vegetation communities encompass 70 percent of the entire project area and all of the future potential remedial activity areas in their entirety.

Existing remediation activities primarily occur outside of these habitats. One of the existing freshwater extraction wells (PG&E-14) is located within approximately 0.25 to 0.5-mile of a small portion of the southern interspersed creosote bush scrub on the south side of Highcrest Road. Additionally, there are monitoring wells throughout the project area, which may be located within or directly adjacent to both allscale sparse playa and creosote bush scrub. The existing agricultural treatment areas are concentrated in the central portions of the overall project area. The two Gorman agricultural treatment units are located south of and directly adjacent to Thompson Road; a portion of the allscale sparse playa community is located directly north of these units on the north side of Thompson Road (approximately within 0.25-mile of the Gorman agricultural units) (see Figure 3.7-1).

Construction of new wells, all associated infrastructure, and new access roads (all alternatives); new agricultural treatment units (all action alternatives); and above-ground treatment facilities (Alternatives 4C-3 and 4C-5) would require land clearance, trenching, paving, concrete laying, and crop planting. These activities would also increase presence of construction workers and storage and use of large construction vehicles and equipment. Construction of wells and associated above-ground infrastructure and construction of above-ground treatment facilities have the potential to increase the area where urbanized landscapes and native plant habitats interface, especially in the future remedial activity areas (where new wells could be located but not new above-ground treatment facilities) because that is where the majority of the moderate to higher quality special-status plant species habitat is present. Construction of all new remediation facilities has the potential for introduction/colonization of non-native plant species (particularly non-native grasses) which may infringe on and reduce suitable habitat for special-status plant species to occur. The majority of construction impacts would occur during the initial buildout of wells, agricultural land treatment units and above-ground treatment facilities. Continued construction of these components (in subsequent phases) would also result in the same impacts.

These construction-related impacts have the potential to cause direct and indirect permanent loss of individual special-status plants in the project area. Implementation of **Mitigation Measure BIO-MM-1g and BIO-MM-1o** would minimize impacts to special-status plant species and their supporting habitat to a less-than-significant level.

For all alternatives, operations and maintenance activities are not expected to have adverse effects to special-status plants or their habitat since these activities would primarily occur within areas that have already been disturbed during construction of new remediation facilities. However, Alternatives 4C-3 and 4C-5 include new above-ground facilities, there may be increased potential to introduce non-native plants due to increased presence of vehicles (for materials deliveries, trash collection) that may carry remnants of non-native plants on their tires. Although these impacts are not considered significant and adverse, implementation of **Mitigation Measure BIO-MM-1g** would further minimize any operations and maintenance impacts to special-status plants within the project area.

3.7.6.2 Riparian Habitat or Sensitive Natural Communities

Impact BIO-2: Reduction or Loss of Function of Riparian Habitat or Sensitive Natural Communities (Less than Significant with Mitigation, All Alternatives)

No riparian habitat was observed within the project area, and there is no potential for such habitat to be adversely affected by project implementation.

As described in Section 3.7.4.1 above, two sensitive natural communities listed by CDFG are located in the project area including the California joint fir scrub and desert dunes (see Figure 3.7.1). The California joint fur scrub is located in the southern-central portion of the project area, generally between Highcrest Road and the Mojave River as it passes through the project area. Desert dunes habitat is located in the south below the Mojave River (see Figure 3.7.1). The Mojave River wash may also be considered a sensitive natural community and is located in the southern section of the project area.

Two existing freshwater extraction wells (FW-01 and FW-02) that are currently used to implement hydraulic control of the plume occur within the California joint fir scrub habitat area. There are no

existing remediation activities occurring within the Mojave River wash or desert dunes habitat areas. As noted above, there is no proposed remedial activity in the Mojave River wash areas.

New remedial activities and associated infrastructure under all alternatives would be focused away from these sensitive natural communities. However, given that the California joint fur scrub is upgradient of the chromium plume and where groundwater is most readily recharged from the Mojave River, it is possible that new wells and pipeline may be proposed in this area to provide alternative water supplies to domestic and agricultural wells that are currently affected by the plume or may be affected by future remedial actions (see discussion in Section 3.1, *Water Resources and Water Quality*). As a result, remedial actions and mitigation may affect a small portion of California joint fir scrub habitat area. If these new infrastructure are constructed, there may be potential for significant adverse impacts due to construction-related disturbance and permanent loss of California joint fir scrub. Implementation of **Mitigation Measure BIO-MM-2** would minimize these impacts to a less-than-significant level.

3.7.6.3 Jurisdictional Waters

Impact BIO-3: Loss or Disturbance of Federal and/or State Jurisdictional Waters (including wetlands) (Less than Significant with Mitigation, All Alternatives)

Project impacts related to surface water quality contamination are discussed in *Section 3.1, Water Resources and Water Quality.* This analysis focuses on impacts to drainages in the context of habitat impacts.

A formal jurisdictional wetland delineation was not conducted for the project area, and no federally protected wetlands were observed during the field assessment. However tributary washes in the project area that drain to the Mojave River have the potential to be federally regulated waters of the United States. The majority of the drainages in the project area (which drain north to Harper Lake) are considered state waters that are subject to state jurisdiction (as described in Section 3.7.4.9). Harper Lake supports habitat for various waterfowl species as discussed in Impact BIO-1g.

Under all alternatives, construction activities could result in erosion and sedimentation into downgradient surface drainages. It is also possible that new pipelines or new access roads may need to cross desert washes and construction could affect these washes. Operations and maintenance activities could also result in erosion and downgradient sedimentation. Since drainages in the project area are either federally- or state-regulated waters, project related erosion and sedimentation could have the potential to result in adverse effects to jurisdictional waters and any wildlife species that may temporarily use the drainages when they flow. The level of project activity under all alternatives would be increased in comparison to existing conditions, and therefore this impact is considered potentially significant. As described in Section 3.1, *Water Resources and Water Quality*, PG&E is required to prepare a Stormwater Pollution Prevention Plan (SWPPP) which will minimize potential erosion and sedimentation. Implementation of **Mitigation Measure BIO-MM-3** would ensure this impact would remain less than significant because it requires avoidance of ground disturbing activities within drainages wherever feasible, conducting delineations if any drainages are expected to be affected, and implementation of compensatory mitigation in accordance with federal and state requirements if deemed necessary.

3.7.6.4 Wildlife Movement

Impact BIO-4: Conflicts with Wildlife Movement (Less than Significant, No Project Alternative; Potentially Significant, All Action Alternatives)

The primary wildlife species that use the project area as a movement corridor are the desert tortoise and Mohave ground squirrel.

The Mohave ground squirrel can have large home ranges (16.6 acres) and long-distance movements (up to 20,000 feet has been recorded), as described under Impact BIO-1b and shown in Figure 3.7-2. It is assumed that Mohave ground squirrel could potentially use any suitable habitat areas; therefore, they are also considered to be unrestricted from movement within the project area under existing conditions. The Mohave ground squirrel, as well as the Mojave River vole, may utilize agricultural areas, but new remediation activities including the agricultural treatment included in all action alternatives are not expected to have a high potential for restricting their movement.

Potential impacts to movement of avian species, such as burrowing owls and northern harrier, are not expected. American badger is likely capable of crossing through agricultural units and no reduction in movement for this species is expected. Mojave fringe-toed lizard's movement potential will not be reduced as the areas inhabited by these species are largely outside of where new agricultural units would occur. For these species, implementation of all project alternatives is not expected to result in significant adverse impacts from introduction of new barriers to movement in comparison to existing conditions.

There is potential for moderate to highly suitable habitat for the desert tortoise throughout the project area, which is interspersed with low quality and urban/developed (or unsuitable) habitats, as discussed under Impact BIO-1a and shown in Figure 3.7-2. Desert tortoise movement occurs in a diffused pattern across the landscape; and where open, expansive areas are maintained, the project would not be expected to constrain desert tortoise movement overall. Construction of new wells and in-situ treatment facilities (included in all alternatives) is not expected to result in large areas of disturbance and would be dispersed across the landscape. New pipelines would be placed in trenches and backfilled such that there would be no above ground infrastructure present that could disrupt movement after construction. New above-ground treatment facilities (Alternatives 4C-3 and 4C-5) would require construction of new buildings, paved roads, and other paved/disturbed areas that could potentially result in permanent changes to open habitat areas that could alter the overall pattern of movement for desert tortoise. However, these new facilities would cover only limited areas of the overall project area with suitable areas for movement surrounding the limited areas of above-ground infrastructure. New roadways would be relatively limited in width and would not incur large amounts of traffic. Although new rural roads would create some obstacle compared to existing conditions, it is expected that tortoise would cross new rural roads as they cross existing rural roads in the project area.

The largest potential changes to desert tortoise movement from remedial activities would be due to new agricultural units, which may potentially require the loss of existing suitable habitats. It is expected that desert tortoise would not likely cross through new agricultural units, which are typically unattractive for tortoise, and instead would move around the areas. East-west movement in this area is partially hindered at present by the Desert View Dairy and existing agricultural treatment units, but there are areas of suitable habitat for east-west movement north (north of Thompson Road) and south of the existing agricultural treatment units (south of SR 58).

The No Project Alternative would not include new agricultural treatment units and would only have new disturbances for new wells and in-situ remediation facilities which would not create contiguous areas of unsuitable habitat (as shown on Figure 3.7-4). Thus, the No Project Alternative would have a less than significant impact on desert tortoise movement.

As shown in Figure 3.7-5 through 3.7-8, the known future areas of agricultural treatment are centered between Mulinax Road and Serra Road, south of Salinas Road. With the existing agricultural areas east of the PG&E Compressor Station and proposed expansion of agricultural treatment (especially with Alternative 4C-4 as shown in Figure 3.7-8), there could be a contiguous area of agriculture of several miles in length with the remedial alternatives. In addition, there would be additional agricultural units in locations yet to be determined to address the expanded plume, but would likely be in the center of Hinkley Valley, perhaps north and south of those areas shown in Figure 3.7-4 through Figure 3.7-8.

Although the amount of new agricultural treatment areas for Alternative 4B shown on Figure 3.7-5 would be only about 40 acres (based on the remediation activities, the Feasibility Study/Addenda), as described in Chapter 2, *Project Description*, the amount of agricultural treatment in this alternative (and other action alternative) is expected to be increased to address the expanded chromium plume. Based on the scaled up estimates, Alternative 4B could require up to 264 acres of new agricultural treatment. Figure 3.7-5 shows the effect of up to 168 new acres for Alternative 4C-2 (based on the Feasibility Study/Addenda, and a scaled up Alternative 4B could require more acres than shown on this figure. Thus, depending on their ultimate configuration, there could be contiguous agricultural treatment areas extending on a north-south axis for perhaps up to 2 miles in length under all action alternatives.

Although desert tortoise would be physically able to move through the agricultural treatment units and there would not be any physical barriers (like fences) to their movement, they would likely avoid the agricultural treatment areas because they would be largely unsuitable irrigated parcels that would not favor tortoise locomotion. This impact is potentially significant impact for all action alternatives because it could result in a substantial constraint of a general east-west movement pattern for desert tortoise individuals.

While feasible mitigation was reviewed for this impact, none of the following measures are recommended for the following reasons:

- Wildlife movement corridors. A mitigation measure was considered to require PG&E to segregate new agricultural treatment areas (by perhaps 500 to 1,000 feet). This mitigation is not proposed because it is highly uncertain whether desert tortoise would actually use such corridors and because spreading out (as opposed to concentrating) agricultural areas would actually increase fragmentation of habitat even further and would push more agricultural areas further north, which is considered counterproductive in terms of maintain habitat for the desert tortoise.
- Limit the number of agricultural treatment areas. A mitigation was considered to limit the areas new agricultural treatment such that substantial desert tortoise east-west movement areas could be maintained throughout the Hinkley Valley. For example, if agricultural treatment units were limited to the 40 acres for Alternative 4B included in the Feasibility Study/Addenda (and shown in Figure 3.7-5), then east-west movement areas would be maintained. This measure is not recommended because it would substantially slow down remediation and may impede hydraulic containment of the plume.

- Adopt one of the alternatives with less agricultural treatment. One mitigation option would be to adopt the No Project Alternative, but this would not meet the project objectives and was thus rejected. Another option would be to adopt Alternative 4B which would have the least amount of new agricultural treatment, but since this alternative may need to be scaled up to provide up to 264 acres of new agricultural treatment, this alternative would lower but would not avoid a potentially significant impact.
- Eliminate new agricultural treatment. One mitigation option would be to use a different remediation technology than new agricultural treatment. One option could include wide-scale above-ground treatment ("plume-wide pump and treat"). While this option would provide for hydraulic containment if extraction flows were sufficiently high, as discussed in Chapter 2, *Project Alternatives*, Section 2.8, this alternative would take approximately 50 years to reduce Cr[VI] concentrations throughout the plume to 50 ppb, approximately 140 years to reduce Cr[VI] concentrations to 3.1 ppb, and 210 years to reduce Cr[VI] concentrations to 1.2 ppb. This alternative was rejected because it does not meet the fundamental project objectives because it does not clean up chromium in groundwater within a meaningful period of time. Chapter 2, *Project Alternatives*, Section 2.8, also discusses why other alternatives were not carried forward fur further analysis.

Since no feasible mitigation was identified that would meet most of the project goal objectives and would reduce this impact to a less than significant level, the action alternatives are considered to result in a potentially significant and unavoidable impact related to desert tortoise movement (depending ultimately on the amount and configuration of new agricultural treatment areas).

3.7.6.5 Protected Trees

Impact BIO-5: Removal of Protected Trees (Less than Significant, All Alternatives)

During field surveys, Joshua trees, which are protected desert native plants under San Bernardino ordinance, were identified within the project area. If construction requires removal of Joshua trees or other potentially occurring locally-protected desert native plants, PG&E would be required to comply with the San Bernardino County Plant Protection and Management ordinance (Chapter 88.01 of the San Bernardino County Development Code and obtain a tree removal permit prior to initial of ground disturbance. Operations and maintenance activities under all alternatives are not expected to require the removal of individual plants, as infrastructure would already be in place during these activities. Compliance with the County's plant protection ordinance would ensure that potential direct impacts to Joshua tree or other locally-protected plants would be avoided or minimized according to the provisions of the County's permit requirements. Therefore, this potential impact would be less than significant.

3.7.6.6 Conservation Plans

Impact BIO-6: Conflicts with West Mojave Plan Conservation Requirements on BLM Land (No Impact, No Project Alternative; Less than Significant with Mitigation, All Action Alternatives)

The West Mojave Plan and its provisions only apply to the areas that are located on federal lands owned by the BLM within the project area. A portion of the project area is on BLM land that is subject to the requirements of the West Mojave Plan. For the project portion on BLM land, there are

areas designated for habitat conservation for desert tortoise, Mohave ground squirrel, burrowing owl and four of the special-status plant species (Barstow Woolly sunflower, desert Cymopterus, Mojave monkeyflower, and Parish's Phacelia) by the West Mojave Plan.

Under the No Project Alternative, future remedial activity would continue within the confines of the existing permitted remediation area (e.g., OU1/OU2). Direct conflicts with the West Mojave Plan conservation requirements on federal land are not expected because these areas are beyond the extent of activities under this alternative. Thus, the No Project Alternative would have no impact on West Mojave Plan implementation on BLM land.

For all action alternatives, there could be potential conflicts with the conservation requirements of the West Mojave Plan where remediation activities disturb BLM land. However, implementation of **Mitigation Measures BIO-MM-1a through BIO-MM-1l and BIO-MM-1o** and **Mitigation Measure BIO-MM-4** would minimize potential conflicts with conservation requirements of the West Mojave Plan on BLM land. In addition, the provisions of the West Mojave Plan that address specific desert tortoise, Mohave ground squirrel and burrowing owl avoidance, minimization and conservation measures could also be considered during agency consultations to obtain federal and state ESA permits if required. Therefore, this impact is considered less than significant with mitigation.

3.7.7 Mitigation Measures

Mitigation Measure BIO-MM-1a: Implement Measures to Minimize, Reduce, or Mitigate Impacts to Desert Tortoise during Construction

- Protocol-level surveys for desert tortoise will occur prior to construction either in April through May or September through October per the most recent protocol issued by the USFWS (U.S. Fish and Wildlife Service 2010b). The surveys will be conducted in the area proposed to be disturbed by the project and 1,500 meters from the edge of the proposed disturbance area to confirm the use of that area by desert tortoise. Any variation from this protocol would require approval by USFWS. A report will be prepared at the end of each survey period.
- A preconstruction clearance survey will be completed for desert tortoise within each project area to ensure that all tortoise are absent, or that any tortoises that present are moved off site and out of harm's way per the most recent protocol issued by the USFWS (currently this is USFWS 2009). The protocol (USFWS 2009) states that two consecutive surveys would be conducted immediately prior to surface disturbance at each site within the project area.
- Desert tortoise found within the construction areas will be either allowed to move passively away or be physically relocated by an authorized handler to a location away from harm's way, but within their home range (defined by USFWS 2009 as less than 1,000 feet).
- Where possible, desert tortoise exclusion fencing will be placed along the perimeter of the proposed work areas prior to surface disturbance to prevent encounters with desert tortoise during construction activities. The specifications of the desert tortoise exclusion fencing will follow USFWS (Desert Tortoise Field Manual: Chapter 8. Desert Tortoise Exclusion Fence 2009c). Daily preconstruction sweeps within the proposed project area will be conducted before construction to ensure that desert tortoise are absent from the project area. Desert tortoise exclusion fencing will also be placed around all permanent buildings and structures where entrapment or negative interactions with tortoises could occur.

- All desert tortoise sighted within the proposed project area must be immediately reported and construction activity jeopardizing the tortoise must be halted until the approved USFWS and CDFG biologist is able to relocate the animal. If a desert tortoise is injured or killed, the authorized biologist must be notified, the injury or death documented, and the animal taken to a qualified veterinarian or the carcass removed by the biologist.
- Ongoing construction monitoring will ensure that desert tortoise observed within 100 feet of construction are actively monitored for a negative qualitative response from vibration.

Mitigation Measure BIO-MM-1b: Limit Footprint of Disturbance Areas within Special-Status Species Habitats.

The area of disturbance will be confined to the smallest practical area, considering topography, placement of facilities, location of occupied desert tortoise, Mohave ground squirrel, and burrowing owl habitat, public health and safety, and other limiting factors, and will be located in previously disturbed areas to the extent possible. An Authorized Biologist or Environmental Monitor will assist the project foreman in locating such areas to avoid desert tortoise, Mohave ground squirrel, and burrowing owl mortality, minimize impacts to habitat, and ensure compliance with this measure and other pertinent regulatory documents. In areas where the project sponsor is unable to install exclusionary fencing, work area boundaries and access roads will be delineated with flagging or other marking to minimize surface disturbance outside of the approved work area. All disturbance limits need to be confirmed by the construction monitor. Special habitat features, such as burrows, identified by the Authorized Biologist will be avoided to the extent possible.

Mitigation Measure BIO-MM-1c: Implement Pre-Construction and Ongoing Awareness and Training Program.

All employees, subcontractors, and others who work on-site will participate in a desert tortoise, Mohave ground squirrel, and burrowing owl awareness program prior to initiation of construction activities. PG&E is responsible for ensuring that the awareness program is presented prior to conducting activities. Hard hat stickers to identify personnel who have attended the training and wallet-sized cards listing key best management practices are required. At a minimum, the awareness program will emphasize the following information relative to these species: (a) distribution on the job site; (b) general behavior and ecology; (c) sensitivity to human activities; (d) legal protection; (e) penalties for violating State or federal laws; (f) reporting requirements; and (g) project protective mitigation measures. The Authorized Biologist and/or Environmental Monitor will work with the project proponent to ensure that all workers have received the awareness program and understand the various components. Interpretation will be provided for non-English speaking construction workers.

Mitigation Measure BIO-MM-1d: Conduct Ongoing Biological Monitoring during Construction.

Biological monitors will conduct daily construction monitoring of the desert tortoise exclusion fencing, as well as during clearing and grubbing (initial ground disturbance) of the work area. This monitor will be familiar with desert tortoise, Mohave ground squirrel, and burrowing owl, as well as nesting birds. Once clearing and grubbing is complete, a biological monitor will conduct, at minimum, weekly spot checks to document compliance with the Habitat

Conservation Plan (HCP) and other mitigation measures presented in this EIR and elsewhere. An on-call desert tortoise handler will be available should desert tortoise be encountered during construction activities.

Mitigation Measure BIO-MM-1e: Minimize Potential Construction Hazards to Special-Status Species

- No hazards to special-status species, particularly desert tortoise, such as open trenches and holes, will be left overnight without fencing or covering,
- No firearms or pets will be allowed at the work area. Firearms carried by authorized security and law enforcement personnel are exempt from this term and condition.
- Dust will be controlled. If water trucks are to be used, pooling of water will be avoided so to minimize the potential to attracting common ravens or potential predators of the desert tortoise.
- Except on paved roads with posted speed limits, vehicle speeds will not exceed 10 miles per hour through desert tortoise and Mohave ground squirrel habitat during travel associated with the authorized activity.

Mitigation Measure BIO-MM-1f: Implement Measures to Minimize and Prevent Attraction of Predators during Construction and Operation.

- Litter control measures will be implemented. Trash and food items will be contained in closed containers and removed daily to reduce the attractiveness or the area to opportunistic predators such as common ravens (*Corvus corax*), coyotes (*Canis latrans*), and feral dogs.
- If water trucks are to be used, pooling of water will be avoided so to minimize the potential to attracting common ravens or other potential predators.
- Potential perches and nest substrates for the common raven will be reduced to the greatest extent practicable within permanent project facilities.
- A raven management plan will be developed by the project proponent and approved by BLM that will include at a minimum establishing a common raven population baseline, with ongoing and post-construction monitoring of common raven populations, and triggers for adaptive management actions if ravens are occurring above baseline conditions and observed to be utilizing facilities and structures built as part of this project.

Mitigation Measure BIO-MM-1g: Reduction of Project-Related Spread of Invasive Plant Species

If reseeding of temporary disturbance areas or ornamental landscaping is proposed, the proposed seed palette will be reviewed by a biologist to ensure it does not contain plants that are considered invasive in California (based on the California Invasive Plant Inventory Database).

Mitigation Measure BIO-MM-1h: Compensate Impacts to Desert Tortoise and Mohave Ground Squirrel Habitat

Compensatory mitigation for the loss of desert tortoise and Mohave ground squirrel habitat will be determined through consultation with CDFG and USFWS. The minimum compensation ratios for moderate to high quality habitat suitable to desert tortoise and Mohave ground squirrel are 3:1 for permanent impacts and 1:1 for temporary impacts (although no temporary impacts have been identified). For impacts to low quality desert tortoise and Mohave ground squirrel habitat, the minimum compensation ratio is 1:1 for permanent impacts. The minimum compensation ratio for impacts within a DWMA will be 5:1 for permanent impacts. Final mitigation ratios will be determined during consultation with the appropriate resource agency, in accordance with the requirements of a Section 7 or Section 10 permit and/or a Section 2081 permit. Mitigation may include purchase, restoration, enhancement, and/or creation of desert tortoise and Mohave ground squirrel habitat.

Lands provided as mitigation for desert tortoise and Mohave ground squirrel may also be used to provide mitigation for any loss of burrowing owl habitat, if the land in question includes suitable habitat for the burrowing owl.

Mitigation Measure BIO-MM-1i: Integrated Pest Management and Adaptive Management Plan for Agricultural Treatment Units

An agricultural unit integrated pest management (IPM) plan will be developed and implemented for all new (and existing) agricultural units, and will be compliant with the California Statewide IPM year-round program for alfalfa and any other crops that may be proposed for use. The plan will explicitly detail an integrated pest management plan to ensure that risks of any proposed use of herbicides, pesticides, or rodenticides will pose a negligible risk to wildlife species. Herbicides, pesticides, or rodenticides will only be used at new agricultural units if specifically authorized by USFWS and CDFG in the take permits for the desert tortoise and the Mohave ground squirrel. The adaptive management plan will detail the predicted harvest of the agricultural crops and how harvest will be conducted in such a manner to reduce potential impacts to nesting birds. The adaptive management plan will provide other population monitoring guidelines for predatory species such as brown-headed cowbird, with management actions that will be required if fields are found to be supporting these species. The adaptive management plan will also outline irrigation control to avoid pooled water, as well as dust control methods.

Mitigation Measure BIO-MM-1j: Reduction of Night Light Spillover

Exterior light fixtures and standards will be designed to be fully shielded, directing light downward below the horizontal plane of the fixture height. A detailed lighting plan will be inspected by a biologist to ensure that the expected light spillover has no potential to impact special-status species.

Mitigation Measure BIO-MM-1k: Implement Other Measures to Minimize, Reduce, or Mitigate Impacts to Mohave Ground Squirrel

- A Mohave ground squirrel focused protocol survey will be completed prior to construction in the study area where construction is proposed following protocol established by CDFG (2003). For habitat loss of greater than 180 acres, the Department requires special survey

protocol(s) to be developed through its consultation with either the project proponent or the local lead agency (if appropriate) or both entities.

- If any Mohave ground squirrels are uncovered by excavation during construction, work must stop in the immediate area and the project biologist will be immediately notified.
- If any Mohave ground squirrels are injured or killed during the course of construction, work must stop in the immediate area and the project biologist will be immediately notified. Only the authorized biologist will handle, and transport injured animal to a qualified veterinarian.

Mitigation Measure BIO-MM-1l: Implement Other Measures to Minimize, Reduce, or Mitigate Impacts to Burrowing Owl

- To confirm the current existing condition for burrowing owls in the study area, a focused nesting season survey for burrowing owl will be completed for all potential disturbance limits and a minimum 400 feet buffer area, where accessible, prior to construction. This focused survey will utilize the most recent CDFG protocol.
- A preconstruction survey for burrowing owls will occur no greater than 14 days and a second preconstruction survey will occur 24 hours prior to commencing ground disturbing or construction activities. The limits of this preconstruction survey will include the disturbance area and a 400-foot buffer.
- Avoid disturbing occupied burrows during the nesting period, from February 1 through August 31 unless it is verified that the birds have not begun egg-laying. Work may only commence when it is determined that juvenile owls from those burrows are foraging independently and capable of independent survival.
- Avoid impacting burrows occupied during the non-breeding season (September 1–January 31) by migratory or non-migratory resident burrowing owls.
- An avian protection plan will be developed in consultation with CDFG to address burrowing owls or signs of burrowing owls should they be found on site during the focused nesting or preconstruction surveys. Unless otherwise approved by CDFG, the minimum no construction buffers will be 160 feet for occupied burrows during the non-breeding season of September 1 through January 31 and 250 feet during the breeding season of February 1 through August 31.
- If burrowing owls and their habitat can be protected in place on or adjacent to a project area, the use of buffer zones, visual screens (such as hay bales) or other feasible measures while project activities are occurring will be used to minimize disturbance impacts. These will be outlined in the avian protection plan.
- On-site passive relocation will be avoided to the greatest extent practicable, and only implemented if avoidance cannot be met. Passive relocation is defined as encouraging owls to move from occupied burrows to alternate natural or artificial burrows. A passive relocation plan will be detailed in the avian protection plan.
- Compensation provided for desert tortoise and Mohave ground squirrel will also provide habitat for burrowing owls should there be an unavoidable impact to this species.

Mitigation Measure BIO-MM-1m: Minimize Impacts to American Badger and Desert Kit Fox Occupied Dens

If there is evidence that a burrow may be occupied by a badger or a kit fox during preconstruction surveys (see BIO-1a), all construction activities will cease within a 100-foot buffer of the burrow during the natal season (February–July) unless otherwise authorized by CDFG. Removal of an occupied American badger or desert kit fox burrow at anytime of the year will require coordination with CDFG.

Mitigation Measure BIO-MM-1n: Avoid Impacts to Nesting Loggerhead Shrike, Northern Harrier, and Other Migratory Birds (including Raptors and excluding Burrowing Owls)

Pursuant to the federal Migratory Bird Treaty Act and CDFG code, impacts to bird nests will be avoided. To avoid any impacts on migratory birds, resulting from construction activities that may occur during the nesting season the nesting season, February 1 through August 31, the following measure will be implemented:

- A qualified biologist will conduct a preconstruction survey of the proposed construction site and 250 foot buffer area around the site. This preconstruction survey will commence no more than 7 days prior to the onset of construction, such as clearing and grubbing and initial ground disturbance.
- If a nest is observed, an appropriate buffer will be established. For nesting passerine birds the minimum buffer will be 50-feet. For nesting raptors, the minimum buffer will be 250 feet. These minimum buffers could be reduced with approval by CDFG based on the field conditions and disturbance tolerance of each species.
- All no-construction activity buffer areas will be clearly demarcated in the field with stakes and flagging that are visibility to construction personnel.

Mitigation Measure BIO-MM-1o: Implement Measures Required to Minimize, Reduce, or Mitigate Impacts to Special-Status Plants

- To confirm the presence/absence and quantify of special-status plant species populations (such as Lane Mountain milk-vetch, Mojave monkeyflower, Clokey's cryptantha, desert cymopterus, Barstow woolly sunflower, Mojave menodora, creamy blazing star, beaver dam breadroot, and Parish's phacelia) in specific areas where remedy facilities may be constructed, a special-status plant survey will be completed prior to construction in the limits of disturbance and a 100-foot buffer that are proposed in allscale and creosote scrub habitats, desert dune habitat, and the Mojave River wash habitat. The focused survey for these species should be conducted by a qualified biologist during the appropriate blooming period (approximately March–July), or when the plant is readily identifiable, prior to the initiation of construction.
- If any listed plant species are observed during focused surveys of the work areas (see Mitigation Measures BIO-MM-3 and BIO-MM-6), the extent of the population will be clearly demarcated in the field by protective fencing, lath stakes, and/or flagging, as appropriate, for avoidance and the regulatory agencies will be notified. If project related impacts to a listed plant species will occur, initiation of consultation with CDFG and or USFWS will be required.

- If any plant species that are not listed under CESA or ESA but are identified as special-status species ("non-listed plant species") are observed during focused surveys of the work areas, the extent of the population will be clearly demarcated in the field by protective fencing, lath stakes, and/or flagging, as appropriate, for avoidance. Avoidance will occur to the maximum extent feasible. If impacts are proposed to non-listed plant species, a brief analysis will be completed to determine if the removal of those plant species is a significant adverse impact under CEQA because of their rarity at a local or regional scale, or because they could comprise an important or unique population. Additional measures as a result of this analysis may be required, such as seeding, transplanting, collection of seeds to be used for the future conservation of the species, and/or compensatory mitigation habitat.
- A biological monitor who has observed the location of the listed and non-listed plant species to be avoided will conduct a tailgate session, informing the work crew of the appearance and location of the plant species prior to initiation of work activities.

Mitigation Measure BIO-MM-2: Habitat Compensation for Loss of Sensitive Natural Communities

If new remediation activities result in the permanent removal and loss of sensitive natural communities such as the California joint fir scrub, a compensatory mitigation program or plan will be developed and implemented through consultation with the USFWS, CDFG, and the Lahontan Water Board. Compensatory mitigation may include a fee-based program and/or direct habitat replacement on a minimum 1:1 basis and in accordance with those agencies' recommendations.

Lands provided as mitigation for desert tortoise, Mohave ground squirrel, and burrowing owls may also be used to provide mitigation for any loss of sensitive nature community habitat, if the land in question includes sensitive natural communities.

Mitigation Measure BIO-MM-3: Measures Required to Minimize, Reduce, or Mitigate Impacts to Waters and/or Wetlands under the Jurisdiction of the State

- Construction activity and access roads will be avoided in all drainages, streams, dry lake beds, pools, or other features that could be under the jurisdiction of the U.S. Army Corps of Engineers (USACE), Lahontan Water Board, and/or CDFG, if feasible. If impacts to these features are identified, a formal jurisdictional delineation for submittal to the agencies may be required.
- If impacts to USACE, RWQCB, and/or CDFG jurisdiction waters or wetlands are identified, the project applicant will comply with the permitting requirements imposed by USACE, Lahontan Water Board, and/or CDFG, as appropriate.

Mitigation Measure BIO-MM-4: Implement West Mojave Plan Measures to Impacts to DWMAs on BLM Land.

Pertinent measures contained within the Final Environmental Impact Report and Statement for the West Mojave Plan (BLM 2005) will be implemented to minimize potential impacts to special-status species within conservation areas located on federal land, if and where project activities would infringe on their suitable habitat. Consultation with BLM will be required prior to implementation of any activities. According to the FEIR for the West Mojave Plan, these

activities will generally include the following (the detailed list of mitigation measures can be found in the FEIR for the West Mojave Plan):

- Avoid of construction activities (particularly linear projects through Tortoise Survey Areas) when tortoises are most likely to be active, which generally occurs between February 15 and November 15.
- Conduct pre-construction surveys (according to approved BLM guidelines [2005] and USFWS' Guidelines for Handling Desert Tortoises [USFWS 2009]) for presence or absence of species and monitor and report any violations of protective stipulations. Only authorized biologists may conduct surveys and handling of any live individuals.
- Authorize biologists and environmental monitors will monitor and report any violations of protective stipulations, record and report any instances where tortoises or other covered species were encountered, upon completion of construction activities report on the effectiveness and practicality of mitigation measures (including information on collected, killed or injured individuals) and the acres of habitat that were removed or disturbed.
- Pay compensatory fee. Within the Habitat Conservation Areas on BLM land, the compensatory fee will be based on a ratio of 5:1 (five times the average value of an acre of land within the habitat conservation area).
- Conduct burrowing owl survey. For burrowing owl habitat within the DWMAs, a burrowing owl survey utilizing the four-visit CDFG protocol will be conducted. The applicant will provide to all construction personnel an informational brochure with an illustration of a burrowing owl, a description of its burrows and how they can be recognized, and a summary of the bird's life history. If at any time prior to grading the applicant becomes aware of burrowing owls on the site, he will be instructed to call a number where a biologist can respond quickly by instituting the minimization measures.
- Conduct botanical surveys. For Desert cymopterus, if disturbance within suitable habitat located within the Superior Cronese DWMA is proposed, the Applicant will be required to perform botanical surveys for this species, and if the plant is located, to avoid all occurrences to the maximum extent practicable. Incidental take will be limited to 50 acres.