7.2 BIOLOGICAL RESOURCES

This section describes the biological resources within and near the Marsh Landing Generating Station (MLGS) project site, potential impacts to these resources associated with construction and operation of the project, measures to mitigate these impacts, and necessary regulatory compliance.

Section 7.2.1 describes the existing biological resources, both regional and local. Included is an overview of jurisdictional waters of the United States and potentially occurring special-status species in vicinity of the project. Section 7.2.2 describes resources that might be adversely impacted by the project, both in its construction and operation. Section 7.2.3 describes how this project may contribute to cumulative impacts, i.e., compounded adverse effects through combination with other construction projects. Section 7.2.4 recommends measures to mitigate the effects of the project on the environment. Sections 7.2.5 through 7.2.7 provide an overview of the laws and regulations, required permits, and agency contacts as they apply to this project.

The biological information presented in this section was obtained from:

- U.S. Fish and Wildlife Service (USFWS), Sacramento Fish and Wildlife Office Endangered Species Lists: Federally listed species with historic range or current distribution within the U.S. Geological Survey (USGS) 7.5 North Antioch quadrangle, accessed February 2008 (USFWS, 2008).

- California Department of Fish and Game's (CDFG) Natural Diversity Database (CNDDB): Special-status species occurrence records from 10-mile radii from the project site, accessed February 2008 (CDFG, 2008).

- California Native Plant Society (CNPS) Rare Plant Database: CNPS-listed plants within the USGS 7.5 North Antioch quadrangle and the surrounding eight quadrangles, accessed February 2008 (CNPS, 2008).

Table 7.2-1 summarizes the special-status wildlife, plants, and habitats that potentially occur in the project vicinity based on these sources. The potential for occurrence within the project area and the potential for impacts are evaluated based upon field survey observations and a review of the project description. The field survey to identify existing biological resources, identify special-status species and their potential habitats, and evaluate potential impacts was conducted on March 6, 2008 by URS Corporation (URS) biologists Bill Martin and Katherine Caldwell. Biologists surveyed all areas of proposed ground disturbance.

7.2.1 AFFECTED ENVIRONMENT

Biological resources within the project area, the existing Contra Costa Power Plant (CCPP), and adjacent areas were identified based upon reviews of database records and field observations. The following sections describe regional and local biological resources and well as potential sensitive habitats (e.g., wetlands) and species.

7.2.1.1 Regional Overview

The proposed MLGS project is located adjacent to the San Joaquin River, just east of its confluence with the Sacramento River. The confluence of these two river systems and their tributaries make up the Sacramento-San Joaquin River Delta. The delta extends from Suisun Bay, to the west, to the towns of Sacramento and Stockton to the north and east.

Over the last 150 years, much of the wetland and upland habitats have been converted for urban or agricultural uses. The remaining areas of natural vegetation have been fragmented into small areas along the margins of sloughs, rivers, and the many islands scattered through the delta. This habitat loss and fragmentation has resulted in the change in diversity of wildlife species. Some of these species are now listed as threatened or endangered and are restricted to small patches of remaining habitat.

Due to the diversity of upland, open water, mudflat, and wetland habitats, the delta is used by a number of species, both for permanent residence and as a migratory route. The San Joaquin River is an important habitat for Chinook salmon and steelhead trout, both sports fish with declining populations (Code of Federal Regulations [CFR] 50, Part 226, 2005). The aquatic habitats are also used by diverse invertebrate species, while migrating birds use riparian vegetation, tidal marshes, and open water. Numerous small mammals, such as the San Joaquin pocket mouse (*Perognathus inornatus inornatus*) and San Joaquin kit fox (*Vulpes macrotis mutica*), use scrub and grassland habitats.

Significant ecological areas within the region are identified in the Contra Costa General Plan. The significant ecological areas near the CCPP include the intake of the Contra Costa Canal, Antioch San Dunes, Big Break, and Sherman's Island. To the west, near the intake of the Contra Costa Canal, white-tailed kite (*Elanus leucurus*) forage in salt marsh habitat. Also to the west, the Antioch Dunes National Wildlife Area protects a small area of riverine dune habitat (CCCCDD, 2005). These dunes support at least 14 special-status species including insects, plants, and the California legless lizard (CFDG, 2008). Big Break Regional Shoreline, to the east, is an emergent marsh that provides habitat for the California black rail (*Laterallus jamaicensis cotorniculus*) (CCCCDD, 2005). The Sherman Island Waterfowl Management Area and other islands of the San Joaquin-Sacramento River Delta are to the north of the project site. These sites are dominated by cultivated land and smaller blocks of brackish marsh habitat, which support several special-status plant species (Mason's lilaeopsis, soft bird's beak, Suisun Marsh aster, delta mudwort) as well as the double-crested cormorant (*Phalacrocorax auritus*) and several other birds. Figure 7.2-1 shows the location of regional biological resources within 5 miles of the MLGS.

7.2.1.2 Local Habitats

A variety of upland and aquatic habitats surround the CCPP. These habitats include: freshwater/brackish marsh, open water, fallow fields, cultivated fields, ruderal, landscaped/ornamental, and developed (Figure 7.2-2). Nearly all of the areas within the CCPP footprint are developed (e.g., plant operation facilities, parking areas, roads, etc.) with scattered ruderal areas and landscaping. A detention basin is located in the southern portion of the CCPP and planted ornamental trees (primarily *Eucalyptus globulus*) line the perimeter of the facility. Agricultural fields are located outside of the fenced perimeter of the plant and pipeline rights of way (ROW). The Bridgehead Lift Station (BLS) (where the water supply line will begin) is currently a graded lot, devoid of vegetation in the interior and landscaped with ornamental trees along the perimeter. The lift station has substantial traffic noise, limiting its potential to support wildlife.

San Joaquin River

Some natural habitat, namely the San Joaquin River and associated marshes, lie adjacent to the project site. The San Joaquin River is approximately 1,100 feet wide in the project area, and is generally less than 20 feet deep, except in the main maritime transportation channel running adjacent to the northern bank of the river (PG&E, 1998). Within the open waters of the San Joaquin River, saltwater intrudes from the bay, converging with the freshwater from the river, to create brackish conditions. Brackish and freshwater marshes just north of the project site are dominated by bulrush (*Scirpus acutus* var. *occidentalis* and *S. californicus*) and open waters provide habitat for a variety of wildlife species including anadromous fish and migratory birds.

Vegetation Communities

The proposed MLGS site will encompass approximately 27 acres within the CCPP. The plant site will include generation facilities, construction laydown area, access road, and transmission line connections to the adjacent PG&E switchyard and pipelines. Vegetation within a one-mile radius around the project site include freshwater wetlands, disturbed/ruderal, stabilized interior dunes, tidal marshes, and annual grassland (Figure 7.2-2). Vegetation series are described below (per Sawyer and Keeler-Wolf, 1995).

- **California Annual Grassland Series**. Annual grasslands dominated by European annual grasses and invasive forbs are common outside of the MLGS site. Species include rabbit's foot grass (*Polypogon monspeliensis*), cheeseweed (*Malva parviflora*), hairy vetch (*Vicia villosa* ssp. *villosa*), yellow star thistle (*Centaurea solstitialis*), Harding grass (*Phalaris aquatica*), Italian rye grass (*Lolium multiflorum*), Himalayan blackberry (*Rubus discolor*), common iceplant (*Carpbrotus edulis*), common tansy (*Tanacetum vulgare*), dog fennel (*Anthemis cotula*), and sweet white clover (*Melilotus alba*), among many others. Many of these species are weedy and nonnative. Native shrubs include California sage (*Artemisia californica*), silver lupine (*Lupinus albifrons*), hill lotus (*Lotus micranthus*), and California croton (*Croton californicus*).

- **Eucalyptus Series**. Several eucalyptus groves occur in the project study area. A fencerow of approximately 50-foot-tall Tasmanian bluegum (*Eucalyptus globulus*) is present along the western edge of the MLGS site and also inside the site. To the west outside of the MLGS site there are also groves of lemon-scented gum (*Eucalyptus citriodora*) and black locust (*Robinia pseudoacacia*). This series is mapped as ornamental landscaping on the vegetation map (Figure 7.2-2).

- **Coast Live Oak Series.** Coast live oak riparian forests border the San Joaquin River approximately 250 feet west of the plant. The vegetation is composed of trees and shrubs with an herbaceous layer dominated by annual grasses. Creeping wildrye (*Leymus triticoides*) dominates the herbaceous community along some portions of the levee. Tree species include coast live oak (*Quercus agrifolia*), cottonwood (*Populus balsamifera* spp. *trichocarpa*), yellow willow (*Salix lucida* ssp. *lasiandra*), and arroyo willow (*Salix lasiolepis*). Blue elderberry (*Sambucus mexicana*) is also present. This community intergrades with tidal marsh along the San Joaquin River.

- **Bulrush-Cattail Series**. This vegetation type occurs in the tidal brackish marshes along the San Joaquin River north of the project area. Species composition consists of palustrine emergent species dominated by California bulrush, tule, and cattail (*Typha* sp.). Soils are composed of alluvial silts and clays. Brackish bulrush-cattail vegetation is considered rare by the CDFG.

- **Ruderal**. Ruderal vegetation is found throughout the project study area, both on and off of the MLGS site, in disturbed areas. Herbaceous, nonnative species such as willow herb (*Epilobium brachycarpum*), prickly lettuce (*Lactuca serriola*), black mustard (*Brassica juncea*), bur clover (*Medicago polymorpha*), and short pod mustard (*Hirschfeldia incana*) typically dominate these areas. Other species found in ruderal areas include yellow star-thistle, Italian thistle, and milk thistle (*Silybum marianum*). Most occurrences of this habitat type are associated with disturbed sites near urban areas or cultivated fields.

- **Stabilized Interior Dunes.** Stabilized interior dunes are found approximately 50 feet west of the MLGS. The vegetation consists of scattered forbs and grasses that form a ground canopy. Characteristic plant species include Antioch dunes evening primrose,

California croton, California matchweed, Contra Costa wallflower, devil's-lettuce, lessingia, and telegraph weed. Individual emergent shrubs or coast live oak trees may be present over the ground canopy. The ground layer is generally open, and annual plants are seasonally present. The low nutrient conditions of the soils and natural instability of dune sands limit the amount of vegetation that establishes on the inland dunes. Stabilized interior dunes are considered rare by the CDFG, and contain many rare species of plants and invertebrates.

Species Present

The majority of the MLGS site, as well as the CCPP property, is composed of industrial use impervious surfaces (i.e., buildings, tanks and paved lots/roads) that have little to no wildlife value. Animals that may use these areas likely are limited to species highly adapted to developed lands, such as rats (*Rattus* spp.), raccoons (*Procyon lotor*), opossums (*Didelphus virginianus*), house sparrows (*Passer domesticus*), rock doves (*Columba livia*), and European starlings (*Sturnus vulgaris*).

The annual grasslands, with scattered ornamental trees and coast live oaks, provide forage and nesting habitat for resident and migratory raptors such as white-tailed kite (*Elanus leucurus)*, red-tailed hawk (*Buteo jamaicensis)*, northern harrier (*Circus cyaneus*), red-shouldered hawk (*Buteo lineatus*), and American kestrel (*Falco sparverius*). These birds prey on small mammals (e.g., shrews, moles, mice, ground squirrels) and reptiles (e.g., snakes, lizards) that inhabit the grasslands and scrub areas.

Grasslands are also occupied by a variety of seed-eating and insectivorous migratory and resident birds. Common seed-eating birds include mourning dove (*Zenaida macroura*), savanna sparrow (*Passerculus sandwichensis*), western meadowlark (*Sturnella neglecta*), house finch (*Carpodacus mexicanus*), song sparrow (*Melospiza melodia*), white-crowned sparrow (*Zonotrichia leucophrys*), and golden-crowned sparrow (*Zonotrichia atricapilla*). Insect eaters include western scrub jay (*Aphelocoma californica*), barn swallow (*Hirundo rustica*), northern mockingbird (*Mimus polyglottos*), loggerhead shrike (*Lanius ludovicianus*), and western kingbird (*Tyrannus verticalis*). Reptiles such as terrestrial gopher snake (*Pituophis catenifer*) and western fence lizard (*Sceloporus occidentalis*) also inhabit the annual grasslands.

Piscivourous (i.e., fish eating) birds, wading birds, shorebirds, gulls and terns can be found in the marsh areas. Wading birds such as black-necked stilts (*Himantopus mexicanus*), greater yellow legs (*Tringa melanoleuca*), killdeer (*Charadrius vociferus*), great egret (*Ardea alba*), great-blue heron (*Ardea herodias*), green-backed heron (*Butorides virescens*), and western sandpiper (*Calidris mauri*) are commonly observed in the tidal freshwater/brackish marsh. Birds nesting in the marsh vegetation include marsh wren (*Cistothorus palustris*), black phoebe (*Sayornis nigricans*), red-winged blackbird (*Agelaius phoeniceus*), and common yellow-throat (*Geothlypis trichas*). Western pond turtles are common in the open water portions of the fresh water marshes. Waterfowl species observed in the open water portion of the marshes include common goldeneye (*Bucephala clangula*), American coot (*Fulica americana*), cinnamon teal (*Anas cyanoptera*), mallard (*Anas platyrhyncos*), and pied-billed grebe (*Podilymbus podiceps*).

The San Joaquin Delta, including New York Slough and the San Joaquin River, support a large number of fish species. The Delta is a migration route for all four runs of Chinook salmon (*Oncorhynchus tshawytscha*), Central Valley steelhead (*Oncorhynchus mykiss*), green and white sturgeon (*Acipenser* sp.), striped bass (*Roccus saxatilis*), and American shad (*Alosa sapidissima*). The Delta is also a major stopover and feeding location for migratory birds including waterfowl, shorebirds, and raptors.

Immediately adjacent to the shoreline, separating the river and the MLGS site, is an area that supports California blackberry (*Rubus ursinus*), fennel (*Foeniculum vulgare*), star thistle (*Centaurea solstitialis*),

willows (*Salix* sp.), coast live oak, and saltgrass (*Distichlis spicata*). Willows along the water's edge provide habitat for resident riparian birds and migratory birds. Common riparian birds include finch, American robin (*Turdus migratorius*), song sparrow (*Melospiza melodia*), white crowned sparrow (*Zonotrichia leucophrys*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), and red-winged blackbird (*Agelaius phoeniceus*).

Plant species observed during the March 6, 2008 site visit are shown in Table 7.2-2. The vegetation observed within the plant site is typical of ruderal or landscaped vegetation. Beyond the plant boundaries are marsh, grassland, riparian, landscaped, and ruderal habitats.

Wildlife species observed during the March 6, 2008 site visit and previous visits are shown in Table 7.2-3. These species may use habitats either within the plant complex (e.g., fallow field in the southern portion of the plant) or habitats outside of the CCPP site.

7.2.1.3 Wetlands and Other Waters of the United States

No wetlands or other waters of the United States were identified within the areas that would be disturbed during construction of the new generation project. However, there are potential wetlands and other waters of the United States in the project vicinity. The San Joaquin River, a traditional navigable water, is adjacent to the northern portion of the CCPP. In addition, the detention basin in the southern portion of the plant and a drainage along the western edge of the CCPP site (west of tanks 6 and 7) have potential to contain small, isolated wetlands. These features are identified on Figure 7.2-2.

A channel that conveys stormwater runoff from the MLGS to the San Joaquin River, is in the northwestern corner of the CCPP site. This channel is immediately north of where the new MLGS facility would be located. A strip of freshwater/brackish marsh is located between the boundary of the MLGS and the San Joaquin River. These areas are dominated by bulrush and provide habitat for numerous birds. Species observed during the March 2008 visit include gulls, coots, grebes, and ducks. This area is not expected to be directly impacted by construction.

West of existing tanks 6 and 7, just south of the MLGS site, is a drainage area dominated by saltgrass. This species is a facultative wetland plant that usually occurs in wetlands (67 to 99 percent of the time), but may be found in nonwetlands. A 12-foot-high slope borders the east side of the channel, closest to the tanks, and a 5-foot-high slope follows the west side of the channel near the project site border. Surface runoff from these slopes may collect in the channel producing small wetlands. However, the area showed no signs of wetland hydrology during the March field visit. This area is approximately 200 feet south of the proposed demolition area.

A ruderal field in the southern portion of the CCPP site, southeast of the proposed MLGS site, is currently in use as a detention pond. While dry during the March site visit, stormwater runoff from portions of the CCPP site drains to this area during rain events. This area has some patches of hydrophytic vegetation; however, the hydrologic conditions may be insufficient for these areas to fully classify as wetlands. This area will not be impacted by construction, and therefore, a formal wetland delineation was not conducted. However, for this project, it is assumed that there are wetlands within the detention basin. If construction plans change, resulting in potential direct or indirect impacts to this area, a formal delineation would be completed.

A small drainage area also occurs on the eastern edge of the Bridgehead Lift Station. This is a man-made basin, used to hold runoff after heavy rains. It has a soil bottom and sides and is unvegetated. A few landscaping trees, Deodar cedar (*Cedrus deodara*) and California pepper (*Schinus molle*), have been planted on the western edge of this drainage area. It is man-made, not hydrologically connected to any

jurisdictional waters, non-vegetated, and ephemeral. For these reasons, this area does not classify as a jurisdictional water body.

7.2.1.4 Special-Status Habitats

The three habitat types that have been identified as sensitive on the CNDDB list do not occur within the MLGS site or along the proposed pipeline routes (see Table 7.2-1). Narrow bands of freshwater and brackish marsh associated with the San Joaquin River can be found adjacent to the project to the north. The project would not require any work within these habitats.

7.2.1.5 Special-Status Species

A list of special-status species with potential to occur in the project area was compiled based on records maintained by the USFWS, the CNNDB, and the CNPS as described in Section 7.2 (Appendix K). Special-status species include all species that are listed under the Federal and California Endangered Species Acts, species proposed for those listings, USFWS Species of Concern, California Species of Special Concern, California Fully Protected Species under the Fish and Game Code, and plant species listed by the California Native Plant Society as of January 31, 2008. Table 7.2-1 lists special-status species with potential to occur within a 10-mile radius of the project site and their potential for occurrence.

No special-status plant species were observed during field surveys and no suitable habitat exists to support the colonization of special-status plants. The only habitats within a 1-mile radius of the MLGS that are considered sensitive and have the potential to support special-status plant species are the freshwater marsh and riparian areas associated with the San Joaquin River and interior dunes to the west of the project area.

The project site lacks suitable habitat for most special-status wildlife species. Northern harrier and white-tailed kite were observed during a field survey conducted in 1997 (ESA, 1998). The oak trees on site are potentially suitable habitat for nesting and breeding birds, including some special-status species; however, the industrialized, developed condition of the project site and surrounding areas diminish the habitat value.

The MLGS site lacks habitats suitable for the terrestrial special-status species. However, undeveloped areas associated with the San Joaquin River and surrounding uplands include habitats that are potentially used by these species.

Five protected and special-status fish species have been reported within the estuarine habitat in the vicinity of the CCPP. This includes all four runs (winter, spring, autumn, and late autumn) of the Chinook salmon (*Oncorhynchus tshawytscha*), Central Valley steelhead (*Oncorhynchus mykiss*), green sturgeon (*Acipenser medirostris*), Sacramento perch (*Archoplites interruptus*), and Delta smelt (*Hypomesus transpacificus*). In addition, the Longfin smelt (*Spirinchus thaleichthys*) San Francisco Bay Delta population was proposed for listing on May 6, 2008 and occurs in the project vicinity. There will be no impacts to waters as the result of this project; therefore, these species are not addressed further.

No special-status species are expected to occur within the project area; however, some special-status species are known to occur in the project vicinity (Figure 7.2-3). Special-status species with potential to occur within one mile of the project, or that have the potential to migrate through the project area or its surroundings area, are described in more detail below.

Special-Status Plant Species

Several special-status plants are known to occur near the project site. Special-status species that are known to occur or could potentially occur within one mile of the project area are described below. Construction activities are not likely to directly affect these species because construction activities will occur only in previously developed areas.

- **Antioch Dunes Evening Primrose** (*Oenothera deltoides* ssp. *howellii*). The Antioch dunes evening primrose is a state and federal endangered species that occurs in several locations near the confluence of the Sacramento and San Joaquin Rivers. The only natural stands exist within the interior sand dunes near the project site. Most of the occurrences of Antioch dunes evening primrose are within the Antioch Dunes National Wildlife Refuge (NWR). However, there are some known occurrences in degraded habitat along the San Joaquin River 0.1 to 0.2 mile west of the CCPP site (CDFG, 2008).

- **Contra Costa Wallflower** (*Erysimum capitatum* ssp. *angustatum*). The Contra Costa wallflower is listed as endangered under the federal and state ESA. Contra Costa wallflower grows naturally only in sand dune habitat along the San Joaquin River east of Antioch. Contra Costa wallflower forms a persistent dormant seed bank. Areas of suitable habitat (riverine or wind-blown sandy soils near Antioch) that do not contain visible vegetative, reproductive or senescent/dead plants may support viable seed banks. This species is documented just west of the project site, approximately 130 feet from the northwestern corner of the CCPP (CDFG, 2008).

- **Delta Mudwort** (*Limosella subulata*). The Delta mudwort is a CNPS List 2.1 plant that grows in riparian scrub and freshwater and brackish marshes. It is one of the rarest Delta plant species, and, also occurring on the Atlantic coast, may have been introduced. It is often found in association with Mason's lilaeopsis. The closest reported occurrence is in the Antioch Dunes NWR area, approximately 1 mile west of the MLGS site. There is an additional occurrence to the north on Sherman's island. Potential habitat occurs to the north and west of the MLGS site.

- **Suisun Marsh Aster** (*Symphotrichum lentum*, syn. *Aster lentus*). The Suisun Marsh aster is a CNPS List 1B.2 perennial herb. It grows in fresh and brackish water marshes and swamps and is commonly associated with species such as blackberry, rushes, cattails, and reeds (*Phragmites* spp.). Known occurrences are within 0.2 mile both east and west of the CCPP. There are also occurrences to the north on Sherman's island. Potential habitat occurs to the north and west of the MLGS site.

- **Mason's Lilaeopsis** (*Lilaeopsis masonii*). Mason's lilaeopsis is a CNPS List 1B.1 plant that grows within the tidal zone on muddy or silty soil or within dunes. It is threatened by erosion, channel stabilization, development, and flood control projects, among others. Some populations are ephemeral, colonizing exposed soils. Mason's lilaeopsis has been documented on the northeastern corner of the CCPP site adjacent to the picnic area on a peninsula bordering the San Joaquin River (ESA, 1998). This is approximately 750 feet from the gas pipeline route and 1,500 feet from the proposed MLGS facility. Other occurrences are reported to the west in the Antioch Dunes, north on Sherman's island, and to the east.

- **Delta Tule Pea** (*Lathrus jepsonii* var. *jepsonii*). The Delta tule pea is a CNPS List 1B.2 perennial herb that usually grows on the edges of fresh and brackish water marshes. Associated plants include cattails, Suisun Marsh aster, and rushes (*Juncus* spp., *Scirpus*

spp.). Populations of this species are small, and are most threatened by agriculture, water diversions, and erosion. There are several occurrences along the San Joaquin River in Contra Costa County. The closest occurrence is approximately 1.7 miles west of the CCPP in the Antioch Dunes NWR. Potential habitat occurs in marshes to the north and west of the MLGS site.

- **Soft Bird's Beak** (*Cordylanthus mollis* ssp. *mollis*). The soft bird's beak is a CNPS List 1B.2 plant that grows in coastal salt marshes. Associated plant species include saltgrass, pickleweed (*Salicornia virginica*), and seaheath (*Frankenia* sp.). This species is primarily threatened by nonnative plants, erosion, trampling, and marsh drainage. There are several reported occurrences from Contra Costa County. The closest occurrence is from Sacramento County, just north of the Antioch bridge on Sherman's island, and was reported in 1972. Potential habitat occurs in the marsh area north and west of the MLGS site, but the potential for occurrence is low.

Special-Status Wildlife Species

Several special-status wildlife species have potential to occur on or near the project site. These species may forage, nest, or migrate through the area. No special-status animal species are expected to occur within the project area; however, some may occur just outside of the project area. Species which may be directly or indirectly impacted by construction are described below.

- **Burrowing Owl** (*Athene cunicularia*). Western burrowing owl is a federal species of concern. Burrowing owls typically occur in dry, open, shortgrass, treeless plains often associated with burrowing mammals (Haug et al., 1993). Golf courses, cemeteries, road allowances within cities, levees, and ruderal borders around agricultural fields, airports, and vacant lots in residential areas are also used for both breeding and foraging. One occurrence of this species is approximately 1.6 miles southeast of the project site in annual grassland with eucalyptus and coyote bush (CDFG, 2008). Suitable habitat is present in ruderal and fallow fields to the west and south of the project site.

- **California Tiger Salamander** (*Ambystoma californiense*). The California tiger salamander is a federally threatened species. The documented range of the tiger salamander includes the Central Valley from Yolo County south to Kern County, and coastal grasslands from the vicinity of San Francisco Bay south at least to Santa Barbara County (Zeiner et al., 1988). Tiger salamanders breed in vernal pools and other seasonal wetlands as well as stock ponds where predatory fish and bullfrogs are absent. Aquatic habitat must hold water for two to three consecutive months to allow salamanders to complete their metamorphosis. Tiger salamanders aestivate in the summer in underground burrows, generally excavated by ground squirrels. California tiger salamander was found in 1951 approximately 2 miles southwest of the project site (CDFG, 2008). Potential habitat occurs in freshwater wetlands to the west of the CCPP and potentially in wetland depressions in the detention pond in the southern portion of the CCPP, but no potential habitat occurs within the areas of direct impact.

- **Giant Garter Snake** (*Thamnophis gigas*). The giant garter snake is listed as threatened under the federal and state endangered species acts. This mostly aquatic snake is the largest of the garter snake genus, *Thamnophis*, and is endemic to the basins and floodplains of the Sacramento and San Joaquin Valleys (USFWS 2002). The giant garter snake occupies slow-moving streams and adjacent uplands characteristic of that area. Giant garter snakes are found in rice fields, canals, irrigation ditches, and cattail marshes. Giant garter snakes prey on small fish, tadpoles, and frogs throughout the year. From late

October to late March giant garter snakes hibernate above the high water line. Hibernaculae are often abandoned rodent burrows, but the snakes can also hibernate in other types of cracks or crevices that would provide them with adequate shelter (Muth, 1999). The giant garter snake is known from an occurrence 1.2 miles northeast of the project site (CDFG, 2008). It could occur in the marshes along the San Joaquin River north of the project area.

- **Insects Endemic to the Antioch Dunes.** Several federal species of concern may occur in the stabilized interior dunes approximately 1 to 2 miles west to the project area. These species include the Antioch andrenid bee (*Perdita scituta antiochensis*), Antioch efferian robberfly (*Efferia antiochi),* Antioch multilid wasp (*Myrmosula pacifica*), Middlekauff's shieldback katydid (*Idiostatus middlekauffi*), Hurd's metapogon robberfly (*Metapogon hurdi*), Molestan blister beetle (*Lytta molesta*), redheaded sphecid wasp (*Eucerceris ruficeps*), San Joaquin dune beetle (*Coelus gracilis*), Antioch dunes anthicid beetle (*Anthiscus antiochchensis*), and Sacramento anthicid beetle (*Anthiscus sacramento*). Many of these species are known only from the Antioch Dunes NWR; many have not been seen for years. Virtually nothing is known about the population sites, life histories or habitat requirements of these species, other than that they may prefer sandy soils (USFWS, 2002). They are expected to have relatively small home ranges, and, should they occur more than a mile from the project site, are not expected to enter the project area.

- **Western Pond Turtle** (*Actinemys marmorata*). The western pond turtle is a California species of special of concern. It is found in suitable aquatic habitats throughout California west of the Sierra Cascade crest (Jennings and Hayes, 1994; Zeiner et al., 1988). Western pond turtles require permanent or nearly permanent water, such as ponds, lakes, streams, or irrigation canals. They overwinter under water or on land when water temperatures are below 15 degrees Celsius, from October or November until spring. Mating begins in April or May, but may occur year-round (Jennings and Hayes, 1994). The western pond turtle is documented approximately 3.5 miles west of the project site (CDFG, 2008). Potential suitable habitat occurs along the San Joaquin River north and west of the project area. To the west of the project area is grassy, ruderal uplands that could be used for basking or egg-laying.

- **San Joaquin Pocket Mouse** (*Perognathus inornatus inornatus*). The San Joaquin pocket mouse is a federal species of concern that occurs only in California's Central Valley. This species constructs burrows in grassy and weedy areas, on fine textured and sandy soils (Ingles, 1965). Pocket mice are granivorous and nocturnal. During periods of intense weather or food shortage, pocket mice may enter an inactive state of torpor. An occurrence of San Joaquin pocket mouse is documented approximately 5.5 miles southwest of the project site (CDFG, 2008). Potential habitat occurs in ruderal and California grassland vegetation surrounding the project area.

- **Swainson's Hawk** (*Buteo swainsoni*). Swainson's hawk is listed as threatened under the California ESA. The Swainson's hawk is an open-country bird that nests in the Central Valley of California and in the juniper woodlands of Modoc County. Nests are typically found in scattered trees or along riparian corridors adjacent to annual grasslands, pastures, alfalfa, and other crops that provide foraging habitat (CDFG, 1994). The Swainson's hawk also nests in urban areas although the reproductive success of pairs in urban areas has been shown to be lower than that of birds that nest in rural areas (England et al., 1997). Two nesting adults were observed approximately 4.5 miles southwest from the project area in 2007 (CDFG, 2008). The scattered ornamental and coast live oak

woodlands bordering fallow fields, grasslands, and ruderal vegetation provide suitable habitat for this species.

- **Vernal Pool Branchiopods.** Vernal pool fairy shrimp (*Branchinecta lynchi*), a federal threatened species, and vernal pool tadpole shrimp (*Lepidurus packardi*), a federal endangered species, are collectively referred to here as vernal pool branchiopods. These California endemic species grow in temporary pools that fill with rainwater for at least two weeks (such as seasonal wetlands or low depressions that hold water), lay eggs as the pool dries, and persist in the encysted egg stage during dry periods. These particular species are endemic to vernal pools and swales in California's Central Valley (Federal Register, 1994), but also inhabit scrapings, tire tracks and other artificial depressions (Ebasco Environmental, 1993; USFWS, 1996). Where topsoil has been removed from the depression by grading or scraping, or where water is prevented from collecting, the population of fairy shrimp in that pool could be lost. Potential habitat exists for listed vernal pool branchiopods in areas subject to pooling in the project study area. This may include the detention basin and drainage areas within or near the CCPP site. The closest occurrence of vernal pool fairy shrimp is about 4.5 miles west of the project site in non vegetated depressions along railroad tracks found in 1999 (CDFG, 2008). Surveys for vernal pool branchiopods were conducted in the area, and results were submitted to the USFWS in 2006; no branchiopods were observed during these surveys (URS, 2006). The listed branchiopods are very unlikely to occur in the project area due to the lack of nearby occurrences and the current level of disturbance in the project area.

- **Migratory Birds.** All native birds found commonly in the United States, with the exception of native resident game birds and introduced species are protected under the federal Migratory Bird Treaty Act. The Act authorizes state governments to adopt and enforce laws and regulations protecting migratory birds. A large number of migratory bird species within the Delta region are covered under this act. Riparian and marsh habitat along the northern section of the project site, and ornamental landscaping to the south and west of the project area have potential to support breeding migratory birds.

- **White-Tailed Kite** (*Elanus laecurus*). The white-tailed kite is a California fully protected species. It nests in scattered oak and river bottomlands or marshes in rolling and valley margins adjacent to deciduous woodlands. It prefers open grasslands, meadows, and marshes for foraging, and relies on isolated, dense-topped trees for nesting and perching. The closest reported occurrence is approximately 3 miles to the southeast, with other occurrences within 5 miles to the east and west.

- **Sandhill Crane** (*Grus canadensis*). The greater sandhill crane (*Grus canadensis tabida*) is a California fully protected species. It nests in wetland habitats in northeastern California and winters in the central valley. Sandhill cranes prefer grain fields within 4 miles of a shallow body of water that can be used as a communal roost site. While there are no reported nest sites within 5 miles, this species was observed flying over the CCPP site during the March 2008 field visit. It likely does not nest in or near the proposed impacted areas, but may pass through the area during migration.

- **California Black Rail** (*Laterallus jamaicensis coturniculus*). The California black rail is a California fully protected species. California black rail inhabit freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. They require a constant water depth of approximately 1 inch, surrounded by dense vegetation for nesting. The closest reported occurrence is from San Joaquin marshes, approximately

3 miles to the east. Potential habitat occurs in the marsh areas to the north and west of the CCPP.

- **Great Blue Heron** (*Ardea herodias)*. Great blue heron are a California species of special concern. They communally nest in tall trees, but also on cliffsides along marshes. The nearby marshes, as well as lake margins, tide-flats, rivers, and streams are used as foraging areas. There are no reported nest sites within Contra Costa County or within 5 miles of the CCPP. However, there are numerous occurrences from nearby Sacramento, Solano, and San Joaquin Counties. Potential nest sites could include the tall ornamental eucalyptus trees that surround the CCPP and neighboring areas.

- **San Joaquin Kit Fox** (*Vulpes macrotis mutica*). The San Joaquin kit fox is federally endangered and state threatened mammal found in annual grasslands and grassy open areas. They require scattered shrubby vegetation for cover and need loose-textured sandy soils for burrowing. The closest reported occurrence is from grazed annual grasslands south of Antioch and approximately 4.5 miles southwest of the CCPP. Given the disturbance in the area and the occurrence of other foxes and coyotes (observed during field visits) it is unlikely that the San Joaquin kit fox would occur in neighboring grasslands, but potential habitat does occur.

- **Western Red Bat** (*Lasiurus blossevillii*). The western red bat is a California species of special concern that roosts primarily in trees 2 to 40 feet above the ground level. They may occur on the coastline or in mixed coniferous forests. They prefer habitat edges and mosaics with protected trees for nesting and open areas for foraging. An unconfirmed record from 1998 reports western red bats in or near the town of Antioch, approximately 3 miles to the east of the MLGS. While habitat is not ideal, western red bats could nest in oak trees west of the MLGS and forage in the open grassland and ruderal areas.

- **Tricolored Blackbird** (*Agelaius tricolor*). The tricolored blackbird is a California species of special concern that is largely endemic to California. It occurs mostly in the Central Valley of California, forming communal roosts in areas near open water. Tricolored blackbirds forage on insects associated with these water bodies. There are no reported occurrences within 5 miles of the project site; however, a number of occurrences are from nearby Sacramento and San Joaquin Counties. Tricolored blackbirds could use the riparian habitat along the San Joaquin River.

- **Suisun Song Sparrow** (*Melospiza melodia maxillaris*). The Suisun song sparrow is a California species of special concern. It inhabits the brackish marshes of the Suisun Bay. Suisun song sparrow nest in cattails, tules and other sedges, and pickleweed. It can also be found in riparian areas on the borders of sloughs. The closest reported occurrences are from Sherman's island to the north (approximately 2 miles), and also near the town of Pittsburg. The marshes and riparian areas to the north and west of the project area would serve as potential habitat for this species.

- **Saltmarsh Common Yellowthroat** (*Geothlypis trichas sinuosa*). The saltmarsh common yellowthroat is a California species of special concern that inhabits the freshwater and saltwater marshes of the San Francisco Bay. It requires thick, continuous cover down to water surface for foraging. In addition, tall grasses, tule patches, and willows are required for nesting. This species has been reported from Brown's Island north of Pittsburg and also Sherman's Island, approximately 4 to 5 miles north and west of the MLGS. Suitable habitat occurs to the north and west of the MLGS.

7.2.2 ENVIRONMENTAL CONSEQUENCES

This section evaluates potential direct and indirect impacts during construction, operation, and maintenance phases of the project. The project site is within the existing CCPP site where the majority of the natural vegetation has been removed or modified. The wildlife habitat value of the project area and the CCPP is low. No natural vegetation communities, wetlands, or special-status plant species are present within the construction area. Some animal species may use the CCPP site for foraging or nesting. Therefore, the project would not directly impact natural vegetation or special-status plant species, but the project could indirectly impact special-status animal species.

The following criteria were used to determine whether project-related impacts are significant. Impacts would be considered significant if the project would:

- Cause a fish or wildlife population to drop below self-sustaining levels;
- Eliminate a plant or animal community;
- Substantially diminish or reduce habitat for fish, wildlife, or plants;
- Substantially affect, reduce the number, or restrict the range of unique, rare, or endangered species of animal or the habitat of the species;
- Substantially diminish or reduce habitat for fish, wildlife, or plants;
- Interfere substantially with the movement of any resident or migratory fish or wildlife species;
- Change the diversity of species, or number of any species of plant (including trees, shrubs, crops, and aquatic plants) or animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, or insects); or
- Introduce new species of plants or animals or result in a barrier to the normal replenishment of existing species.

7.2.2.1 Construction Impacts

The MLGS, including parking and laydown areas, will be sited entirely within the existing CCPP boundary. Gas and water pipelines will be sited along existing roadways and right of ways in disturbed areas. Areas have been identified for construction of the new facility, parking for construction vehicles, construction trailers, and construction laydown (see Figure 2.7-3).

Three areas of the CCPP site are designated for construction laydown and parking. An approximately 2.9-acre area in the northeastern part of the CCPP site is a graded lot. The second area, approximately 7.5 acres, is a gravel lot just east of the MLGS and is currently being used for laydown for another project. The third area, approximately 3.5 acres, is immediately north of the detention basin in the southern portion of the CCPP site. This area has been previously cleared of vegetation and compacted. All three of these areas are currently devoid of vegetation.

Construction of the new facility would take place in the northwestern section of the CCPP site. This section of the property currently contains five fuel storage tanks and an asphalt parking area. Each of the fuel storage tanks are enclosed by unvegetated areas and berms, approximately 12 feet high. The berms are unvegetated with a paved road surface along the top. Demolition of the storage tanks and the construction of the new facility will occur within the outermost berm, approximately 30 to 50 feet from

the CCPP site boundary and the nearest natural vegetation. No vegetation removal is anticipated as part of the new facility construction. A single coast live oak tree occurs along the western edge of the CCPP site, within a row of eucalyptus trees, at the end of the berm separating tanks 3 and 5. This tree will be avoided during construction. Just west of the tank 6 outer berm (south of the MLGS site) is a drainage basin dominated by saltgrass. This area will also be avoided during construction.

In addition to the new generation facilities, gas, electricity, and water transmission lines will need to be installed or relocated. A natural gas pipeline will connect the new generation facility with an existing gas pipeline to the east. The new gas pipeline route will run approximately 2,100 feet east from the new generation facility within an existing right-or-way along an existing roadway. This area is currently paved and devoid of vegetation. A few eucalyptus trees are to the north of the gas pipeline route, but will be avoided.

Existing electricity transmission lines will have to be temporarily removed and then re-installed during construction. The transmission towers currently stand in a paved lot within the CCPP site, just east of tanks 3 and 4. These towers will be relocated to the south, just east of existing tank 5, in the PG&E switchyard. This area is also paved and unvegetated.

In addition, two water pipelines, one to convey recycled water from Delta Diablo Sanitation District (DDSD) BLS to the plant and one to convey wastewater from the plant back to the BLS, will need to be installed. These pipelines will connect directly to existing and new facilities located at the BLS. The pipelines will run north through the lift station site and then west along the center of Wilbur Avenue. The pipelines will then enter the eastern side of the MLGS site, following north and west along existing paved or graded areas. The total lengths of both pipelines between BLS and the MLGS property boundaries will be approximately 4,800 feet, and the pipelines will run entirely along existing roadways and disturbed areas. No vegetation removal is necessary.

An area at the north end of the BLS has been graded as part of previous DDSD's activities at the BLS site. This area was once ruderal, but is now cleared and devoid of vegetation. Along the western edge of the lift station site is a row of ornamental trees, primarily California pepper. No impacts to these trees are expected. The lift station site is surrounded by major roads (State Route (SR)-160, SR-4, Wilbur Avenue, and Bridgehead Road). This creates substantial traffic noise, limiting the site's potential to support wildlife.

Construction of the MLGS facilities will result in the following permanent and temporary impacts to biological resources on site:

- Temporary noise disturbance in habitat surrounding the construction site during demolition and construction.
- Temporary increase in dust and suspended particles during the demolition of existing facilities

There will be no permanent or temporary loss of habitat due to the construction of the new generation facilities. All construction will occur on existing paved, graded, and/or unvegetated surfaces. No additional preparation for construction laydown or parking areas is required. Sensitive habitats near the construction area will be avoided (i.e., the saltgrass drainage area west of tank 6 and the coast live oak at the west boundary between tanks 3 and 5).

Construction Noise

Construction noise would temporarily impact wildlife species in the habitats surrounding the MLGS facilities, primarily to the north and west of the project area. During the excavation activities, additional

traffic-related noise is anticipated, particularly in association with heavy-duty trucks transporting wastes for offsite disposal. Noise-generating equipment will be used at the site which would affect project noise levels. Equipment may include various pieces of earth moving equipment (front loaders, backhoes, tractors, compactors, and rollers), generators, and compressors. The noise levels for such equipment can often reach or exceed 85 A-weighted decibels (dBA) at 50 feet. Disturbance, particularly during the breeding season, could lead to failed nesting. Due to preexisting noise levels at the site, impacts from noise are considered to be less than significant. Standard measures to reduce impacts from construction noise are addressed in Section 7.2.4.

7.2.2.2 Operations/Maintenance Impacts

Potential impacts of lighting, dust and airborne emissions, noise, electrocution, collision, and stormwater runoff during operation phases as well as maintenance of the project were evaluated and are discussed below.

Noise

The proposed plant site is located in an industrial area. Operation of the plant would produce some noise, as described in Section 7.5. The project would produce noise levels similar to the current levels at the CCPP. Noise and activity from construction activities could temporarily prevent wildlife from foraging on the site and nesting adjacent to the site. However, surrounding habitats are marginal for wildlife species, and wildlife that remain in industrial areas become accustomed to routine background noise. Noise associated with operation of the proposed plant is not likely to substantially affect wildlife use in the project vicinity. Therefore, noise from plant operations is not considered a significant impact to biological resources and no mitigation is proposed.

Electrocution

Bird collisions with electric wires occur when the birds are unable to see the lines, especially during fog and rain events and if they are flushed suddenly from the ground. Factors that affect the risk of collision include weather conditions, behavior of the species of bird, and design and location of the line. Large raptors and migratory birds are at risk of electrocution when they perch on power poles where conducting wires are closer together than their wingspan. Existing transmission lines will be relocated and with the exception of short interconnection lines to the PG&E switchyard no new lines will be installed. The electric transmission line route is within an industrial area that supports no foraging habitat for the large special-status birds. Therefore, operation of the overhead electric transmission lines is not likely to increase the potential for avian collisions along its route. To reduce potential for electrocution, the transmission lines constructed for the project would have a minimum distance greater than the wingspan of any birds in the area. Therefore, increased electrocution rates from transmission line operation are not considered a significant impact to biological resources and no mitigation is proposed.

Collision

The proposed transmission could pose some collision hazard to avian species that may fly into the lines. With the exception of short interconnection lines between the new facility and the adjacent PG&E switchyard, no new lines would be installed, and the existing lines would be relocated to an area near existing overhead lines. Since there is no foraging habitat in the area, and because no new lines are being constructed, no increases in collision incidents are anticipated.

In addition, the MLGS will include four new stacks, each with a diameter of approximately 20 to 30 feet and 150 feet in height. These stacks would also increase collision potential for avian species. Some migrating bird species that fly at night are guided in part by constellations and can become confused by brightly lit tall structures. Migratory waterfowl and other night-migrating bird species have the highest potential for collisions. Fog or low cloud cover can further add to collision potential, although fog does not occur with

much frequency in the study area. The stacks would be located in an industrial area away from aquatic habitat that would attract large numbers of migratory birds; therefore, it is unlikely that migratory birds would use the immediate area. Although the number of potential collisions cannot be quantified, collision would likely occur relatively infrequently. This impact would be less than significant.

Water Supply

Recycled water for use in plant operations will be supplied to the MLGS by the DDSD, via a pipeline from the BLS. The pipeline will be approximately 4,800 feet long, and will primarily run beneath existing paved surfaces (e.g., Wilbur Avenue and roads within the CCPP). Potable water will be supplied by the City of Antioch via a new pipeline installed within the MLGS site connecting to an existing potable water supply line within the CCPP property. Process and sanitary wastewater will be discharged to the BLS via a separate pipeline that will be along approximately the same route as the recycled water supply pipeline (i.e., beneath existing paved roads). No water intake from or discharge to the San Joaquin or other natural water bodies is required. No work is required on the shoreline or within the San Joaquin River or the limited marsh habitat associated with the river. Therefore, water supply and effluent discharge operations are not considered to have a significant impact on biological resources and no mitigation is proposed.

Stormwater Runoff

Stormwater runoff from uncurbed portions of the site will be collected on site and discharged through an existing outfall at the northwestern corner of the CCPP site. Only storm water runoff from uncurbed areas will be conveyed to Outfall 001, in accordance with the NPDES General Industrial Permit Requirements. The outfall channel is surrounded by wetland vegetation and provides habitat for a number of wildlife species. Stormwater collected from areas of potential oil contamination will be contained within concrete curbs and conveyed to an onsite oil-water separator prior to discharge to the new waste water storage tank and ultimately discharged with the process waste water back to DDSD. Collected oil will be shipped off site for recycling.

The CCPP site already operates and maintains a stormwater drainage system. The construction of new facilities will not significantly change the amount of impervious surfaces, which could potentially increase the amount of stormwater runoff. No increases (over existing discharges) in stormwater runoff would be discharged to the San Joaquin River, adjacent riparian wetlands, or other sensitive biological resource areas. Therefore stormwater runoff from plant operations is not considered a significant impact to biological resources and no mitigation is proposed.

Maintenance Activities for Fire and Weed Control

Potentially, herbicide applications (e.g., non-ALS herbicides) could be used to control weed growth within the project area. Should herbicides runoff into adjacent areas, special-status plant and animals outside of the immediate area could be negatively impacted. However, due to the present paved substrate throughout the site, weed control is expected to be minor. In addition, applications would likely occur at least 100 feet from known special-status plant populations. Current weed control would not increase for the project. Therefore maintenance activities for fire and weed control are considered a less-than-significant impact to biological resources.

Pipeline Maintenance

Operation of the natural gas or water pipelines will not cause impacts to special-status plants, animals, or wetlands unless maintenance of the pipelines is required. Maintenance of the pipelines would typically require excavation of a portion of the pipeline and disturbance of a small area approximately 20 feet wide by 30 feet long so that the pipe can be inspected and repaired, if necessary. This activity could impact

animals, but is not expected to impact vegetation, as the pipeline routes are unvegetated. Pipeline maintenance is not likely to adversely affect any sensitive biological resources because the pipelines are primarily located within disturbed areas with little or no wildlife habitat value. Therefore operation and maintenance of the natural gas or water pipelines is not is not considered a significant impact to biological resources and no mitigation is proposed.

Disturbance from Illumination of Plant Site

The lighting system for the MLGS plant site provides personnel with illumination for plant operation under normal conditions, illuminates means of egress under emergency conditions, and emergency lighting to perform manual operations during a power outage of the normal power source. The lighting system will be designed and installed to meet Occupational Safety and Health Administration (OSHA) minimum standards while keeping light emissions to a minimum.

Exterior building lighting of the CTG and HRSG structures will be high-pressure sodium lamps. These fixtures will be placed to offer maximum illumination of operating work areas in compliance with OSHA standards while minimizing offsite illumination. Light associated with operation of the proposed plant is not likely to substantially affect wildlife use in the project vicinity. Therefore illumination of the plant is not considered a significant impact to biological resources and no mitigation is proposed.

7.2.2.3 Wetlands and Non-Wetland Waters of the United States

Construction and operations would not result in direct impacts to wetlands or other waters of the United States. No construction will occur within waters of the United States, and no material or debris will be discharged into waters of the United States. The detention basin south of the PG&E switchyard and the drainage areas west of tank 6 and east of the Bridgehead Lift Station will be avoided. Construction outside of the MLGS site would occur on existing paved surfaces.

No intake or discharge of process water to the San Joaquin River is proposed for this project. The MLGS will implement spill control measures to prevent discharge of contaminants. Implementation of avoidance and minimization will prevent negative impacts to the San Joaquin River.

7.2.2.4 Other Habitats of Concern

The construction, operation, and maintenance of the MLGS project is not expected to impact any sensitive habitats in the project area. All construction would occur at existing disturbed sites and within ROWs. No vegetation removal is anticipated. Construction would occur near one coast live oak on the west side of the MLGS site between tanks 3 and 5. This species is regulated under the Contra Costa County and Antioch General Plans and will be avoided during all construction activities (CCCCDD 2005, Antioch 2003).

7.2.2.5 Special-Status Species

No known sensitive terrestrial plant or animal species and habitats were identified within the project site, including along pipeline routes and BLS. Because all work would take place within the existing CCPP site boundary, no impact to special-status terrestrial species is expected as a result of the project.

Special-Status Plant Species

The following special-status plant species may occur in the areas adjacent to the project site: Antioch evening primrose, Contra Costa wallflower, Suisun Marsh aster, Mason's lilaeopsis, Delta tule pea, soft bird's beak, and Delta mudwort. Construction and operation of the MLGS would not result in any direct impacts to these species.

Special-Status Animal Species

No special-status species are expected to occur within the construction area, but the following special-status animal species may nest, breed, forage, or migrate through areas adjacent to the project site: white-tailed kite, sandhill crane, California black rail, great blue heron, San Joaquin kit fox, western red bat, American badger, tricolored blackbird, Suisun song sparrow, saltmarsh common yellowthroat, burrowing owl, California tiger salamander, giant garter snake, San Joaquin pocket mouse, Swainson's hawk, western pond turtle, vernal pool branchiopods, interior dunes insects, and migratory birds. Of these species, vernal pool branchiopods and interior dune insects, should they occur nearby, are unlikely to be affected due to their small home ranges and distance of suitable habitat from the construction area. The remaining species may be impacted by:

- Temporary noise disturbance in habitat surrounding the construction site during demolition and construction.
- Potential incidental take should species migrate through the area during construction.

No permanent or temporary loss of habitat would be associated with this project, as all impacted areas are unvegetated and do not provide habitat for these species. It is very unlikely that any special-status species would pass through the area during construction; the potential for incidental take onsite is considered very low. In addition, air quality will be regulated to levels acceptable to human health, thereby reducing the potential for harming special-status species. However, indirect take of species could occur if species are disturbed by construction noise during the breeding or nesting season. Avoidance and minimization measures are described in Section 7.2.4.

7.2.3 CUMULATIVE IMPACTS

The project is not expected to significantly affect biological resources, and therefore will not contribute to cumulative impacts.

Habitats in the area are mapped on Figure 7.2-2 and special-status species are similar to those with potential to occur near the CCPP site. Construction is expected between October 2009 and June 2012. Construction impacts include loss of habitat and disturbance due to noise. Operations that may impact special-status species include increased noise, stormwater discharge, air emissions, herbicide application, and increased lighting.

In combination with other projects in the area, the MLGS may contribute to cumulative increases in light, noise, and air emissions. Due to the lack of suitable habitat and existing development in the project area, the effects of these increases on biological resources are expected to be minimal.

7.2.4 AVOIDANCE AND MINIMIZATION MEASURES

This section discusses proposed impact avoidance and minimization measures that will be implemented to reduce project-related impacts to biological resources identified in Section 7.2.1.

The following measures will reduce or eliminate impacts to special-status species occurring in the MLGS area.

BIO-1 Avoid sensitive habitats and species during construction by developing construction exclusion zones and silt fencing in sensitive areas.

This includes avoiding the drainage area west of tank 6 and the oak tree west of the berm between Tanks 3 and 5. This also includes any nest sites identified during preconstruction surveys.

BIO-2 Preconstruction surveys for special-status species in impact areas.

Preconstruction surveys for nesting migratory birds will be conducted in the ornamental trees lining the west side of the project area, the riparian vegetation to the north, and the trees lining the pipeline routes. Should nests of migratory birds, raptors, or special-status species be identified, nest monitoring may be required.

BIO-3 Provide construction monitoring by a qualified Designated Biologist during construction activities near sensitive habitats or identified nests.

Should nests be identified, an approved biologist will monitor the nests during construction. The required buffer distance varies by species, but should be no less than 150 feet.

BIO-4 Provide safety lighting that points downward on the stacks to reduce avian collisions.

Lighting should be positioned to reduce avian collisions.

BIO-5 Design transmission lines to be "raptor friendly."

Ways to reduce electrocution of raptors in transmission lines are described in "Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996" (APLIC, 1996).

BIO-6 Implement erosion control in the temporary impact areas.

Erosion control should be implemented along the north side of the project area to reduce the potential for sedimentation of the San Joaquin River.

BIO-7 Use only non-ALS (i.e., acetolactate synthase-inhibiting) herbicides approved for use by the USFWS to control weeds and reduce fire hazards in and adjacent to the power plant site (Table 7.2-4).

The use of herbicides that target small areas and degrade quickly will reduce the potential for impacts to special-status plants outside of the application area.

BIO-8 Provide worker environmental awareness training for all construction personnel.

Training will include the identification of the special-status biological resources and measures required to minimize project impacts during construction and operation.

BIO-9 Reduce dust levels.

To reduce dust as a result of construction, unvegetated, dirt surfaces will be watered during summer months. Demolition areas with high dust levels will be sprayed down regularly, and shower water will be collected and filtered prior to discharge.

7.2.4.1 Wetlands

No temporary or permanent loss of wetlands is expected as a result of this project. All wetland areas will be avoided. No Corps consultation is expected and no permits are needed. No mitigation is required.

7.2.4.2 Special-Status Species

No special-status species are expected to occur within the project area or are expected to be impacted by construction. Should nesting California black rail or Swainson's hawk be identified during pre-construction surveys, consultation with the California Department of Fish and Game will be necessary. No federally listed species are expected to occur. Should a federally listed species be identified, formal Section 10 of the ESA consultation with the USFWS will be required.

Special-Status Plant Species

All proposed construction will occur on paved or previously graded sites where there are no occurrences of special-status plant species. Based on these construction plans, no special-status plant species are expected to be impacted as a result of this project. Therefore, no avoidance and minimization measures are proposed for special-status plants.

Special-Status Wildlife Species

Based on surveys conducted to date, no special-status wildlife species would be affected by the project. The following measures would be implemented to minimize adverse affects to any special-status wildlife at the project site:

BIO-10 Cap all open pipes.

Capping pipes will reduce the potential for small mammals, such as the San Joaquin pocket mouse, from entering the pipe and becoming trapped. Pipes will be capped at the end of each day.

BIO-11 Speed limits.

Speed will be limited to 15 miles per hour or less on all non-public roads to reduce the potential for incidental take of animal species.

BIO-12 Ground disturbance.

The site will be inspected for special-status species prior to ground disturbance in any non-paved area. No ground disturbance of vegetated areas is anticipated. A biologist will be consulted should a vegetated area need to be disturbed.

BIO-13 Tree and shrub removal.

No tree or shrub removal is anticipated. A biologist will be consulted prior to the removal of any vegetation, and the appropriate timing, consultation, and permits will apply as required**.**

7.2.5 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The project will operate in accordance with all LORS applicable to biological resources. The following LORS are applicable or potentially applicable to the project in the context of biological resources. Specific locations in the document where these LORS are addressed are indicated in Table 7.2-5.

7.2.5.1 Federal

Endangered Species Act of 1973 and implementing regulations, Title 16 U.S. Code (USC) §1531 et seq. (16 USC 1531 et seq.), Title 50 Code of Federal Regulations (CFR) §17.1 et seq. (50 CFR 17.1 et seq.)

The ESA includes provisions for the protection and management of federally listed threatened or endangered plants and animals and their designated critical habitats. Section 10(1)(A) of the ESA requires a permit to take threatened or endangered species during lawful project activities. If there no federal nexus for the project, a Habitat Conservation Plan (HCP) may be necessary. The administering agency for the above authority is the USFWS for terrestrial, avian, and most aquatic species, and the National Marine Fisheries Service (NMFS) for anadromous species.

Section 7 of Fish and Wildlife Coordinating Act, 16 USC 742 et seq., and Endangered Species Act, 16 USC 1531 et seq., and 50 CFR 17.

Section 7 requires consultation if any project facilities could jeopardize the continued existence of an endangered or threatened species, and issuance of a Biological Opinion that also authorizes incidental take of a threatened or endangered species. The applicability of this act depends on federal jurisdiction over some aspect of the project. The administering agencies for the above authority are the USFWS and the National Oceanic and Atmospheric Administration (NOAA).

Section 404 of the Clean Water Act of 1977 (33 USC 1251 et seq., 33 CFR §§320 and 323)

This section of the Clean Water Act gives the Corps authority to regulate discharges of dredge or fill material into waters of the United States, including wetlands. The administering agency for the above authority is the Corps.

Section 401 of the Clean Water Act of 1977

Section 401 of the Clean Water Act requires the Applicant to conduct water quality impact analysis for the project when using Section 404 permits and for discharges to waterways.

The administering agencies for the above authority are the USACE and the Regional Water Quality Control Board.

Migratory Bird Treaty Act 16 USC §§703-711

This Act includes provisions for protection of migratory birds, including the non-permitted take of migratory birds. The administering agencies for the above authority are the USFWS and California Department of Fish and Game.

7.2.5.2 State

California Endangered Species Act of 1984, Fish and Game Code, §2050 through §2098

The California Endangered Species Act (CESA) includes provisions for the protection and management of plant and animals species listed as endangered or threatened, or designated as candidates for such listing. CESA includes a consultation requirement "to ensure that any action authorized by a state lead agency is not likely to jeopardize the continued existences of any endangered or threatened species…or result in the destruction or adverse modification of habitat essential to the continued existence of the species" (§2090). Plants of California declared to be endangered, threatened, or rare are listed at 14 CCR §670.2. Animals of California declared to be endangered or threatened are listed at 14 CCR §670.5.

14 CCR §15000 et seq. describes the types and extent of information required to evaluate the effects of a project on biological resources of a project site. Section 2081 also requires a permit to authorize incidental take of species listed as threatened or endangered. The administering agency for the above authority is CDFG.

Fish and Game Code, Fully Protected Species

§3511: Fully Protected Birds; §4700: Fully Protected Mammals; §5050: Fully Protected Reptiles and Amphibians; §5515: Fully Protected Fishes

The Fish and Game Code prohibits the taking of listed plants and animals that are Fully Protected in California. The administering agency for the above authority is CDFG.

Fish and Game Code §1930, Significant Natural Areas

Section 1930 of the Fish and Game Code designates certain areas such as refuges, natural sloughs, riparian areas, and vernal pools as significant wildlife habitats. These Significant Natural Areas are listed in the CNDDB. The administering agency for the above authority is CDFG.

Fish and Game Code §1580, Designated Ecological Reserves

In Section 1580 of the Fish and Game Code, the CDFG Commission designates land and water areas as significant wildlife habitats to be preserved in natural condition for the general public to observe and study. The administering agency for the above authority is CDFG.

Fish and Game Code §1600, Streambed Alteration Agreement

Section 1600 of the Fish and Game Code requires authorization to impact waterways, including impacts to vegetation and wildlife from sediment, diversions, and other disturbances. The administering agency for the above authority is CDFG.

Native Plant Protection Act of 1977, Fish and Game Code, §1900 et seq.

The Native Plant Protection Act designates state rare and endangered plants and provides specific protection measures for identified populations. The administering agency for the above authority is CDFG.

CDFG Policies and Guidelines, Wetlands Resources Policy

The Wetlands Resource policy provides for the protection, preservation, restoration, enhancement, and expansion of wetland habitats in California, including vernal pools. The administering agencies for the above authority are CDFG, California Environmental Protection Agency (Cal/EPA), and the Central Valley Regional Water Quality Control Board.

Public Resource Code §§25500 and 25527

Sections 25500 and 25527 of the Public Resource Code prohibits constructing facilities in certain areas of critical concern for biological resources, such as ecological preserves, wildlife refuges, estuaries, and unique or irreplaceable wildlife habitats of scientific or educational value. If there is no alternative, strict criteria are applied. The administering agencies for the above authority are the USFWS and CDFG.

Title 20 CCR §§1702 (q) and (v)

Title 20 CCR 1702 (q) and (v) protects "areas of critical concern" and "species of special concern" identified by local, state, or federal resource agencies within the project area, including the California Native Plant Society. The administering agencies for the above authority are the USFWS and CDFG.

Title 14 CCR Section 15000 et seq.

The 14 CCR Section 15000 et seq. describe the types and extent of information required to evaluate the effects of a project on biological resources of a project site. The administering agencies for the above authority are the USFWS and CDFG.

7.2.5.3 Local

County and City General Plans encourage preservation and management of biotic resources, including special-status species. They put some planning constraints on sensitive habitat areas, but do not supersede CDFG and USFWS requirements.

Contra Costa County General Plan

Specific policy goals and objectives in the Contra Costa County General Plan (CCCCDD 2005) include:

- Development should be planned to maintain a healthy and attractive environment.
- Watersheds, natural waterways, significant trees, natural vegetation, and wildlife populations and their habitats shall be preserved and enhanced.
- Significant ecological areas, e.g., those containing endangered species, shall be maintained in their natural state and regulated to the maximum legal extent. Development in these areas should ensure that the resource is protected.
- Native and/or sports fisheries shall be preserved.
- Wetlands shall be identified and regulated. Runoff of pollutants and siltation into wetlands shall be discouraged, and where permitted, may not significantly adversely affect the value or function of the wetlands.
- Efforts will be made to identify and project mature native oak, bay, and buckeye trees.
- Applications of toxic pesticides will be kept at a minimum.
- Planting of native trees and shrubs shall be encouraged.

The administering agency for the above authority is the County of Contra Costa.

City of Antioch General Plan

Specific policy goals and objectives in the City of Antioch General Plan (Antioch 2003) include:

- No net loss of wetlands, in compliance with federal policies, through avoidance and clustered development.

- Preserve and restore wetlands and riparian habitat along the San Joaquin River and other streams.
- Require appropriate setbacks in areas adjacent to natural streams.
- Protection of sensitive habitats including, but not limited to: oak woodlands, riparian woodlands, vernal pools, and native grasslands.
- Review and permit the removal of oak trees on a case-by-case basis. Preserve heritage trees.
- Avoid the introduction of invasive species.
- Design drainage to avoid creating perennial flows within intermittent streams.
- Requires established protocols be used when surveying to identify the presence/absence federal or state special-status species.

The administering agency for the above authority is the City of Antioch.

7.2.6 INVOLVED AGENCIES AND AGENCY CONTACTS

Since adverse effects on biological resources as a result of this project are limited, no authorizations from state or federal agencies would be required. While special-status species do occur nearby the project area, they will not be significantly impacted by this construction. No wetlands or other waters of the United States would be impacted.

Potential consultation may be needed with CDFG and USFWS with regards to the Migratory Bird Treaty Act. There will be no impacts to aquatic resources, so no consultation with NMFS would be needed. No consultation with the USACE or Regional Water Quality Control Board is anticipated. Agencies with authority over biological resources in the project area are listed on Table 7.2-6.

7.2.7 PERMITS REQUIRED AND PERMIT SCHEDULE

No permits are expected. No construction will take place in sensitive areas or special-status species habitat. No vegetation will be removed. There will be no impacts to wetlands.

7.2.8 REFERENCES

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Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 1 of 19)

Scientific Name	Common Name	Within 2.5 Miles[1]	Fed[2]	CA[3]	CNPS[4]	Habitat	Likelihood	Rationale
Wildlife								
Acipenser medirostris	green sturgeon	N	T (NMFS)			Spawns in the Sacramento River and the Klamath River. Spawns at temperatures between 8 and 14 degrees Celsius (C°). Preferred spawning substrate is large cobble, but can range from clean sand to bedrock.	L	San Joaquin River serves as suitable habitat, but it will not be impacted as a result of this project.
Actinemys marmorata	western pond turtle	N	N	N		Aquatic; a thoroughly aquatic turtle of ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation; needs basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg laying.	L	Potential habitat occurs along the San Joaquin River.
Agelaius tricolor	tricolored blackbird	N	N	N		Freshwater marsh; highly colonial species, most numerous in central valley and vicinity. Largely endemic to California; requires open water, protected nesting substrate, and foraging area with insect prey within a few kilometers of the colony.	L	Potential habitat occurs along the San Joaquin River.
Ambystoma californiense	California tiger salamander	Y	T	N		Cismontane woodland; vernal pools and stock ponds, prefers open grassland. Central valley Distinct Population Segment (DPS) is listed as threatened. Santa Barbara and Sonoma Counties DPS are listed as endangered. Species needs underground refuges, especially ground squirrel burrows and vernal pools or other seasonal water sources for breeding.	L	Potential habitat occurs within the detention basin area along the south side of the CCPP, but potential occurrence is considered low due to the present disturbance in the area. This area will not be impacted by construction.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 2 of 19)

Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Wildlife								
Andrena blennospermatis	A vernal pool andrenid bee	N	N	N		Vernal pool; this bee is oligolectic on vernal pool blennosperma;bees nest in the uplands around vernal pools.	U	No suitable habitat is present near the project area.
Anniella pulchra pulchra	silvery legless lizard	Y	N	N		Chaparral; sandy or loose loamy soils under sparse vegetation. Soil moisture is essential prefer soils with high moisture content.	U	Recorded from nearby Antioch dunes, but unlikely to approach project area.
Anthicus antiochensis	Antioch Dunes anthicid beetle	Y	N	N		Interior dunes; extirpated from Antioch dunes but present in several localities along the Sacramento and Feather Rivers.	L	Recorded from nearby Antioch dunes, but unlikely to approach project area.
Anthicus sacramento	Sacramento anthicid beetle	N	N	N		Interior dunes; restricted to sand dune areas of the Sacramento-San Joaquin Delta; inhabits sand slipfaces among bamboo and willow but may not depend on presence of these plant species.	L	Recorded from nearby Antioch dunes, but unlikely to approach project area.
Apodemia mormo langei	Lange's metalmark butterfly	N	E			Inhabits stabilized dunes along the San Joaquin River. Endemic to Antioch dunes, Contra Costa County. Primary host plant is *Eriogonum nudum* var. *auriculatum*; feeds on nectar of other wildflowers, as well as host plant.	L	Recorded from nearby Antioch dunes, but unlikely to approach project area. Host plant is not present near the project impact areas.
Archoplites interruptus	Sacramento perch	Y	N	N		Aquatic; historically found in the sloughs, slow-moving rivers, and lakes of the central valley; prefers warm water. Aquatic vegetation is essential for young. Tolerates wide range of physio-chemical water conditions.	U	San Joaquin River serves as suitable habitat, but it will not be impacted as a result of this project.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 3 of 19)

Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Wildlife								
Ardea herodias	great blue heron	N	N	N		Brackish marsh; colonial nester in tall trees, cliffsides, and sequestered spots on marshes; rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	L	Potential for nesting in landscaped eucalyptus trees near the San Joaquin River.
Asio flammeus	short-eared owl	N	N	N		Great basin grassland; found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields; tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	U	No suitable habitat; grassland areas are not sufficiently moist. No nearby occurrences.
Athene cunicularia	burrowing owl	Y	N	N		Coastal prairie; open, dry annual or perennial grasslands, deserts & scrublands characterized by low-growing vegetation; subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	L	Potential for occurrence in grassland areas south of the CCPP.
Branchinecta lynchi	vernal pool fairy shrimp	N	T	N		Valley and foothill grassland; endemic to the grasslands of the Central Valley, Central Coast Mountains, and South Coast Mountains, in astatic rain-filled pools. Inhabits small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	U	No suitable habitat. No branchiopods were observed during 2005 focused surveys.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 4 of 19)

Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Wildlife								
Buteo swainsoni	Swainson's hawk	N	N	T		Great basin grassland; breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch; requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	M	Potential to pass though the area. Could nest in landscaped trees or riparian or oak habitat along the San Joaquin River.
Coelus gracilis	San Joaquin dune beetle	Y	N	N		Interior dunes; inhabits fossil dunes along the western edge of San Joaquin valley; extirpated from Antioch dunes (type locality); inhabits sites containing sandy substrates.	L	Recorded from nearby Antioch dunes, but unlikely to approach project area.
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	N	T			Associated with elderberry trees (*Sambucus mexicana*), riparian forests along rivers and streams. Prefers to lay eggs in elderberries 2 to 8 inches in diameter; some preference shown for "stressed" elderberries.	U	No elderberry bushes in project area. Some elderberries east of the CCPP. No nearby occurrences.
Efferia antiochi	Antioch efferian robberfly	Y	N	N		Interior dunes; known only from Contra Costa and Fresno Counties.	L	Recorded from nearby Antioch dunes, but unlikely to approach project area.
Elanus leucurus	white-tailed kite	N	N	N		Cismontane woodland; rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland; open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	L	Potential suitable habitat surrounds CCPP, but potential for occurrence is low due to high levels of disturbance.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 5 of 19)

Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Wildlife								
Elaphrus viridis	delta green ground beetle	N	T	N		Restricted to the margins of vernal pools in the grassland area between Jepson Prairie and Travis Air Force Base. Prefers the sandy mud substrate where it slopes gently into the water, with low-growing vegetation, 25 to 100% cover.	U	There are no vernal pools in the project area; this species has a very restricted distribution and has not been found nearby.
Eucerceris ruficeps	redheaded sphecid wasp	Y	N	N		Interior dunes; Central California interior dunes; nest in hard-packed sand using abandoned halictine bee burrows.	L	Recorded from nearby Antioch dunes, but unlikely to approach project area.
Geothlypis trichas sinuosa	saltmarsh common yellowthroat	N	N	N		Marsh and swamp; resident of the San Francisco Bay region, in fresh and salt water marshes; requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	L	Potential to occur in riparian habitat along the San Joaquin River.
Hygrotus curvipes	curved-foot hygrotus diving beetle	N	N	N		Aquatic; aquatic; known only from Alameda and Contra Costa Counties.	U	This species is very restricted, and known only from a few small ponds and ditches. No suitable habitat occurs in the project area.
Hypomesus transpacificus	Delta smelt	N	T, X	T		Aquatic; Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay; seldom found at salinities > 10 parts per thousand parts per thousand (ppt). Most often at salinities <2 ppt.	U	San Joaquin River serves as suitable habitat, but it will not be impacted as a result of this project.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 6 of 19)

Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Wildlife								
Idiostatus middlekauffi	Middlekauffs shieldback katydid	Y	N	N		Interior dunes.	U	Known only from the Antioch dunes. Is not expected to range from this habitat.
Lanius ludovicianus	loggerhead shrike	N	N	N		Broadleaved upland forest; broken wood-lands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub and washes; prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	U	No suitable habitat is present near the project area.
Lasiurus blossevillii	western red bat	Y	N	N		Cismontane woodland; roosts primarily in trees, 2 to 40 feet above ground, from sea level up through mixed conifer forests; prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	L	Potential habitat surrounding the CCPP. Closest reported occurrence from an unknown location in Antioch.
Lasiurus cinereus	hoary bat	N	N	N		Broadleaved upland forest; prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding; roosts in dense foliage of medium to large trees. Feeds primarily on moths. Requires water.	U	No suitable habitat is present near the project area.
Laterallus jamaicensis coturniculus	California black rail	Y	N	T		Brackish marsh; inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays.; needs water depths of about 1 inch that does not fluctuate during the year and dense vegetation for nesting habitat.	L	Potential to occur in marsh habitat along the San Joaquin River. Habitat is not ideal and highly disturbed

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 7 of 19)

Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Wildlife								
Lepidurus packardi	vernal pool tadpole shrimp	N	E	N		Valley and foothill grassland; inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water; pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	U	No suitable habitat. No branchiopods were observed during 2005 focused surveys.
Lytta molesta	molestan blister beetle	N	N	N		Vernal pool; inhabits the central valley of California, from Contra Costa to Kern and Tulare Counties.	U	No suitable habitat is present near the project area.
Masticophis lateralis euryxanthus	Alameda whipsnake	N	T	T		Cismontane woodland; restricted to valley-foothill hardwood habitat of the coast ranges between Monterrey and the San Francisco Bay. Inhabits south-facing slopes and ravines where shrubs form a vegetative mosaic with oak trees and grasses.	U	No suitable habitat is present near the project area.
Melospiza melodia maxillaris	Suisun song sparrow	N	N	N		Marsh and swamp; resident of brackish-water marshes surrounding Suisun Bay; inhabits cattails, tules and other sedges, and saltgrass; also known to frequent tangles bordering sloughs.	L	Potential to occur in marsh and riparian habitat along the San Joaquin River.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 8 of 19)

Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Wildlife								
Metapogon hurdi	Hurd's metapogon robberfly	Y	N	N		Interior dunes; known only from Antioch and Fresno areas.	L	Recorded from nearby Antioch dunes, but unlikely to approach project area.
Myrmosula pacifica	Antioch multilid wasp	Y	N	N		Interior dunes.	L	Recorded from nearby Antioch dunes, but unlikely to approach project area.
Oncorhynchus mykiss	Central Valley steelhead	N	T, X, (NMFS)	N		Populations in the Sacramento and San Joaquin Rivers and their tributaries.	L	San Joaquin River serves as suitable habitat, but it will not be impacted as a result of this project.
Oncorhynchus tshawytscha	Central Valley spring-run Chinook salmon	N	T, X (NMFS)	T		Adult numbers depend on pool depth and volume, amount of cover, and proximity to gravel. Water temperatures over >27°C are lethal to adults. Federal listing refers to populations spawning in Sacramento River and tributaries.	L	San Joaquin River serves as suitable habitat, but it will not be impacted as a result of this project.
Oncorhynchus tshawytscha	winter-run Chinook salmon (Sacramento River)	N	E, X (NMFS)	E		Sacramento River below Keswick dam. Spawns in the Sacramento River but not in tributary streams. Requires clean, cold water over gravel beds with water temperatures between 6°C and 14°C for spawning.	L	San Joaquin River serves as suitable habitat, but it will not be impacted as a result of this project.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 9 of 19)

Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Wildlife								
Perdita scitula antiochensis	Antioch andrenid bee	Y	N	N		Interior dunes; known only from Antioch dunes and Oakley; visits flowers of *Eriogonum* sp., *Gutierrezia californica*, *Heterotheca grandiflora*, and *Lessingia glandulifera*.	L	Recorded from nearby Antioch dunes, but unlikely to approach project area.
Perognathus inornatus inornatus	San Joaquin pocket mouse	N	N	N		Coastal scrub; typically found in grasslands and blue oak savannas; needs friable soils.	L	Potential to occur in grasslands surrounding CCPP. No nearby occurrences. Potential is low due to highly disturbed environment.
Phalacrocorax auritus	double-crested cormorant	Y	N	N		Riparian forest; colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state; nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	L	Potential to occur in marsh and riparian habitat along the San Joaquin River.
Philanthus nasalis	Antioch specid wasp	Y	N	N		Interior dunes; previously known only from Antioch dunes, in Contra Costa County. Now known only from the inland sandhills in Santa Cruz County.	L	Recorded from nearby Antioch dunes, but unlikely to approach project area.
Rallus longirostris obsoletus	California clapper rail	N	E	E		Salt and brackish marshes, typically dominated by pickleweed, Pacific cordgrass. Restricted to major sloughs and rivers, tidal marsh areas.	U	No suitable habitat is present near the project area.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 10 of 19)

Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Wildlife								
Rana aurora draytonii	California red-legged frog	N	T	N		Aquatic; lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation; requires 11 to 20 weeks of permanent water for larval development. Must have access to aestivation habitat—aquatic and riparian, dense shrubby or emergent vegetation close to deep-water pools with fringes of cattails and dense stands of overhanging vegetation (e.g., willows); wetlands and streams in coastal drainages of central California.	U	No suitable habitat. No nearby occurrence records.
Reithrodontomys raviventris	salt-marsh harvest mouse	N	E	E		Marsh and swamp; only in the saline emergent wetlands of San Francisco Bay and its tributaries; pickleweed is primary habitat. Does not burrow, build loosely organized nests. Requires higher areas for flood escape.	U	No suitable habitat is present near the project area.
Riparia riparia	bank swallow	N	N	T		Riparian scrub; colonial nester; nests primarily in riparian and other lowland habitats west of the desert; requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	U	No suitable habitat is present near the project area.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 11 of 19)

Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Wildlife								
Sphecodogastra antiochensis	Antioch Dunes halcitid bee	Y	N	N		Interior dunes; restricted to Antioch dunes; host plant is *Oenothera deltoides howellii*. Nests in the ground in stabilized sand dunes in open, xeric areas.	L	Recorded from nearby Antioch dunes, but unlikely to approach project area.
Sternula antillarum browni	California least tern	N	E	E		Alkali playa; nests along the coast from San Francisco Bay south to northern Baja, California; colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, land fills, or paved areas.	L	Potential habitat does occur in the project area, but there are no nearby known occurrences.
Taxidea taxus	American badger	N	N	N		Coastal scrub; most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils; need sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	L	Some potential habitat is grassland areas, but lack of shrubby cover make this habitat less than ideal.
Thamnophis gigas	giant garter snake	Y	T	T		Marsh and swamp; overwinters in animal burrows October to March. Agricultural wetlands, irrigation and drainage canals, sloughs, ponds, slow creeks and adjacent uplands. Requires water, emergent herbaceous wetland vegetation (cattails, rushes), grassy banks and openings, higher elevation uplands. Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches; this is the most aquatic of the garter snakes in California.	L	Potential to occur in marshes along the San Joaquin River adjacent to grassland uplands.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
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Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Wildlife								
Vulpes macrotis mutica	San Joaquin kit fox	N	E	T		Chenopod scrub; annual grasslands or grassy open stages with scattered shrubby vegetation; needs loose-textured sandy soils for burrowing, and suitable prey density near freshwater marshes. Forages in California prairie and grasslands with dense, tall grasses and San Joaquin saltbrush. Deep, heavy loam soils.	L	Potential habitat is present, but occurrence is considered low due to disturbance and competition.
Plants								
Amsinckia grandiflora	large-flowered fiddleneck	N	E	E	1B.1	Cismontane woodland; cismontane woodland, valley and foothill grassland; annual grassland in various soils. Elevation 275 to 550 m.	U	No potential suitable habitat. Elevation is too low.
Anomobryum julaceum	slender silver moss	N	N	N	2.2	Broadleaved upland forest; broadleafed upland forest, lower montane coniferous forest, north coast coniferous forest; moss which grows on damp rocks and soil; usually seen on roadcuts. Elevation 100 to 1,000 m.	U	No potential suitable habitat. Elevation is too low.
Arctostaphylos auriculata	Mt. Diablo manzanita	Y	N	N	1B.3	Chaparral; chaparral; in canyons and on slopes. On sandstone. Elevation 120 to 500 m.	U	No suitable habitat is present near the project area. Elevation is too low.
Arctostaphylos manzanita ssp. *laevigata*	Contra Costa manzanita	N	N	N	1B.2	Chaparral; chaparral; rocky slopes. Elevation 500 to 1,100 m.	U	No suitable habitat is present near the project area. Elevation is too low.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
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Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Plants								
Astragalus tener var. *tener*	alkali milk-vetch	N	N	N	1B.2	Alkali playa; alkali playa, valley and foothill grassland, vernal pools; low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. Elevation 1 to 170 m.	U	No suitable habitat is present near the project area.
Atriplex joaquiniana	San Joaquin spearscale	N	N	N	1B.2	Chenopod scrub; chenopod scrub, alkali meadow, valley and foothill grassland; in seasonal alkali wetlands or alkali sink scrub with *Distichlis spicata*, frankenia, etc. 1-250 m.	U	No suitable habitat is present near the project area.
Blepharizonia plumosa	big tarplant	Y	N	N	1B.1	Valley and foothill grassland; valley and foothill grassland; dry hills and plains in annual grassland. Clay to clay-loam soils; usually on slopes and often in burned areas. Elevation 15 to 455 m.	U	No suitable habitat is present near the project area. Elevation is too low.
California macrophylla	round-leaved filaree	Y	N	N	1B.1	Cismontane woodland; cismontane woodland, valley and foothill grassland; clay soils. Elevation 15 to 1,200 m.	U	No potential suitable habitat. Elevation too low.
Calochortus pulchellus	Mt. Diablo fairy-lantern	N	N	N	1B.2	Chaparral; chaparral, cismontane woodland, riparian woodland, valley and foothill grassland; on wooded and brushy slopes. Elevation 200 to 800 m.	U	No suitable habitat is present near the project area. Elevation is too low.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
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Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Plants								
Calystegia atriplicifolia ssp. *buttensis*	Butte County morning-glory	N	N	N	1B.2	Lower montane coniferous forest; lower montane coniferous forest; dry, mostly open slopes. Elevation 600 to 1200 m.	U	No suitable habitat is present near the project area. Elevation is too low.
Carex comosa	bristly sedge	N	N	N	2.1	Freshwater marsh; marshes and swamps; lake margins, wet places; site below sea level is on a delta island. Elevation –5 to 1,005 m.	U	Potential habitat occurs, but there are no nearby occurrences of this species.
Cordylanthus mollis ssp. *mollis*	soft bird's-beak	Y	E	R	1B.2	Marsh and swamp; coastal salt marsh; in coastal salt marsh with *Distichlis*, *Slicornia*, *Frankenia*, etc. Elevation 0 to 3m.	L	Potential to occur in marsh habitat along the San Joaquin River.
Cryptantha hooveri	Hoover's cryptantha	Y	N	N	1A	Valley and foothill grassland; valley and foothill grassland; in coarse sand. Elevation -150 m.	L	Potential habitat does occur in surrounding grasslands, but there are no areas of coarse sand. There are only 3 reported occurrences of this species and it is thought to be expatriated to Contra Costa County.
Downingia pusilla	dwarf downingia	N	N	N	2.2	Valley and foothill grassland; valley and foothill grassland (mesic sites), vernal pools; vernal lake and pool margins with a variety of associates. In several types of vernal pools. Elevation 1 to 485 m.	U	No suitable habitat is present in the project area.
Eriogonum truncatum	Mt. Diablo buckwheat	Y	N	N	1B.1	Chaparral; chaparral, coastal scrub, valley and foothill grassland; dry, exposed clay or sandy substrates. Elevation 100 to 600 m.	U	No suitable habitat is present in the project area. Elevation is too low.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
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Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Plants								
Erysimum capitatum var. *angustatum*	Contra Costa wallflower	Y	E, X	E	1B.1	Interior dunes; inland dunes; stabilized dunes of sand and clay near Antioch along the San Joaquin River. Elevation 3 to 20 m.	M	Occurrences within 0.2 miles of the project site. Marginal suitable habitat to the west.
Eschscholzia rhombipetala	diamond-petaled California poppy	Y	N	N	1B.1	Valley and foothill grassland; valley and foothill grassland; alkaline, clay slopes and flats. Elevation 0 to 975 m.	L	Potential habitat, but occurrence is unlikely. The only reported nearby occurrence is from 1889 and is thought to be an expatriated specimen.
Fritillaria liliacea	fragrant fritillary	N	N	N	1B.2	Coastal prairie; coastal scrub, valley and foothill grassland, coastal prairie; often on serpentine; various soils reported though usually clay, in grassland. Elevation 3 to 410 m.	U	No suitable habitat is present near the project area. No serpentine or clay soils. No nearby occurrences.
Helianthella castanea	Diablo helianthella	N	N	N	1B.2	Broadleaved upland forest; broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland; usually in chaparral/oak woodland interface in rocky, azonal soils. Often in partial shade. Elevation 25 to 1,150 m.	U	No suitable habitat is present near the project area. Elevation is too low.
Hesperolinon breweri	Brewer's western flax	Y	N	N	1B.2	Chaparral; chaparral, cismontane woodland, valley and foothill grassland; often in rocky serpentine soil in serpentine chaparral and serpentine grassland. Elevation 30 to 885 m.	U	No serpentine habitat is present. Elevation is too low.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 16 of 19)

Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Plants								
Hibiscus lasiocarpus	woolly rose-mallow	N	N	N	2.2	Freshwater marsh; marshes and swamps (freshwater); moist, freshwater-soaked river banks and low peat islands in sloughs; in California, known from the delta watershed. Elevation 0 to 150 m.	U	There are some marsh areas to the north of the CCPP along the San Joaquin River, but no peat islands or sloughs in the vicinity. There are no nearby reports of this species.
Isocoma arguta	Carquinez goldenbush	N	N	N	1B.1	Valley and foothill grassland; valley and foothill grassland; alkaline soils, flats, lower hills. On low benches near drainages and on tops and sides of mounds in swale habitat. Elevation 1 to 20 m.	U	Potential habitat occurs, but it is not ideal. All reported occurrences are from Solano County, and not near the project area.
Juglans hindsii	Northern California black walnut	N	N	N	1B.1	Riparian forest; riparian forest, riparian woodland. Few extant native stands remain; widely naturalized; deep alluvial soil associated with a creek or stream. Elevation 0 to 395 m.	U	No suitable habitat is present near the project area. Was not observed during site visit.
Lasthenia conjugens	Contra Costa goldfields	Y	E	N	1B.1	Cismontane woodland; valley and foothill grassland, vernal pools, cismontane woodland. Extirpated from most of its range; extremely endangered; vernal pools, swales, low depressions, in open grassy areas. Elevation 1 to 445 m.	U	Very low potential for habitat to occur near the project area. Habitat is not ideal and highly disturbed. Occurrence in North Antioch thought to be expatriated.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 17 of 19)

Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Plants								
Lathyrus jepsonii var. *jepsonii*	Delta tule pea	Y	N	N	1B.2	Freshwater marsh; freshwater and brackish marshes; often found with *Typha, Aster lentus, Rosa californica, Juncus* spp, *Scirpus*, etc. Usually on marsh and slough edges.	L	Potential to occur in marsh habitat along the San Joaquin River.
Lilaeopsis masonii	Mason's lilaeopsis	Y	N	R	1B.1	Freshwater marsh; freshwater and brackish marshes, riparian scrub; tidal zones, in muddy or silty soil formed through river deposition or river bank erosion. Elevation 0 to 10 m.	L	Potential to occur in marsh habitat along the San Joaquin River.
Limosella subulata	Delta mudwort	Y	N	N	2.1	Brackish marsh; riparian scrub, freshwater marsh, brackish marsh. Probably the rarest of the suite of delta rare plants; usually on mud banks of the delta in marshy or scrubby riparian associations; often with *Lilaeopsis masonii*. Elevation 0 to 3m.	L	Potential to occur in marsh and riparian habitat along the San Joaquin River.
Linderiella occidentalis	California linderiella	N	N	N		Vernal pool; seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions; water in the pools has very low alkalinity, conductivity, and total dissolved solids.	U	No suitable habitat is present near the project area.
Madia radiata	showy madia	Y	N	N	1B.1	Chenopod scrub; valley and foothill grassland, cismontane woodland, chenopod scrub; mostly on adobe clay in grassland or among shrubs. Elevation 25 to 1,125 m.	U	No suitable habitat is present near the project area. Elevation is too low.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 18 of 19)

Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Plants								
Neostapfia colusana	Colusa grass	N	T	E		Vernal pools. Usually in large, or deep vernal pool bottoms; adobe soils. Elevation 5 to 110 m.	U	No suitable habitat. No nearby occurrence records.
Oenothera deltoides ssp. *howellii*	Antioch Dunes evening-primrose	Y	E, X	E		Interior dunes; remnant river bluffs and sand dunes east of Antioch. Elevation 0 to 30 m.	M	Occurrences within 0.2 miles of the project site. Marginal suitable habitat to the west.
Potamogeton zosteriformis	eel-grass pondweed	N	N	N	2.2	Marsh and swamp; marshes and swamps; ponds, lakes, streams. Elevation 0-1,860 m.	U	Potential habitat does occur in the project area, but there are no nearby known occurrences.
Scutellaria galericulata	marsh skullcap	N	N	N	2.2	Lower montane coniferous forest; marshes and swamps, lower montane coniferous forest, meadows and seeps; swamps and wet places. Elevation 0 to 2,100 m.	U	No suitable habitat is present near the project area.
Scutellaria lateriflora	side-flowering skullcap	N	N	N	2.2	Meadow and seep; meadows and seeps, marshes and swamps; wet meadows and marshes. Elevation –3 to 500 m.	L	Potential habitat does occur in the project area, but there are no nearby known occurrences.
Senecio aphanactis	chaparral ragwort	N	N	N	2.2	Cismontane woodland; cismontane woodland, coastal scrub; drying alkaline flats. Elevation 20 to 575 m.	U	No suitable habitat is present near the project area. Elevation is too low.

Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius and Potential for Occurrence
(Page 19 of 19)

Scientific Name	Common Name	Within 2.5 Miles	Fed	CA	CNPS	Habitat	Likelihood	Rationale
Plants								
Symphyotrichum lentum	Suisun Marsh aster	Y	N	N	1B.2	Brackish marsh; marshes and swamps (brackish and freshwater); most often seen along sloughs with Phragmites, Scirpus, blackberry, Typha, etc., Elevation 0 to 3m.	M	Occurrences within 0.2 mile of the project site. Marginal suitable habitat to the west.
Tropidocarpum capparideum	caper-fruited tropidocarpum	N	N	N	1B.1	Valley and foothill grassland; valley and foothill grassland; alkaline clay. Elevation 0 to 455 m.	L	Potential habitat, but not ideal. No reported occurrences near the project area.
Habitats								
Coastal and Valley Freshwater Marsh		N	N	N		Marsh and swamp	L	May occur north of the project area along the San Joaquin River.
Coastal Brackish Marsh		N	N	N		Marsh and swamp	L	May occur north of the project area along the San Joaquin River.
Stabilized Interior Dunes		Y	N	N		Interior dunes	L	Occurs to the west of the project area, approximately 1.5 miles away.

Notes:
[1] Within 2.5 miles column identifies all species with known occurrences within 2.5 miles of the project area: Y = Species recorded within 2.5 miles, N = Species not recorded within 2.5 miles
[2] Federal-list Status: N = Not listed; E = Federally Endangered; T = Federally Threatened; X = Critical habitat located within the same USGS quadrangle (i.e., North Antioch); NMFS = Species protected under the National Marine Fisheries Service
[3] State-list Status: N = Not listed; E = State Endangered; T = State Threatened; R = State Rare
[4] California Native Plant Society Status:
1B = Plants that are rare, threatened, or endangered in California and elsewhere.
2 = Plants that are rare, threatened, or endangered in California, but more common elsewhere.
Suffixes indicating plant species of limited distribution (a watch list)
.1 Seriously endangered in California
.2 Fairly endangered
.3 Not very endangered in California

Table 7.2-2
Plant Species Occurring in the Vicinity of the Project Area
March 2008 Site Visit
(Page 1 of 2)

Scientific Name	Common Name	Habitat				
		Ruderal	Land-scaped	Riparian	Marsh	Grass-land
Anthemis cotula	Dog fennel	X				X
Artemisia californica	California sage					X
Brassica juncea	Bur clover	X				X
Carpbrotus edulis	Common iceplant		X		X	X
Centaurea solstitialis	Star thistle	X				X
Cordaderia jubata	Pampas grass	X	X		X	
Croton californicus	California croton					X
Distichlis spicata	Saltgrass	X			X	
Epilobium brachycarpum	Willow herb	X				
Eucalyptus citriodora	Lemon-scented gum		X			
Eucalyptus globulus	Eucalyptus		X			
Foeniculum vulgare	Fennel	X				X
Hirschfeldia incana	Short pod mustard	X				X
Juncus sp.	Rushes	X			X	
Lactuca serriola	Prickly lettuce	X				
Leymus triticoides	Creeping wildrye		X			X
Lolium multiflorum	Italian rye grass					X
Lotus micranthus	Hill lotus					X
Lupinus albifrons	Silver lupine					X
Malva parviflora	Cheeseweed					X
Medicago polymorpha	Black mustard	X				
Melilotus alba	Sweet white clover	X				X
Phalaris aquatica	Harding grass					X
Phragmites communis	Reeds		X		X	
Pinus sp.	Pine		X			

Table 7.2-2
Plant Species Occurring in the Vicinity of the Project Area
March 2008 Site Visit
(Page 2 of 2)

Scientific Name	Common Name	Habitat				
		Ruderal	Land-scaped	Riparian	Marsh	Grass-land
Polypogon monspeliensis	Rabbit's foot grass					X
Populus balsamifera spp. *trichocarpa*	Cottonwood		X	X		
Quercus agrifolia	Coast live oak		X			X
Robinia pseudoacacia	Black locust		X			
Rubus discolor	Himalayan blackberry	X		X		X
Rubus ursinus	California blackberry	X		X		
Salix lasiolepis	Arroyo willow			X		
Salix lucida ssp. *lasiandra*	Yellow willow			X		
Salsola sp.	Thistle	X				X
Sambucus mexicana	Blue elderberry		X	X		X
Schinus molle	Pepper trees		X			
Scirpus acutus var. *occidentalis*	Common tule				X	
Scirpus californicus	California bulrush				X	
Silybum marianum	Milk thistle	X				
Tanacetum vulgare	Common tansy					X
Typha sp.	Cattails				X	
Vicia villosa ssp. *villosa*	Hairy vetch	X				X

Note:
Scientific names per Hickman, 1993.

Table 7.2-3
Wildlife Species Observed in the Plant Vicinity
March 2008 Site Visit
(Page 1 of 2)

Birds		Date Observed		
Scientific Name	**Common Name**	**1999[1]**	**2005[2]**	**2008**
Aechmophorus occidentalis	Western grebe			X
Anas sp.	Dabbling duck			X
Aphelocoma californica	Western scrub jay		X	X
Aphelocoma coerulescens	Scrub jay	X		
Ardea alba	Great egret			
Buteo jamaicensis	Red-tailed hawk	X	X	
Buteo lineatus	Red-shouldered hawk			
Calypte anna	Anna's hummingbird	X	X	X
Carpodacus mexicanus	House finch	X	X	X
Casmerodius albus	Great egret	X		
Cathartes aura	Turkey vulture	X		X
Charadrius vociferus	Killdeer	X		
Colaptes auratus	Northern flicker	X	X	
Columbia livia	Rock dove	X		
Corvus brachyrhynchos	American crow	X	X	X
Dendroica coronata	Yellow-rumped warbler	X		
Falco sparverius	American kestrel	X		
Fulica americana	American coot			X
Geothlypis trichas	Common yellowthroat	X		
Grus canadensis	Sandhill crane			X
Lanius ludovicianus	Loggerhead shrike	X		
Larus californicus	California gull	X		X
Melospiza melodia	Song sparrow	X		X
Mimus polyglottos	Northern mockingbird	X		X
Phalacrocorax auritus	Double-crested cormorant	X		
Sturnella neglecta	Western meadowlark	X		
Turdus migratorius	American robin			X
Tyrannus verticalis	Western kingbird	X		

Table 7.2-3
Wildlife Species Observed in the Plant Vicinity
March 2008 Site Visit
(Page 2 of 2)

Birds		Date Observed		
Scientific Name	**Common Name**	**1999[1]**	**2005[2]**	**2008**
Zenaida macroura	Mourning dove	X		
Zonotrichia leucophrys	White-crowned sparrow	X		X
Mammals				
Canis latrans	Coyote (tracks only – 2005, 2008)	X	X	X
Lepus californicus	Black-tailed jackrabbit		X	
Microtus californicus	California vole		X	
Procyon lotor	Raccoon (tracks)	X		X
Spermophilus beecheyi	California ground squirrel (burrows only in 1999)	X		X
Urocyon cinereoargenteus	Gray fox (noted by employee in 1999; scat and possible sighting 2008)	X		X

Notes:
[1] Contra Costa Powerplant Unit 8 AFC (Dames & Moore, 2000)
[2] Branchiopod Survey 90-day Report (URS, 2006)

Table 7.2-4
Non-ALS Herbicides Approved for Use by the USFWS
(Page 1 of 2)

Trade Name	Company	Mode of Action(s)
Aim	FMC	PPO inhibitor
Assure II	DuPont	ACCase inhibitor
Banvel	Micro Flo	Synthetic auxin
Basagran	BASF	PSII inhibitors
Blazer	BASF	PPO inhibitor
Boa	Griffin	PSI electron diverter
Boundary	Syngenta	Cell division inhibitor (Chloroacetamide) + PSII inhibitor
Canopy	DuPont	ACCase inhibitor
Clarity	BASF	Synthetic auxin
Cobra	Valent	PPO inhibitor
Command	FMC	Carotenoid biosynthesis inhibitor (bleacher)
Conclude Ultra	BASF	ACCase inhibitor + PPO inhibitor + PSII inhibitor
Conclude Ultra G	BASF	ACCase inhibitor
Conclude Xact	BASF	ACCase inhibitor + PPO inhibitor + PSII inhibitor
Conclude Xtra B	BASF	PPO inhibitor + PSII inhibitor
Conclude Xtra G	BASF	ACCase inhibitor + PSII inhibitor
Credit	Nufarm	EPSPS inhibitor
Dedit	Nufarm	EPSPS inhibitor
Dual II Magnum	Syngenta	Cell division inhibitor
Dual Magnum	Syngenta	Cell division inhibitor
Fusion	Syngenta	2 ACCase inhibitors
Galaxy	BASF	PPO inhibitor + PSII inhibitor
Gauntlet	FMC	PPO inhibitor
Glyfos	Cheminova	EPSPS inhibitor
Glyfos X-TRA	Cheminova	EPSPS inhibitor
Glyphomax	Dow AgroSciences	EPSPS inhibitor
Glyphomax Plus	Dow AgroSciences	EPSPS inhibitor
Lasso	Monsanto	Cell division inhibitor
Lexone	DuPont	PSII inhibitor
Liberty	Aventis	Glutamine synthetase inhibitor

Table 7.2-4
Non-ALS Herbicides Approved for Use by the USFWS
(Page 2 of 2)

Trade Name	Company	Mode of Action(s)
Micro-Tech	Monsanto	Cell division inhibitor
Pendimax	Dow AgroSciences	Microtubule assembly inhibitor (DNA)
Poast	BASF	ACCase inhibitor
Poast Plus	BASF	ACCase inhibitor
Prowl	BASF	Microtubule assembly inhibitor (DNA)
Reflex	Syngenta	PPO inhibitor
Resource	Valent	PPO inhibitor
Roundup Custom	Monsanto	EPSPS inhibitor
Roundup Original	Monsanto	EPSPS inhibitor
Roundup Ultra	Monsanto	EPSPS inhibitor
Roundup Ultra Dry	Monsanto	EPSPS inhibitor
Roundup UltraMax	Monsanto	EPSPS inhibitor
Select	Valent	ACCase inhibitor
Sencor	Bayer	PSII inhibitor
Sonalan	Dow AgroSciences	Microtubule assembly inhibitor (DNA)
Touchdown	Syngenta	EPSPS inhibitor
Ultra Blazer	BASF	PPO inhibitor

Source:
Norsworthy, J. 2001. Resistant Weed Management in Soybeans. Clemson Soybeam Newsletter, vol. 2 (2) and personal communication with Ken Fuller, Biologist, U.S. Fish and Wildlife Service, December 12, 2001.

Note:
non-ALS = non-acetolactate synthase-inhibiting

Table 7.2-5
Applicable Biological Resources Laws, Ordinances, Regulations, and Standards
(Page 1 of 3)

Laws, Ordinances, Regulations, and Standards	Administering Agency	Applicability	Section
Federal			
Endangered Species Act; 16 USC § 1531 et seq.; 50 CFR Parts 17 and 222	U.S. Fish and Wildlife Service; National Marine Fisheries Service	Protection and management of federally listed threatened or endangered species and critical habitats. Does not apply to the project. The project would not reduce the number, restrict the range, or adversely affect the habitat of federally listed threatened or endangered species.	7.2.1.5. 7.2.2.5. 7.2.2.
Section 10(a) Endangered Species Incidental Take Permits	U.S. Fish and Wildlife Service; National Marine Fisheries Service	Permit issued when the "taking" of a species is incidental to the lawful operation of a project. Does not apply to the project. There are no associated intakes from the San Joaquin River that could result in species take and no special-status species are expected to occur within the construction area.	7.2.2. 7.2.2.1.
Migratory Bird Treaty Act; 16 USC § 703-711; 50 CFR Subchapter B	U.S. Fish and Wildlife Service; National Marine Fisheries Service	Protection of migratory birds. The project would not impact migratory birds or migratory bird habitat since no vegetation would be removed. No permit is necessary for the project.	7.2.2.1. 7.2.3. 7.2.2.4.
Rivers and Harbors Act § 10; 33 USC § 401 et seq.	U.S. Army Corps of Engineers	Protects waters of the United States does not apply to the project. No work would take place within the San Joaquin River.	7.2.1.3. 7.2.2.3.
Clean Water Act; 33 USC § 1251-1376; 30 CFR § 330.5(a)(26)	U.S. Army Corps of Engineers	Protection of wetlands and waters of the United States does not apply to the project. The project would not impact wetlands.	7.2.1.3. 7.2.2.3.
Executive Order 11990, Protection of Wetlands (May 24, 1977)	U.S. Army Corps of Engineers	Protection of wetlands. Does not apply to the project. The project would not impact wetlands.	7.2.1.3. 7.2.2.3.

Table 7.2-5
Applicable Biological Resources Laws, Ordinances, Regulations, and Standards
(Page 2 of 3)

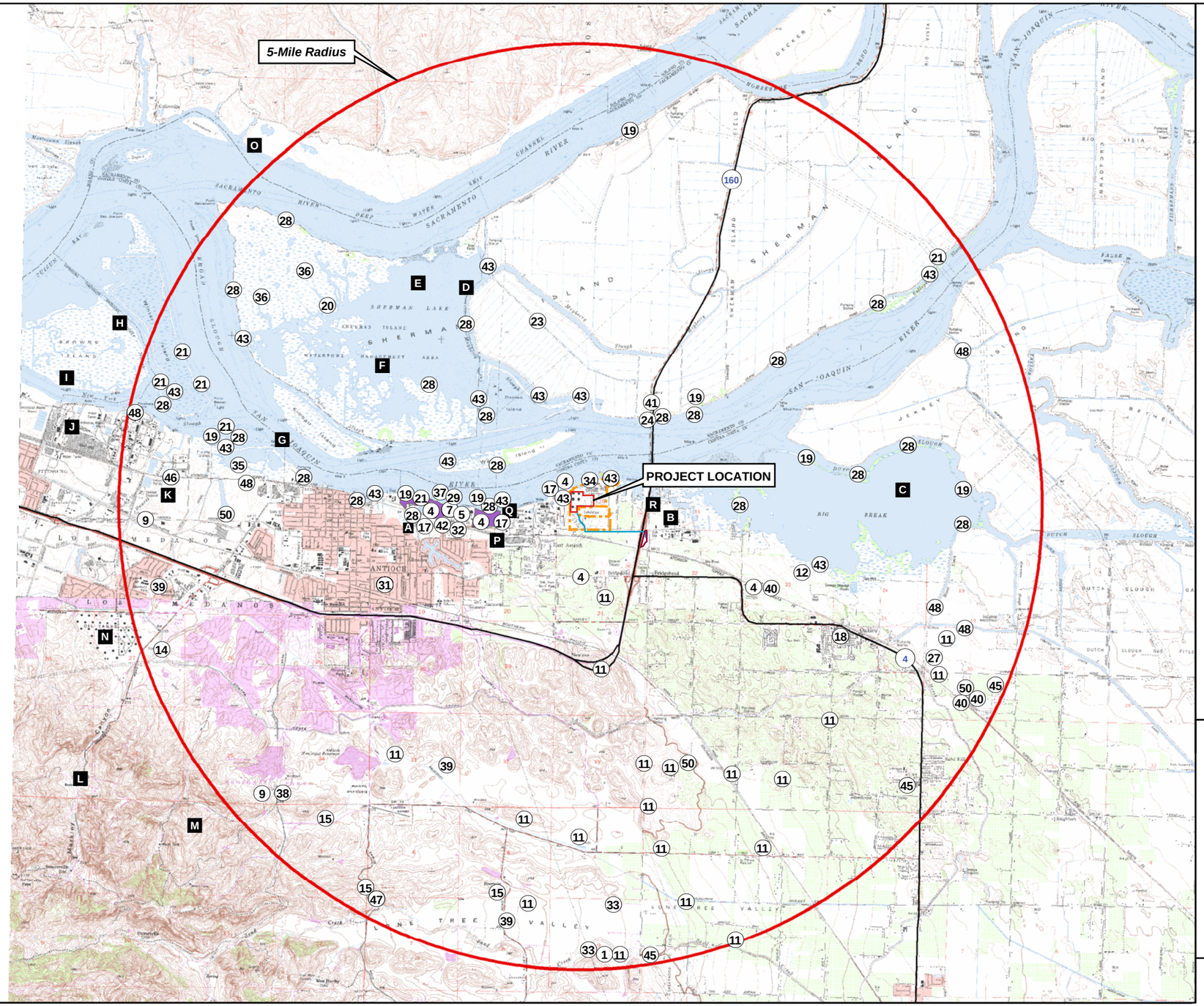
Laws, Ordinances, Regulations, and Standards	Administering Agency	Applicability	Section
State			
California Endangered Species Act of 1984; California Fish & Game Code § 2050-2098	California Department of Fish and Game	Protection and management of species listed as threatened or endangered or designated as candidates for such listing. Does not apply to the project. The project would not reduce the number, restrict the range, or adversely affect the habitat of listed threatened or endangered species or designated as candidates.	7.2.1.5. 7.2.2.5. 7.2.2.
Section 2081 Endangered Species Memorandum of Understanding (MOU)	California Department of Fish and Game	MOU issued when the "taking" of a listed species is incidental to the lawful operation of a project. The MLGS will not affect special-status species. Therefore the MOU does not apply to the project.	7.2.2.1.
Native Plant Protection Act of 1977; California Fish and Game Code § 1900 et seq.	California Department of Fish and Game	Protection of state-designated rare and endangered plants. Does not apply to the project. The project would not impact known state-designated rare and endangered plants or their habitats.	7.2.1.5. 7.2.2.5. 7.2.2.1.
California Species Preservation Act; California Fish and Game Code § 900-903	California Department of Fish and Game	Protection and enhancement of birds, mammals, fish, amphibians, and reptiles of California. The project would not impact sensitive habitats therefore this does not apply and no permit is required.	7.2.1.5. 7.2.2.5. 7.2.2.1.
California Environmental Quality Act (CEQA), PRC § 21000 et seq.	California Energy Commission (for this project)	Protection of the environment within the state of California. CEQA clearance is received through review of the AFC.	7.2.2. 7.2.3. 7.2.4.
California PRC § 25523(a); 20 CCR § 1752, 1752.5, 2300-2309, and Chapter 2, Subchapter 5, article, Appendix B, Part (I)	California Energy Commission (with comment by CDFG)	Protection of rare or endangered species. Does not apply to the project. The project is not expected to impact rare or endangered species.	7.2.1.5. 7.2.2.5. 7.2.2.1.

Table 7.2-5
Applicable Biological Resources Laws, Ordinances, Regulations, and Standards
(Page 3 of 3)

Laws, Ordinances, Regulations, and Standards	Administering Agency	Applicability	Section
Local			
Contra Costa County General Plan (2005) Goal 8-D Protection of ecologically significant lands, wetlands, plants, and wildlife habitat. Goal 8-E Protection of rare, threatened, or endangered species. Net increase in wetland values and functions. Goal 8-F Preservation and restoration of natural characteristics of the Bay-Delta.	Contra Costa County Community Development Department	The project is not expected to conflict with the goals set forth in the General Plan. No variances would be required for the project.	7.2.2.
Contra Costa County Tree Ordinance, Tree Protection and Preservation, Chapter 816-6	Contra Costa County Community Development Department Application and Permit Center	No trees will be removed as a result of this project. No tree removal permit is necessary.	7.2.2.1. 7.2.2.4. 7.2.3.
City of Antioch General Plan (2003) Protection of natural wetlands and riparian habitat (10.4.2.a,b,c,d,i) Protection of oaks and oak woodlands and heritage trees (10.4.2.d,f,g) Limited use of protected areas (10.4.2 e)-N/A Invasive species (10.4.2.h) Protocol special-status species surveys (10.4.2.j.)	City of Antioch Community Development Department, Planning Division	The project is not expected to conflict with the goals set forth in the General Plan. No variances would be required for the project.	7.2.2.

Table 7.2-6
Involved Agencies and Agency Contacts

Issue	Agency	Contact and Telephone
Federal special-status wildlife species; migratory birds	U.S. Fish and Wildlife Service 3310 El Camino Avenue # 120 Sacramento, CA 95821	San Joaquin Valley Branch (916) 414-6630; Listing Program (916) 414-6642
State special-status wildlife species; migratory birds; Fish and Game Code- fully protected wildlife species; Native Plant Protection Act	California Department of Fish and Game Region 2–Sacramento Valley- Central Sierra Region 1701 Nimbus Road, Suite A Rancho Cordova, CA 95670	Office number: (916) 358-2900; Regional Manager - Sandy Morey: (916) 358-2899
Cumulative impacts	Contra Costa County Community Development Department 651 Pine Street, 4th Floor – North Wing, Martinez, CA 94553	Office Number: (925) 335-1290
Biological Resources	California Energy Commission Energy Facilities Siting Division 1516 9th Street Sacramento, CA 95814	Environmental Protection Office – Dale Edwards: (916) 654-5139
Anadromous fish	National Marine Fisheries Service 650 Capitol Mall 6070 Sacramento, CA 95814	Sacramento Area Supervisor – Maria Rea: (916) 930-3600
Federal jurisdictional status of wetlands and waters	U.S. Army Corps of Engineers 1325 J Street Sacramento, CA 95814-2922	Regulatory Division Office: (916) 557-5250



Special-status species

1 American badger
2 Antioch andrenid bee
3 Antioch Dunes anthicid beetle
4 Antioch Dunes evening-primrose
5 Antioch Dunes halcitid bee
6 Antioch efferian robberfly
7 Antioch multilid wasp
8 Antioch specid wasp
9 big tarplant
10 Brewer's western flax
11 burrowing owl
12 California black rail
13 California linderiella
14 California red-legged frog
15 California tiger salamander
16 Contra Costa goldfields
17 Contra Costa wallflower
18 curved-foot hygrotus diving beetle
19 Delta mudwort
20 Delta smelt
21 Delta tule pea
22 diamond-petaled California poppy
23 double-crested cormorant
24 giant garter snake
25 Hoover's cryptantha
26 Hurd's metapogon robberfly
27 loggerhead shrike
28 Mason's lilaeopsis
29 Middlekauff's shieldback katydid
30 Mt. Diablo buckwheat
31 Mt. Diablo manzanita
32 redheaded sphecid wasp
33 round-leaved filaree
34 Sacramento perch
35 salt-marsh harvest mouse
36 saltmarsh common yellowthroat
37 San Joaquin dune beetle
38 San Joaquin kit fox
39 showy madia
40 silvery legless lizard
41 soft bird's-beak
42 Stabilized Interior Dunes
43 Suisun Marsh aster
44 Suisun song sparrow
45 Swainson's hawk
46 vernal pool fairy shrimp
47 vernal pool tadpole shrimp
48 western pond turtle
49 western red bat
50 white-tailed kite

Areas of concern

A Antioch Dunes National Wildlife Refuge
B Antioch Shoreline
C Big Break
D Sherman Island
E Sherman Lake
F Sherman Island Water Flow Management Area
G Kimball Island
H Winter Island
I Browns Island
J New Yourk Slough
K DOW Wetlands Preserve
L Black Diamond Mines Regional Preserve
M Contra Loma Regional Park & Reservoir
N Mouth of Contra Costa Channel
O Montezuma Habitat Enhancement Site
P Sardis Unit of the Antioch Dunes National Wildlife Refuge
Q Antioch Sand Dunes
R Big Break Emergent Marsh Supporting CA Black Rail

Wildlife Refuge

ANTIOCH DUNES NATIONAL WILDLIFE REFUGE

Sources:

USGS Topographic Maps, 7.5 Minute Series:
Antioch North, California, 1978
Antioch South, California, 1980
Jersey Island, California, 1978
Brentwood, California, 1978

CDFG, 2008

LEGEND

Marsh Landing Generating Station Proposed Project Boundary
Contra Costa Power Plant Property Boundary
Bridgehead Lift Station
Water Supply and Discharge Pipelines

N

0 1 2
Scale in Miles

REGIONAL OVERVIEW OF SPECIAL-STATUS SPECIES AND AREAS OF SIGNIFICANT BIOLOGICAL RESOURCES: 5-MILE RADIUS (CNDDB)

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

May 2008
28067344

URS

FIGURE 7.2-1

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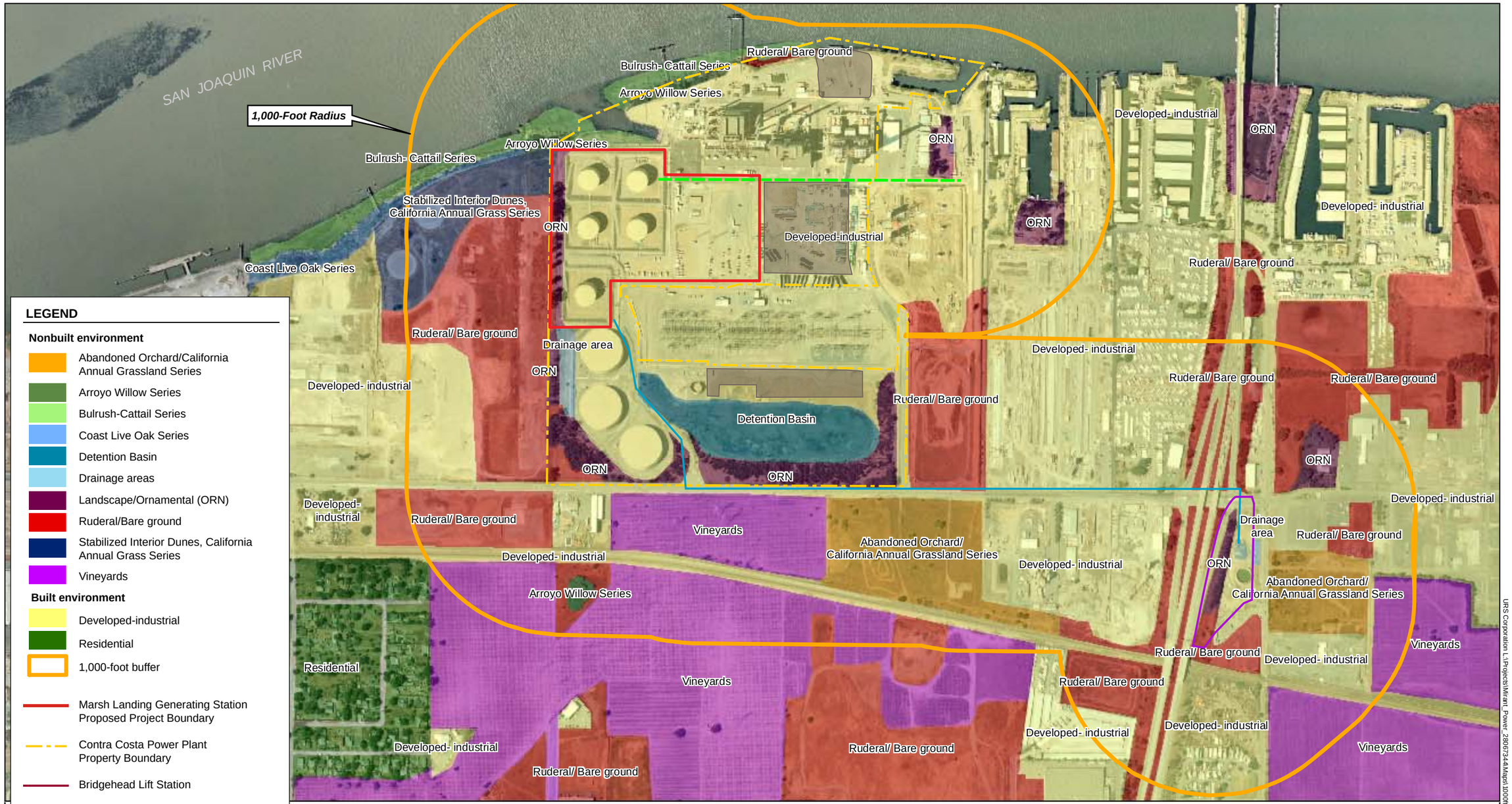

VEGETATION COMMUNITIES WITHIN THE MARSH LANDING GENERATING STATION AND WITHIN A 1,000-FOOT BUFFER AROUND PROPOSED FACILITIES

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

May 2008
28067344

URS

FIGURE 7.2-2

URS Corporation L:\Projects\Mirant_Power_28067344\Maps\1000ft_Vegetation_Map_copy.mxd bjacobsen 04/08/08

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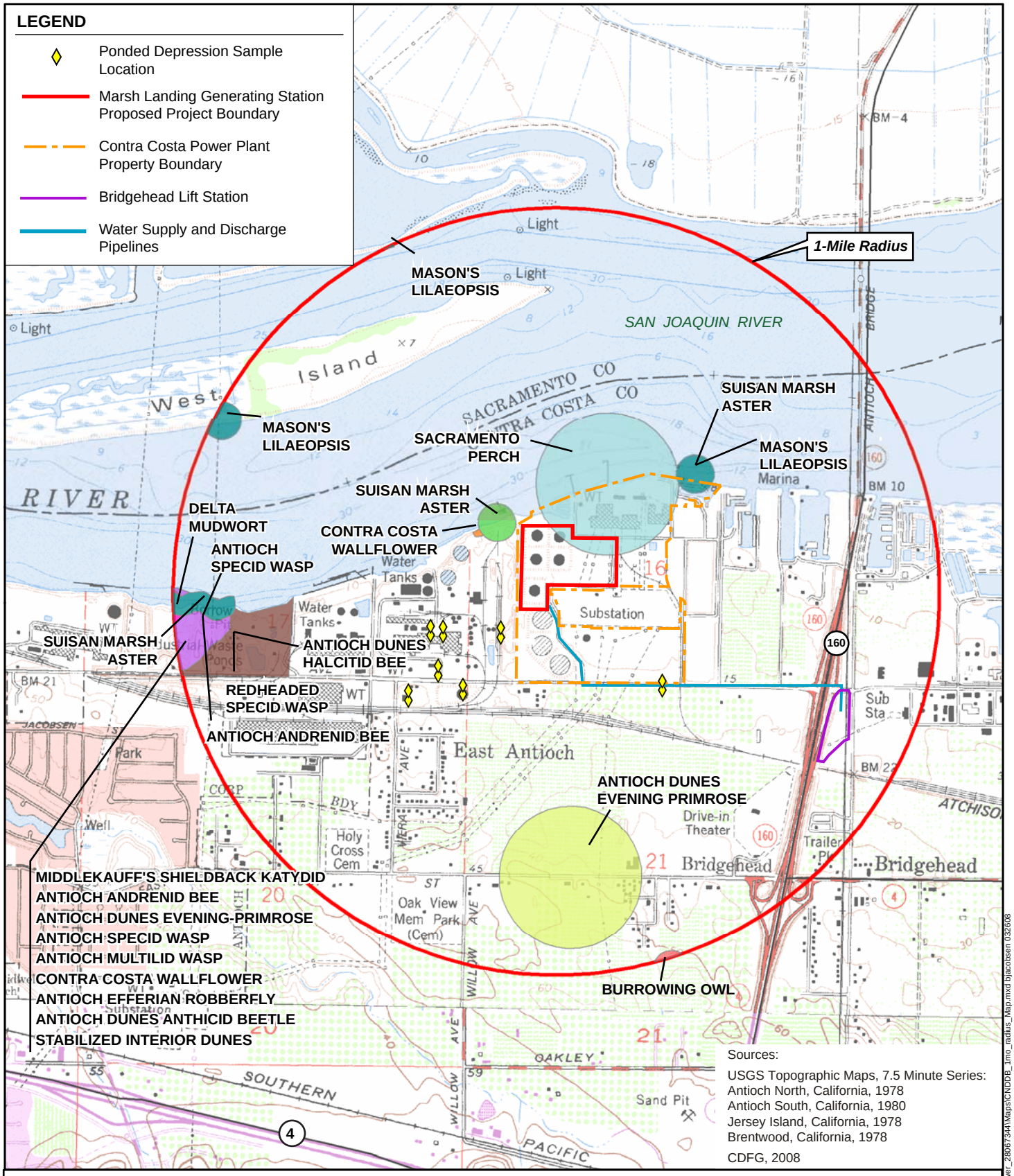

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Scale in Miles

N

LOCAL MAP OF BIOLOGICAL RESOURCES (CNDDB): 1-MILE RADIUS

May 2008
28067344

Marsh Landing Generating Station
Mirant Marsh Landing, LLC
Contra Costa County, California

URS

FIGURE 7.2-3

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