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7.2 BIOLOGICAL RESOURCES

This section describes the biological resources within and near the Willow Pass Generating Station (WPGS) project, 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 potential jurisdictional wetlands and waters of the United States and special-status species potentially occurring in the project vicinity. Section 7.2.2 describes resources that might be adversely affected 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 proposed project on biological resources. Sections 7.2.5 through 7.2.7 provide an overview of the laws and regulations, agency contacts, and required permits as they apply to this project.

The location of the project is shown on Figure 7.2-1. The WPGS will be located within the existing Pittsburg Power Plant (PPP) site, in the City of Pittsburg, within Contra Costa County, California. When completed, the WPGS will occupy approximately 26 acres in the northeastern portion of the approximately 1,000-acre PPP site. The WPGS generating units, natural gas line, transmission lines, screening walls and construction laydown and parking areas are all located within the existing PPP site and adjacent Pacific Gas and Electric Company (PG&E) switchyard project. The only project components extending beyond the boundaries of the PPP site and the adjacent PG&E switchyard are the water supply and wastewater discharge pipelines. Two approximately 5-mile-long pipelines will be constructed to bring water from and return wastewater to Delta Diablo Sanitation District Wastewater Treatment Plant (DDSD WTP), located approximately 3 miles east of the WPGS (see Figure 2.2-1 in Chapter 2), herein referred to as the water pipeline alignment.

The biological evaluation focused on potential impacts associated with the WPGS site and associated onsite linears (i.e., gas and transmission lines), the construction laydown and parking areas within the PPP (which include the screening walls), and the corridor for the water pipeline alignment. For this evaluation, two study areas were defined. The regional study area was defined as the area within 10 miles of the WPGS site and water pipeline alignment. A local study area was also defined, incorporating a 1,000-foot radius around the WPGS site boundary and the potential water pipeline alignment (see Figure 7.2-2). Where appropriate, the 1,000-foot study area was expanded to include biological resources considered to be particularly sensitive, such as the marsh areas west of the WPGS within the PPP site, shown on Figure 7.2-2. In accordance with Application for Certification (AFC) guidelines, local biological resources within a one-mile radius of the WPGS site were also identified (see Figure 7.2-3).

The biological information presented in this section was obtained from the following:

- 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' Honker Bay and Antioch North quadrangles, accessed April 2008 (USFWS, 2008b; Appendix K).
- California Department of Fish and Game (CDFG) Natural Diversity Database (CNDDDB): Special-status species occurrence records from within the USGS 7.5' Honker Bay and Antioch North quadrangles and the surrounding 10 quadrangles, accessed April 2008 (CDFG, 2008; Appendix K).

- California Native Plant Society (CNPS) Rare Plant Database: CNPS-listed plants within the USGS 7.5' Honker Bay and Antioch North quadrangles and the surrounding 10 quadrangles, accessed April 2008 (CNPS, 2008).

Table 7.2-1 summarizes the special-status wildlife, plants, and habitats that potentially occur in the study areas based on these sources. The potential for their occurrence within the project vicinity and the potential for impacts was evaluated based on field survey observations and a review of the project description.

Reconnaissance level surveys to identify existing biological resources, identify special-status species and their potential habitats, and evaluate potential impacts were conducted on May 7, 2008 by URS biologists Jonathan Stead and Katherine Caldwell, and on May 16, 2008, by Jonathan Stead. Biologists surveyed all areas of proposed ground disturbance.

Focused surveys for special-status plant species potentially occurring in the regional and local study areas were conducted by URS biologists Dina Robertson and Katherine Caldwell on May 21 and May 28, 2008. These surveys included the eastern portion of the PPP site and the water pipeline alignment.

A wetland delineation at the one location where impacts to potential jurisdictional wetlands and waters of the U.S. may occur was conducted by URS biologists' Ling He and David Pecora on June 20, 2008. Qualifications of URS biologists who participated in fieldwork are listed below:

Name	Education	Experience	Expertise
David Pecora, Biologist	B.S., Marine Science- Biology, Kutztown University of Pennsylvania	4 years	wildlife biology, aquatic ecology
Dina Robertson, Biologist	M.S., Range Ecology, University of California Berkeley	10 years	plant and wildlife ecology
Jonathan Stead, Senior Ecologist	M.S., Ecology, University of California Davis	10 years	wildlife biology and freshwater ecology
Katherine Caldwell, Biologist	M.S., Natural Resources, North Carolina State University	1 year	vegetation ecology, rare plant surveys, natural environment studies
Ling He, Biologist	M.S., Range Management, University of California, Berkeley	7 years	vegetation ecology, botanical surveys, invasive plants, restoration

7.2.1 AFFECTED ENVIRONMENT

Biological resources within the regional and local study areas were identified based upon reviews of database records and field observations. The following sections describe regional and local biological resources and well as the potential sensitive habitats (e.g., wetlands) and species to occur in the study areas.

7.2.1.1 Regional Study Area

The WPGS site is located in the City of Pittsburg, south of Suisun Bay in northeastern Contra Costa County (see Figure 7.2-1). This area includes urban and mountainous portions of east Contra Costa County as well as islands and waterways of the Bay-Delta (Figure 7.2-1).

The WPGS site is located adjacent to an urban area. North of the WPGS project is the San Joaquin River (New York Slough), Suisun Bay, and associated marshes and wetland habitats. The WPGS project is located at the western end of the Sacramento-San Joaquin Delta, where the delta meets the most upstream portion of San Francisco Bay. This Bay-Delta region is typically considered the most important water body in California (Contra Costa County, 1996). Other important ecological areas present in the regional study area include expansive grassland habitat located in the hilly region south of the City of Pittsburg. Two regional parks, Contra Loma and Black Diamond Mines, and one state park, Mount Diablo, are also located in this area.

A number of other significant ecological areas occur within the regional study area, including several identified in the Contra Costa General Plan (see Figure 7.2-1; Contra Costa County, 2005) and several areas of wetlands known to support special-status species. Significant ecological areas located within the regional study area are described below.

The San Joaquin River and the Delta

The Delta is a 1,150-square-mile, triangular region of land and water at the confluence of the Sacramento and San Joaquin Rivers (U.S. EPA, 1996). The Delta's waterways comprise a matrix of aquatic habitat of approximately 75 square miles, and extend from Suisun Bay, in the west, to the towns of Sacramento and Stockton to the north and east. Major inputs of freshwater to the Delta are from the Sacramento River in the north and the San Joaquin River in the south, while tidal fluctuations bring salt water from Suisun and San Francisco Bays, with which the Delta forms an interconnected estuary system. Immediately north of the WPGS site, the San Joaquin River (partially via New York Slough) flows into Suisun Bay, on its way towards the Pacific Ocean.

Within these waterways, saltwater intrudes from the San Francisco Bay, converging with freshwater from the San Joaquin River, to create brackish conditions. Brackish and freshwater marshes located on the coastal areas of Chipps Island, Browns Island, and along the north coastline of the City of Pittsburg (see Figure 7.2-3) 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. 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 provides habitat for Chinook salmon and steelhead trout, both important sport fish with declining populations (CFR 50, Part 226, 2005). These aquatic habitats are also used by a diversity of invertebrate species, while migrating birds use riparian vegetation, tidal marshes, and open water.

Over the last 150 years, much of the Delta's wetland and upland habitats have been converted for urban or agricultural uses. Most of 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 loss and fragmentation of habitats has resulted in the decline of many wildlife species. Some of these species are now listed as threatened or endangered and are restricted to small areas of remaining habitat.

Suisun Bay and Suisun Marsh

Suisun Bay is located between Chipps Island, at the western end of the Delta, approximately where I-680 crosses the Carquinez Strait (see Figure 7.2-3), and where the Delta meets San Francisco Bay. Freshwater from the Delta and saltwater from the Pacific Ocean mix in Suisun Bay. Suisun Marsh,

located several miles northwest of the WPGS site, across Suisun Bay, is the largest brackish marsh in the United States (U.S. EPA, 1996). The marsh provides important fish habitat as well as nursery areas for juvenile salmon, striped bass, Sacramento splittail, and Delta smelt.

Kirker Creek Watershed

Kirker Creek watershed originates in the foothills of Mount Diablo and encompasses 14.6 square miles, including the eastern half of the City of Pittsburg (see Figure 7.14-1 for sub-basin boundaries). Kirker Creek (see Figure 7.2-2) drains into New York Slough just east of the DDSW WTP through the Los Medanos Wasteway. The proposed water pipeline alignment crosses Kirker Creek twice, and also crosses a small unnamed tributary of Kirker Creek. The existing drainage system for Kirker Creek is largely composed of open channels fed by a combination of street runoff and underground storm drains. Kirker Creek is a seasonally intermittent stream that does not maintain a significant year-round natural flow (KCWPG and CCRCO, 2004). It flows primarily in the rainy season and dries out in the summer, although irrigation and related urban runoff produce some urban dry-weather flow that keeps areas of the creek wet throughout the year. Kirker Creek is described in more detail in Section 7.2.1.4 below.

Kirker Creek does not currently provide suitable habitat temperature for anadromous species such as salmon and steelhead trout (KCWPG and CCRCO, 2004). The water in Kirker Creek is too high for these species, as large sections of the creek lack canopy cover and lie under direct sunlight. Steelhead trout generally do not pass through culverts over 150 feet long, of which lower Kirker Creek has several. The seasonally intermittent flow of the creek also means there is insufficient water to support the fish upstream. Much of the creek is dry during the summer, except for certain segments sustained by irrigation runoff, and thus does not support young fish.

Dow Wetlands Preserve

The Dow Wetlands Preserve was created in 1989. It lies immediately east of the DDSW WTP on the south bank of the San Joaquin River (see Figure 7.2-3). The preserve protects three endangered species, more than 120 species of birds, freshwater and tidal marshes, seasonal wetlands, and grasslands. It is a major stop for migrating birds along the Pacific Flyway.

Brown's and Winter Islands

Brown's Island Regional Preserve and Winter Island are located north of New York Slough at the junction of the Sacramento and San Joaquin Rivers (see Figure 7.2-3). This island complex, over 595 acres, consists of large freshwater and estuarine marshes that provide habitat for sensitive plant and bird species. It is the home of six rare and endangered plant species, and a variety of aquatic birds.

New York Slough

New York Slough (see Figure 7.2-3) supports fish species of commercial and recreational value. These include striped bass, American shad, black bass, catfish, steelhead, and sturgeon (Contra Costa County, 1996). Chinook salmon migrate through the slough, while Sacramento splittail and delta smelt are potential year-round residents.

Contra Costa Canal

At the east end of the water pipeline alignment, to the south, lies the Contra Costa Canal, which diverts Sacramento-San Joaquin Delta water and where white-tailed kite (*Elanus leucurus*) forage in salt marsh habitat (Contra Costa County, 1996). See Figure 7.14-1, which shows the location of the Contra Costa Canal.

Antioch Dunes National Wildlife Area

Three miles east of the east end of the water pipeline alignment (see Figure 7.2-1), the Antioch Dunes National Wildlife Area protects a small remnant of riverine dune habitat. These dunes are managed by the USFWS to restore and provide habitat for rare species. The dunes support at least 14 special-status species including insects, plants, and the California legless lizard (CDFG, 2008).

Black Diamond Mines Regional Preserve

The Black Diamond Mines Regional Preserve is located 3 miles south of the water pipeline alignment. The preserve provides public access to grassland, foothill woodland, mixed evergreen forest, and chaparral habitats. The preserve supports a variety of rare plant species and abundant wildlife.

7.2.1.2 Vegetation Types in the Local Study Area

A variety of upland and aquatic habitats are located within the local study area. These habitats include seasonal wetland, freshwater/brackish marsh, open water, riparian vegetation, grassland/ruderal vegetation, ruderal vegetation/bare ground, landscaped/ornamental; and developed areas (see Figure 7.2-2). Plant species observed during site visits and surveys are shown in Table 7.2-2. Vegetation types are described below.

- **Seasonal Wetland.** Seasonal wetlands occur where water is present for limited duration during the wetter months of the year. In the project vicinity, this includes at least one vernal pool, a retention basin, several seasonally ponded depressions, and some stream drainages. Dominant species of the retention basin and depressions include various rush species (*Scirpus* spp.), narrow leaf cattail (*Typha latifolia*), rabbit's foot grass (*Polypogon monspeliensis*), saltgrass (*Distichlis spicata*), and cudweed (*Gnaphalium* spp.). A vernal pool near the proposed pipeline right-of-way was dominated by folded downingia (*Downingia ornitissima*). The pipeline crosses two seasonal creek drainages. These drainages include many of the species listed above in addition to bristly oxtongue (*Picris echioides*), Oregon ash (*Fraxinus latifolia*), and dock (*Rumex* sp.).
- **Freshwater/Brackish Marsh.** This vegetation type occurs in association with permanent or nearly permanent water in the local study area, largely in association with the San Joaquin River/Suisun Bay and adjacent sloughs. A low-lying drainage channel south of the developed portion of the PPP property supports this vegetation type, where the vegetation is likely maintained by groundwater. Palustrine emergent species often occur, dominated by California bulrush (*Scirpus californicus*), tule (*Scirpus acutus*), common reed (*Phragmites australis*) and narrow leaf cattail. Soils are composed of alluvial silts and clays. Brackish bulrush-cattail vegetation is considered rare by the CDFG.
- **Riparian Vegetation.** Riparian vegetation in the local study area is limited to small patches associated with waterways and retention basins, and generally exists in an immature state due to routine disturbance. Species include cottonwood (*Populus balsamifera* spp. *trichocarpa*), California black walnut (*Juglans californica*), and Oregon ash (*Fraxinus latifolia*).
- **Grassland/Ruderal Vegetation.** Disturbed annual grasslands dominated by European annual grasses and invasive forbs occur in the local study area. 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*), bindweed (*Convolvulus arvensis*), Bermuda grass (*Cynodon dactylon*), oat grasses (*Avena* spp.), and foxtail barley (*Hordeum murinum*), among many others. Many of these species are weedy and non-native. Native shrubs include California sage (*Artemisia californica*), silver lupine (*Lupinus albifrons*), hill lotus (*Lotus micranthus*), and California croton (*Croton californicus*).

- **Ruderal Vegetation/Bare Ground.** Ruderal vegetation and bare ground interspersed with ruderal vegetation is found throughout much of the local study area, in disturbed areas. Herbaceous, non native species such as Bermuda grass, broadleaf filaree (*Erodium botrys*), redstem filaree (*Erodium cicutarium*), prickly lettuce (*Lactuca serriola*), black mustard (*Brassica juncea*), fennel (*Foeniculum vulgare*), broadleaf pepperweed (*Lepidium latifolium*), 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*).
- **Landscaped/Ornamental.** Some portions of the local study area support a landscape that is highly modified for human activities, such as playing fields, or non-native vegetation that has been planted for its ornamental appeal, such as bluegum eucalyptus (*Eucalyptus globulus*), crimson bottlebrush (*Callistemon citrinus*), blackwood acacia (*Acacia melanoxylon*), oleander (*Nerium oleander*), Peruvian peppertree (*Schinus molle*), fan palm (*Washingtonia filifera*), pine (*Pinus* sp.), pittosporum (*Pittosporum* sp.) cypress (*Cupressus* sp.), and fruit trees (*Prunus* sp.).

7.2.1.3 Wildlife in the Project Vicinity

Wildlife species observed during site visits and surveys are shown in Table 7.2-3. These species may use habitats in the immediate vicinity of the WPGS site or within the local and/or regional study areas. The eastern portion of the PPP, within which the WPGS site will be constructed, and the DDSD WTP, generally comprise land used for industrial purposes, such as 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 (*Didelphis virginianus*), house sparrows (*Passer domesticus*), black-tailed jackrabbit (*Lepus californicus*), rock doves (*Columba livia*), and European starlings (*Sturnus vulgaris*).

Grassland and ruderal vegetation in the local study area is highly fragmented and disturbed. This habitat, with scattered ornamental trees, particularly in less-disturbed and larger parcels, provides 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 ruderal areas.

Grasslands are also occupied by a variety of seed-eating and insectivorous migratory and resident birds. Common seed-eating birds include mourning dove (*Zenaidura 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 grasslands.

Piscivorous (i.e., fish eating) birds, wading birds, shorebirds, gulls and terns can be found in the marsh areas, and in the seasonal wetlands at certain times of the year. 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 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 sometimes occur 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 platyrhynchos*), and pied-billed grebe (*Podilymbus podiceps*).

While riparian vegetation is poorly developed in the local study area, common riparian birds may occur in association with riparian vegetation including finch species, American robin (*Turdus migratorius*), song sparrow (*Melospiza melodia*), white crowned sparrow (*Zonotrichia leucophrys*), yellow-headed blackbird (*Xanthocephalus xanthocephalus*), and red-winged blackbird (*Agelaius phoeniceus*).

The Delta, including New York Slough and the San Joaquin River, supports 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.

7.2.1.4 Wetlands and Other Waters of the United States

Several potential jurisdictional wetlands and other waters of the United States are located within the local study area (see Figure 7.2-3). Suisun Bay, a traditionally navigable water, is adjacent to the northern boundary of the WPGS site. Most of the shoreline on the north side of the WPGS site is rip rapped, discouraging development of wetland vegetation. More extensive wetland vegetation has developed in a couple of locations along the shoreline, however. Extensive marshlands lie within the western portion of the PPP site (outside of the WPGS site) and continue further west beyond the PPP site boundaries. These estuarine wetlands are a mix of intertidal emergent wetlands and subtidal wetlands, as well as a cooling channel associated with the existing power plant that is classified as lacustrine habitat (USFWS, 2008a).

Areas within the local study area, near the proposed offsite water pipeline alignment, that may contain jurisdictional wetlands or other waters of the United States, are discussed below.

PPP Site and Area Directly South

Within the PPP site, there is also a large retention basin classified as a seasonally flooded, palustrine wetland (USFWS, 2008a). This retention basin is non-jurisdictional (Bob Smith, USACE, pers. comm.; Appendix K). Just outside of and adjacent to the southeastern boundary of the PPP site lies a drainage channel that supports marsh vegetation. This channel does fall under US Army Corps jurisdiction (Bob Smith, USACE, pers. comm.).

Railroad Switchyard Area

South of the developed portion of the PPP site, within a railroad switchyard, the route crosses a constructed drainage ditch that may be a jurisdictional wetland, depending on the vegetation it supports.

Creek Crossings

Farther east of the railroad switchyard, the route crosses Kirker Creek, a seasonal stream that drains into New York Slough north of the water pipeline alignment (see “Kirker Creek Watershed” in Section 7.2.1.1, Regional Overview).

Within the local study area, Kirker Creek is a highly altered stream. Immediately south of the water pipeline alignment and approximately 2,500 feet west of Loveridge Road, the stream was recently modified and connected to a flood control retention basin (see Figure 7.2-3). Adjacent to the retention basin, the creek enters a long subterranean culvert and then emerges into the recently modified, open channel that carries it underneath the Union Pacific railroad tracks, to the location where the pipeline alignment crosses the creek. As the stream flows north, it enters a culvert under the Pittsburg-Antioch Highway. The channel then turns sharply to the east (Figure 7.2-3) and follows a deep, steep-banked trapezoidal channel along the north side of the Pittsburg-Antioch Highway to Arcy Lane. Historically the creek followed a more natural northward route to New York Slough, but the creek was diverted away from the U.S. Steel (now USS-POSCO) property in the 1940s. The creek now flows into New York Slough through the Los Medanos Wasteway, and at high flows Kirker Creek also drains into New York Slough via Dowest Slough.

The flood control retention basin associated with Kirker Creek, described above, likely contains some wetland vegetation and potential jurisdictional wetlands, just south of the water pipeline alignment and east of the creek (see “flood control retention basin” on Figure 7.2-3). The route also crosses an unnamed tributary of Kirker Creek, approximately 0.3 mile east of the flood control retention basin.

Further east, the water pipeline alignment runs adjacent to the south side of Kirker Creek. Although channelized, this section of Kirker Creek contains potential jurisdictional wetlands and waters of the United States. Kirker Creek is culverted under Arcy Lane immediately before its confluence with the Los Medanos Wasteway, which drains north to New York Slough. The water pipeline alignment route turns north toward the DDSW WTP at Arcy Lane, in the vicinity of these potential jurisdictional wetlands. At high flows, Kirker Creek also spills into Dowest Slough, a seasonal wetland located north of the Pittsburg-Antioch Highway and approximately 2,000 feet west of Arcy Lane.

South Side of Pittsburg-Antioch Highway

The area south of the Pittsburg-Antioch Highway, west of where Arcy Lane meets the highway, contains at least two seasonal wetlands, one of which is a natural vernal pool. Both depressions are potential habitat for several species of fairy shrimp (Figure 7.2-3). One of the seasonal wetlands is in a deep depression adjacent to the Los Medanos Wasteway. This feature may have been artificially created when a natural swale was blocked by the Pittsburg-Antioch Highway. At the western end of this same parcel, also south of the Pittsburg-Antioch Highway, is the natural vernal pool. Other vernal pools may occur on this parcel. Vernal pool wetlands seasonally pond rain water and have the potential to support rare plants and listed branchiopod species. A subsequent site reconnaissance conducted in May 2008 revealed that the vernal pool described above has been filled with soil by an unknown third party.

7.2.1.5 Special-Status Habitats

The CNDDDB identifies eight sensitive habitat types that are known to occur within 10 miles of the project area (see Table 7.2-1). Two of these habitats, serpentine bunchgrass and stabilized interior dunes, do not occur in the study area. Several of the habitats, including alkali meadow, alkali seep, and cismontane alkali marsh, could occur in the local study area; however, the project will not require work within these habitats.

Coastal and valley freshwater marsh and coastal brackish marsh habitat occurs in the study area (Figure 7.2-2, Freshwater/Brackish Marsh). Narrow bands of freshwater and brackish marsh associated with the Suisun Bay/New York Slough are located to the north of the WPGS site. Also, a narrow drainage channel that runs along the south side of the developed portion of the PPP could remain wet year-round with groundwater and supports marsh vegetation. There also is an area of marsh habitat associated with the Los Medanos Wasteway, north of the Pittsburg-Antioch Highway near Arcy Lane.

Northern claypan vernal pool habitat occurs in the local study area, in an undeveloped parcel south of the Pittsburg-Antioch Highway close to Arcy Lane. This habitat has the potential to support rare plants and listed branchiopod species.

7.2.1.6 Special-Status Species

A list of special-status species with potential to occur in the area was compiled based on records maintained by the USFWS, the CNDDDB, and the CNPS. Table 7.2-1 summarizes the special-status plants, animals, and habitats that potentially occur within 10 miles of the WPGS site based on these sources, and their potential for occurrence in the regional and local study area. 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, species tracked in the CNDDDB, and plant species listed by the California Native Plant Society.

Special-Status Plant Species

No special-status plant species were observed during surveys conducted May 21 and 28, 2008. Several special-status plants are known to occur within 1 mile of the WPGS site. No special-status plant species were observed during site reconnaissance or rare plant surveys in May 2008. In general, habitats occurring within 1,000 feet of the WPGS site and water pipeline alignment are poor quality habitats with limited potential to support rare plants (see Figure 7.2-2). Habitats in the area with some potential to support rare plant species include seasonal wetland depressions, grassland areas, and vernal pools. The majority of the grassland habitat identified is highly disturbed and considered poor habitat for most sensitive species. The vegetated, seasonal wetland in the depression south of the Pittsburg-Antioch Highway, west of Los Medanos Wasteway (see Figure 7.2-3) appears densely covered with nonnative species and is also unlikely to support sensitive species. This depression and the entire undeveloped parcel located south of the Pittsburg-Antioch Highway, west of Los Medanos Wasteway, however, were inaccessible to URS biologists because permission to access the property could not be secured prior to the site survey. A vernal pool in this parcel, which is visible from the roadway, and other vernal pools that may be present in this parcel, have potential to support rare plant species.

Special-status plant species with potential to occur within 1,000 feet of the WPGS site and water pipeline alignment are described in more detail below.

- **Alkali milk-vetch** (*Astragalus tener* var. *tener*). Alkali milk-vetch is a CNPS List 1B.2 species. This species is a member of the pea family (Fabaceae) and most often occurs in alkali playas and vernal pools. It may also occur in flats and other low ground areas prone to flooding from 1 to 170 meters in elevation. Most occurrences are reported from Solano County, with two reports from Contra Costa County (CDFG, 2008). This species has potential to occur in un-surveyed vernal pools and seasonal wetland depressions in the undeveloped parcel south of the Pittsburg-Antioch Highway. The species was not observed during the blooming period (March-June) within any surveyed wetlands or drainages.

- **Heartscale** (*Atriplex cordulata*). Heartscale is a CNPS List 1B.2 species. This species is a member of the Chenopod family (Chenopodiaceae) and occurs in chenopod scrub, meadows and seeps, and valley and foothill grasslands. It is most often in sandy, saline, and/or alkaline soils from 1 to 375 meters in elevation. Heartscale blooms from April to October. The species was not observed during the May surveys along the creek crossings or surveyed channels. There is some potential for this species to occur in unsurveyed vernal pools and seasonal wetland depressions in the undeveloped parcel south of the Pittsburg-Antioch Highway. However, its presence is less likely as there are no reported occurrences from Contra Costa County. The few occurrences from nearby Solano County are from higher quality habitat on reserve lands (CDFG, 2008).
- **Brittlescale** (*Atriplex depressa*). Brittlescale is a CNPS List 1B.2 species sharing many characteristics of heartscale. Like heartscale, it grows in chenopod scrub, meadows and seeps, playas, valley and foothill grasslands, and in alkaline vernal pools. It primarily grows on clay soils from 1 to 320 meters in elevation and blooms from May to October (CDFG, 2008). There is some potential for this species to occur in unsurveyed vernal pools and seasonal wetland depressions in the undeveloped parcel south of the Pittsburg-Antioch Highway.
- **San Joaquin spearscale** (*Atriplex joaquiniana*). San Joaquin spearscale is a CNPS List 1B.2 plant similar to brittlescale and heartscale. It grows in chenopod scrub, alkali meadow, valley and foothill grassland. Commonly associated species include saltgrass (*Distichlis spicata*), alkali health (*Frankenia salina*), and other rare plants such as brittlescale. The blooming period for San Joaquin spearscale is April-October (CDFG 2008). There is some potential for this species to occur in unsurveyed vernal pools and seasonal wetland depressions in the undeveloped parcel south of the Pittsburg-Antioch Highway.
- **Big tarplant** (*Blepharizonia plumosa*). Big tarplant is a CNPS List 1B.1 species in the sunflower family (Asteraceae). It is most often found on clay to clay-loam soils in valley and foothill grasslands. These grasslands are often dry, disturbed, or burned. It is commonly associated with weedy species such as wild oats (*Avena* spp.), prickly lettuce (*Lactuca serriola*), turkey mullein (*Eremocarpus setigerus*), and yellow star thistle (*Centaurea solstitialis*). All of these species were observed at the site growing in disturbed areas, primarily along the water pipeline alignment and nearby fields. Two CNDDDB occurrences overlap with the pipeline route, but these are unspecific records, dating back to 1916 and 1937 (CDFG, 2008). Due to the lack of precision associated with these records and the level of prior disturbance in the area, it is unlikely that this species will occur. The May surveys were conducted outside of the blooming period for this species (July-October).
- **Congdon's tarplant** (*Centromadia parryi* ssp. *congdonii*). Congdon's tarplant is a CNPS List 1B.2 in the sunflower family (Asteraceae). It is found in valley and foothill grassland, sometimes with alkaline soils, at elevations of 1 to 230 meters. Congdon's tarplant has been known to occur in disturbed areas with nonnative species such as Italian rye grass (*Lolium multiflorum*) and black mustard (*Brassica nigra*). These associated species have been identified within the local study area growing within disturbed grassland habitat, such as along the water pipeline alignment. Congdon's tarplant blooms May-October (CDFG, 2008).
- **Pappose tarplant** (*Centromadia parryi* ssp. *parryi*). Pappose tarplant is a CNPS List 1B.2 plant in the sunflower family (Asteraceae). It grows in chaparral, coastal

prairie, meadows and seeps, coastal marshes and swamps, and valley and foothill grassland habitats. Grasslands containing pappose tarplant are often vernal mesic with alkaline soils. The species is found at elevations of 2 to 420 meters and blooms from May to November. Most occurrences of this species are from Solano County, and there are no occurrences from Contra Costa County. It is known to occur with weedy species such as Italian ryegrass, broadleaf pepperweed (*Lepidium latifolium*), yellow star thistle, and sweet fennel (*Foeniculum vulgare*) (CNPS, 2008). These associated species occur at the site within ruderal areas and grasslands as well as in seasonal wetland depressions and on channel banks. There is some potential for pappose tarplant to occur in seasonal wetlands, especially those that were not surveyed for rare plants, and in the unsurveyed parcel south of the Pittsburg-Antioch Highway.

- **Dwarf downingia** (*Downingia pusilla*). Dwarf downingia is a CNPS List 2.2 plant species in the bellflower family (Campanulaceae). It occurs in mesic areas of valley and foothill grassland and in vernal pools from 1 to 485 meters. It is associated with typical vernal pool species (e.g., downingia, spikerush, goldfields). There are no reported occurrences from Contra Costa County, with most occurrences to the north and east (Placer, Sonoma, Solano, Stanislaus, and Tehama Counties). Dwarf downingia blooms from March to May (CDFG, 2008). There is potential for this species to occur within vernal pools and seasonal wetlands in the local study area. Some areas containing these habitats were not surveyed during the May plant survey.
- **Carquinez goldenbush** (*Isocoma arguta*). Carquinez goldenbush is included on the CNPS List 1B and is designated as a species of concern by the USFWS. This member of the sunflower family (Asteraceae) occurs only in Contra Costa and Solano Counties. Carquinez goldenbush occurs in valley and foothill grasslands, frequently on alkaline soils from 1 to 20 meters in elevation. Recorded occurrences all occur north of WPGS site in Solano County (CDFG, 2008). There is very low potential for this species to occur at this site due to the lack of nearby occurrences.
- **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 1,000 feet to the northeast of the PPP along the San Joaquin River and in association with Mason's lilaeopsis. There is some potential for this species to occur in marshes associated with Suisun Bay/New York Slough. These areas will not be impacted by the WPGS project.
- **Legenere** (*Legenere limosa*). Legenere is a CNPS List 1B.1 plant in the bellflower family (Campanulaceae). It grows nearly exclusively in vernal pools and is often found in association with other vernal pool species such as button celery (*Eryngium* sp.), smooth goldfields (*Lasthenia glaberrima*), common spikerush (*Eleocharis macrostachya*), and downingia (*Downingia* spp.). Legenere has been identified in vernal pools from 1 to 880 meters in elevation and blooms April to June. Legenere has not been identified in Contra Costa County and has primarily been reported from Solano and Sacramento Counties (CDFG, 2008). There is some potential for this species to occur within vernal pools in the local study area. The potential for its occurrence is low because of the lack of observed associated species and the lack of nearby occurrence reports in Contra Costa County.

- **Mason's lilaepsis** (*Lilaeopsis masonii*). Mason's lilaepsis 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 other things. Some populations are ephemeral, colonizing exposed soils. Mason's lilaepsis has been documented approximately 1,000 feet to the northeast of the PPP along the San Joaquin River (CDFG, 2008). This area will not be impacted by the WPGS project.
- **Bearded popcorn-flower** (*Plagiobothrys hystriculus*). Bearded popcorn flower is a CNPS List 1A species, thought to be extinct in California. It is an annual herb in the borage family (Boraginaceae) known only from Solano County. This species historically is known from mesic valley and foothill grasslands and vernal pools in the Sacramento valley from 0 to 52 meters in elevation. The only recorded occurrence of this species was in 1892 in Solano County (CDFG, 2008). It is not likely that this species would occur in the area, although there is a small chance it could potentially be found within areas of vernal pool habitat. It blooms from April to May.

Special-Status Wildlife Species

Several special-status animal species have potential to occur in the local study area. Western pond turtle (*Clemmys marmorata*) is known to be present in the drainage channel at the southern boundary of the developed portion of the PPP. The Kirker Creek watershed supports the federally listed California red-legged frog, and marginal habitat for this species does occur in the local study area. Depressions that pond water seasonally in the vicinity of the proposed water pipeline alignment provide potentially suitable habitat for federally listed vernal pool branchiopods. Several depressions that pond rainwater during the wet season occur within the local study area. These depressions range from a bare (unvegetated) depression beside the railroad tracks to a natural vernal pool, and they may provide habitat for listed vernal pool branchiopod species.

Five protected and special-status fish species have been reported within estuarine habitat in Suisun Bay and New York Slough, in the vicinity of the WPGS site. This includes all four runs (winter, spring, fall, and late fall) 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 waters north of the WPGS site. There would be no impacts to these waters as the result of this project; therefore, these species are not addressed further.

Special-status species with potential to occur within 1 mile of the project, or that have the potential to migrate through the WPGS site, water pipeline alignment, or the surrounding area, are described in more detail below.

- **American badger** (*Taxidea taxus*) American badger is a state species of concern. They are most abundant in drier, open stages of most shrub, forest, and herbaceous habitats, with friable soils. They dig burrows in the friable soil for cover. They also frequently use old burrows. Badgers are non-migratory. They have a varied carnivorous diet of small mammals (rats, mice, chipmunks, ground squirrels and pocket gophers), some reptiles, insects, earthworms, eggs, birds, and carrion (Zeiner et al., 1988). Badgers mate in summer and early fall, and young are born mostly in March and April, in litters averaging from two to three, but ranging up to five young. While this species is known to occur in more extensive grassland habitat located over 5 miles south of the WPGS site, habitat in the project vicinity is fragmented, disturbed, and much less suitable for badgers. During a reconnaissance survey, however, URS biologists discovered an old,

sun-bleached skeleton beside the railroad tracks in ruderal/grassland habitat along the water pipeline alignment that likely was that of a badger. No sign of badger activity was observed during the surveys. While this skeleton has been there for a number of years, it indicates that badgers historically were present in the local study area. Likely extirpated due to the degree of habitat loss, fragmentation, and disturbance in the project vicinity, badgers and other wildlife may use portions of the study area along railroad-right-of-ways as a dispersal/movement corridor.

- **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. There are several known occurrences from within 5 miles of the WPGS site and water pipeline alignment, mostly from habitat more intact than that in the local study area (CDFG, 2008). No burrowing owls or burrowing owl burrows were observed in the study area during field visits, although all areas with potentially suitable habitat were walked. The habitat present in ruderal areas along portions of the water pipeline alignment has been disturbed previously and is highly fragmented, but burrowing owls do sometimes occupy burrows in marginal habitat of this nature.
- **California least tern** (*Sterna antillarum browni*). The California least tern is listed as endangered under federal and state Endangered Species Acts, and is also state fully protected. Least terns arrive at nest territories in Northern California in early May and usually depart by mid-October. Least terns feed in relatively shallow, near-shore waters and coastal freshwater ponds, channels, and lakes. Prey taken in California includes anchovy, silversides (*Atherinops* sp.), and shiner surfperch (Zeiner et al., 1988). Least terns nest on barren to sparsely vegetated sites usually associated with sandy to gravelly substrate. In the Bay, least terns most commonly nest on flat, artificial terrain such as bay fill sites and abandoned salt ponds. Sites colonized by nesting least terns are relatively free of human or predatory disturbance. The former Alameda Naval Air Station and the PPP are the only known Bay Area nesting sites still producing fledglings. Brackish marshlands within and west of the PPP serve as an important breeding ground for the California least tern (KCWPG and CCRCD, 2004). The least tern has been known to have nested on these areas since 1984. This is the most inland nesting site observed for this species. These marshes will not be impacted by the project.
- **California red-legged frog** (*Rana aurora draytonii*). California red-legged frog is a federally listed threatened species. It occurred historically in coastal mountains from Marin County south to northern Baja California, and along the floor and foothills of the Central Valley from about Shasta County south to Kern County. California red-legged frogs depend heavily on aquatic habitats, such as creeks, streams, and ponds. Although they may move between breeding pools and foraging areas, they rarely leave the dense cover of the riparian corridor. California red-legged frogs breed from November to March when eggs are attached to emergent vegetation. Eggs hatch within six to fourteen days, and metamorphosis generally occurs between July and September. Red-legged frogs occur in upstream portions of Kirker Creek watershed. The water pipeline alignment crosses Kirker Creek and an unnamed tributary of Kirker Creek along the railroad corridor south of the Pittsburg-Antioch Highway, and also crosses Kirker Creek at Arcy Lane, near the DDSW WTP. The habitat at both crossings along the railroad corridor consists of shallow waters confined in a narrow channel between steep banks. The unnamed tributary of Kirker Creek largely lacks wetland and riparian vegetation,

while the Kirker Creek channel does support cattails. In May 2008 both channels were full of mosquitofish (*Gambusia affinis*). Surveys were conducted for California red-legged frog on both channels approximately 0.4 mile upstream of the water pipeline in 2003 (Owen-Parsons, 2004). Bullfrogs were detected, but red-legged frogs were not. Farther downstream, where the pipeline route crosses Kirker Creek at Arcy Lane, the creek is no longer in its natural channel. At this location, the creek flows through a deep flood control channel with a wide, flat bottom. These highly modified channels (see Section 7.2.1.1, Kirker Creek Watershed) provide only marginally suitable habitat for California red-legged frog, due to their highly confined, fragmented nature, the presence of non-native fishes, and the likely abundance of predators such as domestic cats and raccoons. The presence of suitable, occupied habitat farther up in the watershed, however, increases the likelihood that a stray or dispersing frog may occasionally be present in Kirker Creek or its unnamed tributary, within or near the water pipeline alignment.

- **California tiger salamander** (*Ambystoma californiense*). The California tiger salamander is a federally listed threatened species. The documented range of the California 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 in order to allow salamanders to complete their metamorphosis. Tiger salamanders aestivate in the summer in underground burrows, generally excavated by ground squirrels. California tiger salamanders are known from the hills south of the local study area. The closest known occurrence is approximately 2 miles away. The freshwater habitat in the study area lacks fish but it is not suitable for tiger salamander breeding because it does not hold water for long enough periods of time to allow completion of metamorphosis. Aestivating tiger salamanders are not likely to occur in the local study area because there are no known or potential breeding sites present.
- **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. The closest known occurrence is a historic occurrence from the San Joaquin River, several miles east of the water pipeline route (CDFG, 2008). The closest recently documented occurrences are from the vicinity of Brannan Island and Webb Tract, several miles northeast of the water pipeline route. These three occurrences represent the westernmost known occurrences of giant garter snake in the Delta, so the WPGS project is at or outside of the western edge of this species' range. Surveys were conducted for giant garter snake on Kirker Creek and its unnamed tributary, approximately 0.4 mile upstream of the water pipeline route, in 2003 and no giant garter snakes were detected (Owen-Parsons, 2004). Due to the location of the WPGS project at the edge of the species'

range, the distance to the closest known occurrences, and the fragmented nature of habitats, this species is not expected to occur in the local study area.

- **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, tidal flats, rivers, and streams are used as foraging areas. No nest sites are reported within Contra Costa County or within 5 miles of the WPGS. However, there are numerous occurrences from nearby Sacramento, Solano, and San Joaquin Counties. Potential nest sites could include the tall ornamental trees at the PPP and trees scattered along the water pipeline alignment.
- **Insects Endemic to the Antioch Dunes.** Several federal species of concern may occur in the stabilized interior dunes approximately 2 to 3 miles east of the WPGS project. 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 antiochensis*), and Sacramento anthicid beetle (*Anthiscus sacramento*). Many of these species are known only from the Antioch Dunes National Wildlife Refuge; many have not been seen for many 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, would not be expected to occur in the local study area.
- **Loggerhead shrike** (*Lanius ludovicianus*). The loggerhead shrike is a federal and California species of concern. This species is found in lowlands and foothills throughout California, especially in open habitats with scattered shrubs, trees, utility lines, or other perches (Zeiner et al., 1988). Loggerhead shrikes rarely occur in heavily urbanized areas, but are often found in open agricultural areas. Although only one occurrence of loggerhead shrike is documented from within 10 miles of the WPGS project, this species may forage in habitats in the local study area in grassland and ruderal vegetation where shrubs and trees are present.
- **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. Most undeveloped habitats in the local study area have some potential to support breeding migratory birds.
- **Saltmarsh common yellowthroat** (*Geothlypis trichas sinuosa*). The saltmarsh common yellowthroat is a California species of special concern that inhabits the fresh and salt water 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, just north of the City of Pittsburg. Marsh habitats associated with New York Slough/Suisun Bay provide suitable habitat. Vegetation in the drainage channel south of the developed portion of the PPP site is of the type preferred by this species, but this narrow strip of habitat is isolated from the nearby, more contiguous habitat making it just marginally suitable.

- **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. Occurrences of San Joaquin pocket mice are documented several miles south of the WPGS project at Black Diamond Regional Preserve (CDFG, 2008). Within the WPGS site and water pipeline alignment, grassland habitats are highly disturbed, ruderal, and occupied by California ground squirrels. Larger patches of grassland habitat that are located outside the WPGS project may be suitable to support this species.
- **Salt marsh harvest mouse** (*Reithrodontomys raviventris*) is listed as both a federal and California state endangered species in addition to being a CDFG fully protected species. Salt marsh harvest mouse are endemic to the salt marshes and adjacent diked wetlands of San Francisco Bay. Salt marsh harvest mouse are dependent on the thick, perennial cover of marshes. Their preferred habitats are the middle and upper portions of tidal marshes where pickleweed (*Salicornia virginica*) grows. Salt marsh harvest mouse is known to occur northeast of the DDSW WTP, along the San Joaquin River in the Dow Wetlands Preserve, and in extensive marshlands that begin at the west side of the PPP site and extend further west of the PPP site boundary. Within the WPGS site there is no habitat suitable for this species.
- **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. An unspecified historic occurrence was recorded from the City of Pittsburg. Marsh habitats associated with New York Slough/Suisun Bay provide suitable habitat. Vegetation in the drainage channel south of the developed portion of the PPP is of the type preferred by this species, but this narrow strip of habitat is isolated from the nearby, more contiguous habitat making it just marginally suitable.
- **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). Although there are no documented occurrences from within 5 miles of the WPGS project, a number of occurrences are known from between 5 and 10 miles of the project. Scattered trees bordering open grasslands and ruderal vegetation in the WPGS project vicinity provide suitable habitat for this species.
- **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 WPGS project; however, there are a number of occurrences from nearby Sacramento and San Joaquin Counties. Tricolored blackbirds could use marsh habitat along New York Slough/San Joaquin River, as well as

marshlands east of the WPGS project at Dow Wetlands Preserve. The drainage channel south of the developed portion of the PPP may provide marginally suitable habitat.

- **Vernal Pool Branchiopods.** Vernal pool fairy shrimp (*Branchinecta lynchi*), a federally listed threatened species, vernal pool tadpole shrimp (*Lepidurus packardi*), a federally listed endangered species, California linderiella (*Linderiella occidentalis*), and midvalley fairy shrimp (*Branchinecta mesovallensis*) are collectively referred to here as vernal pool branchiopods. These California endemic species grow in temporary pools that fill with rainwater for at least 2 weeks, 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). Potential habitat exists for listed vernal pool branchiopods in shallow depressions that pond water during the wet season (October to April). In particular, three seasonal pools along the water pipeline alignment have been identified as potentially suitable habitat for vernal pool branchiopods. These pools, from east to west, include (1) a vegetated, seasonally ponded depression on the south side of the Pittsburg Antioch Highway, approximately opposite Arcy Lane, (2) a natural vernal pool adjacent to the south side of the Pittsburg Antioch Highway, approximately 1,800 feet east of where the Highway converges with the railroad line, and (3) an unvegetated, seasonally ponded depression on the south side of the Union Pacific railroad tracks, approximately 1,750 feet west of Loveridge Road. Vernal pool and California linderiella fairy shrimp are known from similar habitats, including disturbed pools along railroad rights-of-way, from within 1 mile of the water pipeline alignment. Vernal pool tadpole shrimp are known from one location within 5 miles, a fairly pristine pool in grassland habitat.
- **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, 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° Celsius (59° Fahrenheit), from October or November until spring. Mating typically begins in April or May, but could occur year-round (Jennings and Hayes, 1994). A single western pond turtle was observed near the pump station in the drainage channel immediately south of the developed portion of the PPP site, west of Mirant's access road, in May 2007 (WBC and NEC, 2008). Suitable habitat is present in the storm water conveyance channel west of the Mirant access road, adjacent to Willow Creek. The drainage channel east of Mirant's access road does not provide suitable habitat for western pond turtles because it is entirely choked with vegetation and lacks open-water habitat. There is some potential for pond turtles to occur in Kirker Creek and its unnamed tributary, although it is unlikely that these waterways in the project vicinity provide habitat capable of sustaining a population of pond turtles.
- **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 ground. 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 east of the WPGS project, and they are known from several Delta islands. While habitat in the local study area is not ideal, western red bats could roost in trees and forage over open grassland and ruderal areas.

- **White-tailed kite** (*Elanus laeocurus*). 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. In 1985 a pair nested approximately 0.5 mile east of the eastern end of the water pipeline alignment, and potential nest trees are scattered throughout the study area.

7.2.2 ENVIRONMENTAL CONSEQUENCES

This section evaluates potential direct and indirect impacts during construction, operation, and maintenance phases of the project. The following criteria were used to determine whether project-related impacts are significant. Impacts would be considered significant if the proposed 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 WPGS project, including new generation facilities, parking and laydown areas, screening walls and gas and transmission linear facilities, will all be sited within the developed, easternmost, portion of the existing PPP boundary or adjacent PG&E switchyard, with the exception of the water supply and discharge pipelines. Within the eastern portion of the PPP site and PG&E switchyard, most surfaces have been paved or developed, and the majority of the natural vegetation has been removed or modified. Three areas within the PPP site are designated for construction laydown and parking (see Figure 2.7-5 in Chapter 2): an area along the eastern edge of the PPP site, an area just north of the WPGS site, and an area at the southwest portion of the PG&E switchyard property. These areas are a mix of pavement, bare ground, and some sparse ruderal vegetation. Trees present along the eastern boundary of the PPP will not be disturbed.

Construction of the WPGS would take place in the northeastern portion of the PPP site. This section of the property currently contains fuel storage tanks, an abandoned surface impoundment, administrative buildings, asphalt parking areas, and retired generating Units 1 through 4. No vegetation removal, other than some ruderal vegetation within the developed areas of the existing plant, is anticipated as part of the WPGS construction. Although the WPGS site boundary extends to the water line, the 2.5-acre northernmost portion of the WPGS site will not be disturbed; this area was retained as part of the WPGS to retain riparian

water rights for the parcel. The only trees and shrubs that will be removed from the site during construction are those included in limited landscaping around the existing administrative building. A large retention basin with some wetland vegetation present at the PPP site will also be avoided during construction.

In addition to the new generation facilities, gas and transmission lines will need to be installed or relocated. A natural gas pipeline will connect the new generation facility with an existing gas pipeline. Transmission lines will be installed from the WPGS to the existing switchyard. The new gas pipeline and transmission lines will be entirely within the footprint of the existing PPP site and PG&E switchyard property.

The project also includes an offsite component that extends beyond both the WPGS and PPP site boundaries consisting of 5-mile-long water supply and water discharge pipelines that will connect the WPGS site to the DDS D WTP. Three miles of the five-mile-long route currently contains an unused fuel oil pipeline owned by Mirant Delta LLC, which historically was used to convey oil between the Contra Costa Power Plant and the PPP. The existing pipeline is 10.75 inches in diameter, is now out of service, and will be replaced by the new water pipelines. Figure 2.2-1 in Chapter 2 shows the portion of the proposed pipelines that will be installed within the route of the existing unused fuel oil pipeline (identified on the figure as “Mirant Existing Easement”) versus the portion of the water pipelines that will be installed outside of this area (identified on the figure as “New Easement”).

The water pipeline alignment runs through the PPP site, crosses under Willow Pass Road/West 10th Street and Burlington Northern Santa Fe Railroad, then turns east and runs adjacent to the Union Pacific Railroad. The alignment crosses beneath railroad tracks in several locations (consistent with the location of the existing unused fuel oil pipeline). The east section of the water pipeline alignment crosses under Pittsburg-Antioch Highway, runs along the north side of the Highway, and continues north on Arcy Lane to the DDS D WTP.

The water pipelines will be located underground, except at the intersection of Harbor Street, where the pipeline will cross overhead adjacent to the railroad tracks, consistent with the location of the existing unused fuel oil pipeline.

These water pipelines will connect directly to existing facilities located at the DDS D WTP. This connection will be mechanical in nature, occur within the existing footprint of the DDS D WTP, and not require additional land disturbance outside of the installation of the supply and discharge pipelines from the WPGS to the DDS D WTP.

The construction of the water pipelines will require a construction disturbance corridor, including laydown and staging, of a maximum width of 15 feet. This will be reduced to a minimum of 5 feet to avoid environmental resources or minimize traffic disruption during construction adjacent to the Pittsburg-Antioch Highway, where feasible. The pipelines will be laid at an average depth of 5 feet. The offsite water pipelines will be constructed primarily using a cut-and-cover trenching method, except where the pipelines cross environmentally sensitive areas, such as creeks, or cross under existing railroad tracks. In these areas, to minimize disturbance, a jack-and-bore method will be used. This construction method, also known as auger boring, allows the pipeline to be constructed beneath streams, roads, railway tracks, and other obstacles without causing surface disturbance. As the method requires the excavation of an entrance and exit pit at each end of the boring area, these would be located at least 100 feet of the stream channel to avoid disturbance to the stream bed or banks. Spoils will be reused as fill wherever possible.

The one instance where the jack-and-bore method will not be used in a creek area is where the water pipeline alignment will turn north from Pittsburg-Antioch Highway on Arcy Lane. Due to the large elevation difference between grade level and the excavated channel of Kirker Creek at this location,

installation of the pipeline under the creek via jack-and-bore (or other methods that would not require open trenching) is not feasible. At this location, the pipelines will be installed and buried under the creek through a 4-foot-wide open-cut trench (see below under Wetlands and Non-Wetland Waters of the United States for additional discussion).

Construction of the WPGS project would result in temporary noise impacts to habitat surrounding the construction site during demolition and construction, including along the water pipeline alignment. During the excavation activities, additional traffic-related noise is anticipated, particularly in association with heavy-duty trucks transporting wastes for offsite disposal. Equipment used during construction will also generate noise at the site. 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, and along the water pipeline alignment, 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.

Installation of the water supply and discharge lines could result in temporary disturbance of habitats between the PPP and the DDS D WTP. Within the water line corridor, much of the ruderal and wetland habitat has been disturbed previously, but still provides habitat for a variety of plant and animal species. The anticipated width of the area that will be temporarily disturbed during construction is 15 feet. While much of this disturbance will occur within existing roadway and railroad rights-of way, ruderal grassland vegetation and seasonal wetlands will also be disturbed. Potential impacts to these habitats are discussed further below.

Wetlands and Non-Wetland Waters of the United States

Construction of the water pipeline alignment could result in direct temporary impacts to potential jurisdictional wetlands or other waters of the United States. These impacts are expected to occur only at one point along Kirker Creek, where the water pipeline alignment would turn north from Pittsburg-Antioch Highway and continue along Arcy Lane (see Figure 7.2-3). Due to the large elevation difference between grade level and the excavated channel at this location, installation of the pipeline under the creek via jack-and-bore or other methods that would not require open trenching is not feasible. The pipeline would be installed and buried under the creek through a 4 foot-wide open-cut trench. Installation would result in temporary disturbance to a 15-foot-wide swath of potential jurisdictional wetlands where the pipelines would cross perpendicular to the creek. Potential jurisdictional wetlands and waters of the U.S. were delineated at this location on June 20, 2008 (wetland delineation datasheets provided in Appendix K). The delineation will be submitted to the USACE for verification. It is estimated that construction will temporarily impact less than 0.03 acre of seasonal wetland. If construction will result in temporary disturbance to an area greater than 0.1 acre of jurisdictional wetlands and/or waters of the U.S., or if endangered species consultation is required, the Applicant will submit a pre-construction notification to the U.S. Army Corps of Engineers. The applicant will also obtain a Streambed Alteration Agreement from the California Department of Fish and Game, and obtain a water quality certification from the Regional Water Quality Control Board. Permits required for this work are addressed further in Section 7.2.7, and in Table 7.2-6.

Temporary disturbance to potentially jurisdictional wetlands would be potentially significant and the impacts would be fully mitigated in accordance with U.S. Army Corps of Engineers (USACE) “no net loss” policy and the conditions of a Nationwide or Individual Permit authorized by the USACE. Implementation of the measures proposed in Section 7.2.4 would reduce these potential impacts to a less-than-significant level.

Direct impacts would be avoided at several other locations where the water line would cross potential jurisdictional wetlands by installing the line underneath the wetlands using jack-and-bore type technique that does not require an open-cut trench. The creek or channel crossings where such techniques would be used include the following (which are also shown on Figure 7.2-3):

- A drainage channel immediately south of the developed portion of the existing PPP site,
- A drainage channel in the railroad switchyard, and
- Kirker Creek and an unnamed tributary of Kirker Creek (see Figure 7.2-3), between the Pittsburg-Antioch Highway and the Union Pacific Railroad tracks.

Although direct impacts to wetlands at these locations will be avoided, indirect impacts could occur at these creek crossings if construction causes sediment or construction debris to enter the wetlands or aquatic habitat. Indirect impacts could also occur along Kirker Creek, where both the creek and pipeline parallel the northern edge of the Pittsburg-Antioch Highway. Along this section of the route, the pipeline would be installed in the highway and/or along the north side of the highway, close to the south side of Kirker Creek. Wetlands that will be avoided have not been formally delineated. Boundaries of these wetlands, however, were easily identified during reconnaissance level surveys and from aerial photography because the wetlands occur within defined channels or ditches. Avoidance measures i.e., Best Management Practices (BMPs) will be implemented to prevent sediment and construction debris from entering these wetlands.

Vernal Pools

Construction of the water supply and discharge pipelines will occur near northern claypan vernal pool habitat that occurs in an undeveloped parcel south of the Pittsburg-Antioch Highway. Trenching through vernal pool habitat could damage the claypan soil layer, permanently altering the hydrology of one or more vernal pools near the water pipeline alignment. Heavy equipment or vehicles operated within the vernal pool habitat could also have a damaging effect. The current alignment is located on the north side of the Pittsburg-Antioch Highway, at sufficient distance from this area of habitat such that impacts to the vernal pool habitat are not anticipated. Therefore, potential impacts to vernal pools from the WPGS would be less than significant.

Special-Status Species

Several special status plant or animal species may occur in the regional and local study areas that could be affected by the project, and are discussed further below.

Special-Status Plant Species

Several special-status plant species typical of vernal pools may occur in the vegetated, seasonally ponded depression or the natural vernal pool that occur in an undeveloped parcel south of the Pittsburg-Antioch Highway, along the water pipeline alignment:

- Alkali milk-vetch (*Astragalus tener* var. *tener*)
- Heartscale (*Atriplex cordulata*)
- Brittscale (*Atriplex depressa*)
- San Joaquin spearscale (*Atriplex joaquiniana*)
- Pappose tarplant (*Centromadia parryi* ssp. *parryi*)
- Dwarf downingia (*Downingia pusilla*)
- Legenere (*Legenere limosa*)

- Bearded popcorn-flower (*Plagiobothrys hystriculus*)

Trenching in or near the vegetated, seasonally ponded depression or the vernal pool that occur south of the water pipeline alignment could alter the hydrology of the wetlands, rendering them unsuitable for these species. Deposition of earthen fill in or near the depressions, such that their hydrology is substantially altered, could also render the habitat unsuitable for these plants. Such impacts would be potentially significant. In order to reduce these impacts to less-than-significant, the pipeline route will be aligned on the north side of the Pittsburg-Antioch Highway, to avoid trenching or placement of fill in the vegetated, seasonally ponded depression and natural vernal pool that occur south of the roadway. Routing of the water pipeline in this manner, combined with mitigation measures described in Section 7.2.4, will eliminate potential impacts to these species.

Ruderal/grassland habitat along the water pipeline alignment may support several special-status plant species. These plants include:

- Big tarplant (*Blepharizonia plumosa*)
- Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*)
- Pappose tarplant (*Centromadia parryi* ssp. *parryi*)
- Carquinez goldenbush (*Isocoma arguta*)

If populations of these plants occur in areas subject to temporary disturbance during water pipeline installation, then those populations could be extirpated. Such impacts would be potentially significant. In order to reduce these potential impacts to less than significant, vegetation disturbance and removal will be kept to a minimum. Implementation of mitigation measures described in Section 7.2.4 will reduce potential impacts to these species to less than significant. Seasonal wetlands that occur in association with creeks, channels and drainage ditches may support pappose tarplant (*Centromadia parryi* ssp. *parryi*). If populations of this species are temporarily disturbed during installation of the water supply and discharge pipelines, they could be extirpated. Such impacts would be potentially significant. In order to reduce these impacts to less than significant, the pipeline route will be aligned to avoid disturbance to seasonal wetlands at most locations. Avoidance and minimization measures described in Section 7.2.4 will reduce potential impacts to less than significant.

The only tree removal anticipated for construction activities within the PPP site is removal of landscaping associated with the existing administrative building, which will be demolished during construction of the WPGS. Tree removal at select locations along the water pipeline alignment could occur where it is not possible to relocate the pipelines in order to avoid trees that may be present in the right-of-way. Tree removal could be a permanent impact, particularly if the area from which the tree is removed lacks other mature trees that would serve as a seed source for regeneration.

Impacts to protected trees would be potentially significant. In order to reduce these impacts to less-than-significant levels, the pipeline route will be aligned to avoid removal of all trees, particularly "mature trees" as defined by the City of Pittsburg (trees having a diameter of at least 4 inches measured four feet above existing grade). Should avoidance not be possible due to engineering constraints, impacts will be fully mitigated using mitigation measures described in Section 7.2.4.

Special-Status Animal Species

Special-status animal species that may nest, breed, forage, or migrate through areas adjacent to the project site could be impacted by construction noise. Indirect take of special-status species could occur if species are disturbed by construction noise during the breeding or nesting season. Habitat disturbance during construction could result in take of special-status wildlife species that could be present in, or move through, the construction area. Specific impacts are described below.

- California red-legged frogs may sometimes be present in Kirker Creek and its unnamed tributary. If red-legged frogs are present during construction at these locations, and if construction involves disturbance to aquatic or wetland habitats, then excavation and operation of heavy equipment could result in incidental take of this species. Mitigation measures proposed (BIO-10) will minimize the potential for incidental take and maintain impacts at a less than significant level.
- Vernal pool branchiopods may occupy vernal pools occurring along the water pipeline alignment (described in Section 7.2.1.4), and without protocol level surveys their presence must be assumed. Excavation within these habitats could result in altered hydrology rendering the habitat unsuitable. Excavation within the hydrological drainage area of the habitat, if within 250 feet of the habitat, is usually considered an impact by the USFWS. Mitigation measures proposed (BIO-9) would minimize the potential for such impacts to a less than significant level.
- Western pond turtles may sometimes be present in the drainage channel south of the developed portion of the PPP, west of Mirant's access road, as well as in Kirker Creek and its tributary. If pond turtles are present during construction at these locations, and if construction involves disturbance to aquatic or wetland habitats, then excavation and operation of heavy equipment could result in incidental take of this species. In order to prevent these impacts, mitigation measures described in Section 7.2.4.4 (BIO-11) would be implemented to reduce impacts to a less than significant level.
- Tricolored blackbirds, saltmarsh common yellowthroats, and Suisun song sparrows may sometimes be present in the drainage channel south of the developed portion of the PPP. Burrowing owls could occupy ground squirrel burrows in ruderal grassland habitats along the water pipeline alignment. Loggerhead shrikes could occur in disturbed habitats along the water pipeline alignment. Swainson's hawk, white-tailed kite, or other raptors could use trees in the project vicinity for nesting. Depending on the timing of construction, temporary habitat disturbance where nest sites occur could result in direct take of any of these species. Indirect take could occur if construction activities caused nest abandonment. Mitigation measures proposed (BIO-12) would reduce the potential for indirect take and ensure any impacts were less than significant.

7.2.2.2 Operations/Maintenance Impacts

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

Noise

The WPGS site is located in an industrial area. Operation of the plant would produce some noise, but these levels would be less than significant, as described in Section 7.5, Noise. 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 WPGS is not likely to substantially affect wildlife in the WPGS 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 birds are unable to see the lines, especially during fog and rain events, particularly if birds 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. With the exception of short interconnection lines to the existing 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, 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 lines 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 existing switchyard, no new lines would be installed. Since there is no foraging habitat in the area, no increases in collision incidents are anticipated.

Some migrating bird species that fly at night are guided in part by constellations and can become confused by brightly lit tall structures. Tall exhaust stacks may pose a hazard to some bird species. 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 WPGS will include two new stacks, each with a 21-foot, 4-inch inside diameter and 150 feet, 6-inches in height. These would replace four 211-foot stacks. Because the total number of stacks at the site will be reduced by two, there would be a net reduction in potential for bird collisions with the stacks. Although the number of potential collisions cannot be quantified, collision would likely occur relatively infrequently. This impact would be less than significant.

Water Supply and Wastewater

Recycled water for use in plant operations will be supplied to the WPGS by the DDS D, via a pipeline from the WTP. Potable water will be supplied by the City of Pittsburg via a new pipeline installed within the WPGS site connecting to an existing potable water supply line within the PPP property. Process and sanitary wastewater will be discharged to the DDS D WTP via a separate pipeline that will be along the same route as the recycled water supply pipeline. Sanitary wastewater will be discharged to the public sanitary sewer via an existing sanitary sewer line at the PPP site. Water supply and effluent discharge operations, therefore, are not considered to have a significant impact on biological resources and no mitigation is proposed.

No additional intake or discharge to Suisun Bay/New York Slough is proposed for this project. The only potential indirect impact to waters of the United States would be a reduction in water quality if contaminated water were released via storm drainages. Similar to the PPP, the WPGS will implement spill control measures to prevent discharge of contaminants. Implementation of the project will not affect Suisun Bay or New York Slough. Therefore, water supply and effluent discharge operations are not considered to have a significant impact on biological resources and no mitigation is proposed.

Storm Water Runoff

Storm water runoff from clean portions of the site will be collected on site and discharged to the Suisun Bay through existing outfalls E001 and E009. Only clean storm water runoff will be conveyed to these outfalls, in accordance with the National Pollution Discharge Elimination System (NPDES) General Industrial Permit Requirements. Storm water 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 the DDSD WTP. Collected oil will be shipped off site for recycling.

The PPP site already operates and maintains a storm water drainage system. The construction of new facilities will not significantly change the amount of impervious surfaces, which could potentially increase the amount of storm water runoff. No increases (over existing discharges) in storm water runoff would be discharged to the Suisun Bay, adjacent riparian wetlands, or other sensitive biological resource areas. Therefore storm water 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 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. Current weed control would not increase for the proposed 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 wildlife and vegetation. Pipelines are primarily located within disturbed areas with low habitat value, and maintenance requirements are anticipated to be low and excavations related to maintenance infrequent. Therefore operation and maintenance of the natural gas or water pipelines is not is not considered a significant impact to biological resources.

Disturbance from Illumination of Plant Site

The lighting system for the WPGS 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.

7.2.3 CUMULATIVE IMPACTS

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

Habitats in the regional and local study areas are mapped on Figures 7.2-2 and 7.2-3, and special-status species in the area are similar to those with potential to occur near the PPP site. Construction is expected to be undertaken between October 2009 and July 2012. Construction impacts would include loss of

habitat and disturbance due to noise. Operation activities that could affect special-status species include increased noise, stormwater discharge, air emissions, herbicide application, and increased lighting.

In combination with other projects in the area, the WPGS 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. The proposed project, including avoidance and minimization measures, is not expected to significantly affect biological resources, and therefore, will not contribute to cumulative impacts.

7.2.4 AVOIDANCE AND MINIMIZATION MEASURES

This section discusses minimization measures proposed by the Applicant that would be implemented to reduce project-related impacts to the biological resources identified in Section 7.2.2. The following measures will be implemented to reduce project-related impacts to a less-than-significant level.

7.2.4.1 General Mitigation Measures

BIO-1 Avoid Sensitive Habitats and Species during Construction by Developing Construction Exclusion Zones and Silt Fencing in Sensitive Areas

In general, disturbance to existing grades and vegetation would be limited to the actual site of the WPGS, the water pipeline alignment, and necessary access routes. Environmentally sensitive area information will be shown on contract plans and discussed in the Special Provisions. Environmentally sensitive area provisions could include, but are not limited to, the use of temporary orange fencing to delineate the proposed limit of work in areas adjacent to sensitive resources, or to delineate and exclude sensitive resources from potential construction impacts.

Contractor encroachment into environmentally sensitive areas will be restricted (including the staging/operation of heavy equipment or casting of excavation materials). Provisions for environmentally sensitive areas will be implemented as a first order of work, and will remain in place until all construction activities are complete; this includes any nest sites identified during preconstruction surveys. Placement of all roads, staging areas, and other facilities will avoid disturbance to vernal pools, wetlands, and other sensitive areas of habitat, except where unavoidable impacts have been identified and mitigation has been proposed. Existing ingress or egress points will be used. Parking of equipment, project access, supply logistics, equipment maintenance, and other project-related activities will occur at a designated staging area. Following completion of the work, the contours of the area will be returned to preconstruction condition or better.

BIO-2 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.

7.2.4.2 Wetlands

BIO-3 General Avoidance of Wetland/Stream Impacts

Where working areas encroach on live or dry streams or wetlands, Regional Water Quality Control Board (RWQCB)-approved physical barriers adequate to prevent the flow or discharge of sediment into these systems will be constructed and maintained between working areas and streams, lakes, and wetlands. Erosion control and sediment retention devices (e.g., well-anchored sandbag cofferdams, straw bales, or silt fences) will be incorporated into the project design and implemented at the time of construction. These devices will be in place during construction activities, and afterwards if

necessary, to minimize sediment impacts to the wetlands and input to waters of the United States. These devices will be placed at all locations where the likelihood of sediment input exists.

A supply of erosion control materials will be kept on hand to cover small sites that could become bare and to respond to sediment emergencies. Oily or greasy substances originating from the contractor's operations will not be allowed to enter or be placed where they will later enter a live or dry stream, pond, or wetland.

BIO-4 Kirker Creek Avoidance and Minimization Measures

Vegetation disturbed at the Kirker Creek crossing near Arcy Lane during the water line installation will be replanted with appropriate native species, such as mugwort (*Artemisia douglasiana*), creeping wild rye (*Leymus triticoides*), tall flatsedge (*Cyperus eragrostis*), and meadow barley (*Hordeum brachyantherum*). The topography will be restored once proposed construction activities have been completed. The project will likely be authorized under Nationwide Permit #12, for utility line activities. Under Nationwide Permit #12, if construction will result in temporary disturbance to greater than 0.1 acres, or if endangered species consultation is required, the Applicant will submit a pre-construction notification to the USACE. The Applicant will obtain a Streambed Alteration Agreement from the CDFG, and obtain a water quality certification from the RWQCB if disturbance to Kirker Creek is unavoidable. This will reduce impacts to a less-than-significant level.

7.2.4.3 Vernal Pools

BIO-5 Avoidance Measures for Vernal Pool Habitat

West of Arcy Lane, the water supply and discharge pipelines will be installed north of or in the Pittsburg-Antioch Highway, thus avoiding impacts to the vernal pool south of the highway. No work will occur south of the edge of pavement on the south side of Arcy Lane, between the eastern end of the pipelines and a point that is 250 feet west from the natural vernal pool located south of the highway. If work occurs during the rainy season, straw wattles or silt fences will be installed, as needed, to prevent sediment from disturbed areas from crossing the roadway and reaching pools during rainy periods. These avoidance measures will avoid potential project-related impacts to vernal pools.

7.2.4.4 Special-Status Species

Special-Status Plant Species

Avoidance and minimization measures proposed for vernal pools (BIO-5) would also avoid impacts to special status plant species that may occur in the vernal pool and the vegetated, seasonally ponded depression that occur south of the Pittsburg-Antioch Highway.

BIO-6 Late Summer Rare Plant Surveys

Additional surveys during the blooming period will be conducted for big tarplant (July-October), Congdon's tarplant (May-October), pappose tarplant (May-November), and Carquinez goldenbush (August-December).

In the event that any special-status plant species are found to be present or within and immediately adjacent to the limits of construction, these species will be avoided to the extent possible. A 100-foot buffer zone around special-status plant occurrences will be clearly marked by a qualified biologist prior to construction. Signs and fencing will be maintained for the duration of construction. All vehicles, construction personnel, and equipment will be required to avoid marked buffer zones.

It is anticipated that these measures would be sufficient to avoid impacts to any special-status plant species that may be present. If impacts to special-status species are avoided, no compensatory mitigation will be required. However, if impacts to special-status plant species are unavoidable, additional compensatory mitigation measures will be required. Unavoidable impacts to special-status plant species would be mitigated by preservation, enhancement, and/or restoration of existing occurrences of the affected special-status plant species at a ratio of 3:1 based upon the area of habitat affected. If compensatory mitigation is required, the selected option would be subject to approval by the California Energy Commission and the federal or state resource agency with regulatory authority for the affected species. The implementation of these avoidance and mitigation measures would reduce impacts to special-status plant species to less-than-significant levels.

BIO-7 Tree and Shrub Avoidance and Minimization.

The only tree or shrub removal anticipated at the WPGS site is removal of a small amount of landscaping associated with the current administrative building. Along the water supply and discharge pipeline alignment, tree and shrub removal will be kept to the minimum necessary for pipeline installation. A biologist will be consulted prior to the removal of any trees or shrubs, and the appropriate timing, consultation, and permits will apply as required. All removed trees measuring 4 inches or more in diameter at 4 feet above grade level would be replaced at a 2:1 ratio. Any heritage trees (a tree 72 inches or more in circumference measured 4.5 feet above the natural grade) that are removed would be replaced at a 5:1 ratio. Replacement trees will be either the same species as the removed trees or an appropriate California native. These measures are consistent with the City of Pittsburg's Zoning Ordinance policy goal of establishing regulations for the preservation of mature (having a diameter of at least 4 inches measured four feet above existing grade) trees, although the zoning ordinance does not actually provide specific protection for trees.

Special-Status Wildlife Species

BIO-8 Cap All Open Pipes

Capping open pipes at the end of each day during construction will reduce the potential for wildlife to enter a pipe and become trapped.

BIO-9 Avoidance of Impacts to Branchiopods

Avoidance measures proposed for vernal pools (BIO-5) will also avoid impacts to special-status branchiopod species that may occur in the natural vernal pool and the vegetated, seasonally ponded depression that occur south of the Pittsburg-Antioch Highway.

Disturbance to the unvegetated, seasonally ponded depression that occurs on the south side of the railroad grade approximately 1,750 feet west of Loveridge Road would also be avoided. The water supply and discharge pipelines would be installed on the opposite (north) side of the railroad grade from this habitat feature. No construction activities on the south side of the railroad grade would be conducted within 250 feet of this habitat outside of the dry season when listed vernal pool branchiopods are only present as durable resting eggs (cysts). Vehicles or other construction activities will not be allowed within the boundaries of the potential fairy shrimp habitat at any time, to protect the cysts from destruction or damage.

BIO-10 California Red-Legged Frog Avoidance and Minimization Measures

Where the water pipeline alignment crosses Kirker Creek and its unnamed tributary, jack-and-bore techniques are proposed to avoid disturbance to the stream channel. If ground-disturbing activities are

required, then a biologist will be present during such activities to monitor the site for the presence of red-legged frogs.

For the Kirker Creek crossing near Arcy Lane, where disturbance within the creek channel is anticipated, work areas and their immediate vicinity will be surveyed for California red-legged frog two weeks prior to the beginning of construction, one day prior to the beginning of work, as well as immediately prior to construction activities begin each day. Prior to construction, a qualified biologist will conduct training sessions to familiarize all construction personnel with identification of California red-legged frog (and Western pond turtle), their habitat, general provisions and protections afforded by the Endangered Species Act, measures implemented to protect the species, and a review of the project boundaries. This training will also be provided to any new workers. All construction activities at this location will be monitored by a qualified biologist. If California red-legged frog, larvae, or eggs are found within the construction area, the following measures will be implemented:

- A qualified biologist will contact the USFWS to determine whether moving any of the California red-legged frogs at specific life-stages is appropriate. If the USFWS approves moving the animals, the biologist will be allowed sufficient time to move frogs from the worksites before work activities begin. Any adult frogs found in the work areas would be transported out of the study area by a USFWS-approved biologist with the appropriate authorization from the USFWS and released into appropriate habitat within the project vicinity.
- During work activities, trash that may attract predators will be properly contained, removed from the worksite, and disposed of regularly. Following construction, trash and construction debris will be removed from work areas.
- Construction activities would be timed to occur during the dry season (April 1 to November 1) to minimize take of dispersing frogs.
- Applicant would provide a report to the USFWS on the impacts of the proposed project to California red-legged frog. The report will provide the results of biological surveys and sighting records, and also document the following: the number of California red-legged frogs relocated from the study area or killed or injured during the proposed project construction; the dates and times of capture, mortality, or injury; specific locations of capture, mortality, or injury; approximate size and age of individuals; and a description of relocation sites.

BIO-11 Western Pond Turtle Avoidance and Minimization.

Avoidance and minimization measures designed to protect California red-legged frog (BIO-10) would also protect western pond turtles, at both Kirker Creek crossings and at the unnamed tributary of Kirker Creek. Because the water supply and discharge pipelines would be installed underneath the drainage channel south of the PPP without disturbance to the overlying wetland and aquatic habitat, impacts there also would be avoided.

BIO-12 Pre-construction Avian Surveys in Impact Areas

If construction occurs between March 15 and August 15 preconstruction surveys for nesting migratory birds and nesting raptors will be conducted in ornamental trees, riparian vegetation, and other trees near the water pipeline alignment. Surveys will also be conducted where the water supply and discharge pipeline alignment crosses stream and drainage channels, and where they pass through

ruderal grassland habitat. If nests of migratory birds, raptors, or special-status species are identified, nest monitoring and avoidance measures will be required to prevent direct and indirect disturbance to nesting birds. If construction activities would cause unavoidable disturbance to an active nest site, consultation with the California Department of Fish and Game will be necessary.

BIO-13 Provide Safety Lighting That Points Downward on the Stacks to Reduce Avian Collisions

Lighting on the WPGS stacks will be positioned to reduce avian collisions. Mitigation measures to reduce impacts from potential bird collisions with stacks and other structures include reducing exterior lighting on all structures. All other required exterior lighting on structures will be shielded to direct light downward.

BIO-14 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). A “bird flight diverter” or some other technique will be used to prevent bird collisions with these structures.

7.2.5 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

The proposed project will be constructed and operate in accordance with all Laws, ordinances, regulations, and standards (LORS) applicable to biological resources. The following LORS are applicable or potentially applicable to the proposed project in the context of biological resources. Specific locations in the document where these LORS are addressed are indicated in Table 7.2-4.

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 Endangered Species Act (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 USACE 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 USACE.

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 RWQCB.

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 CDFG.

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 animal 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 proposed 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 CNDDDB. 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 for activities that impact waterways, including impacts to vegetation and wildlife from sediment, diversions, and other disturbances. The administering agency for the above authority is the 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 the 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 the CDFG, California Environmental Protection Agency (Cal/EPA), and the Central Valley RWQCB.

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 proposed 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

Contra Costa County General Plan

Specific policy goals and objectives in the Contra Costa County General Plan (CCC, 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 protect mature native oak, bay, and buckeye trees.
- Applications of toxic pesticides will be kept to a minimum.
- Planting of native trees and shrubs shall be encouraged.

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

City of Pittsburg General Plan

Specific policy goals and objectives in the City of Pittsburg General Plan (City of Pittsburg, 2001) include:

- 9-P-2: Establish an ongoing program to remove and prevent the reestablishment of invasive species, and restore native species as part of development approvals on sites that include ecologically sensitive habitat.
- 9-P-9: Establish creek setbacks along riparian corridors, extending a minimum of 50 to 150 feet laterally on each side of the creekbed. Setback buffers for habitat areas of identified special-status species and wetlands may be expanded as needed to preserve ecological resources.
- 9-P-19: As part of the City's Zoning Ordinance, establish regulations for the preservation of mature trees (trees having a diameter of at least 4 inches measured four feet above existing grade). Include measures for the replacement of all mature trees that are removed.
- 9-P-25: Encourage rehabilitation and revegetation of riparian corridors and wetlands throughout the City to contribute to bioremediation and improved water quality.

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

7.2.6 INVOLVED AGENCIES AND AGENCY CONTACTS

At this time no agencies have been contacted regarding the proposed project. Agency coordination, however, would be required for this project. Involved agencies would include the USFWS, USACE, CDFG, and RWQCB. Agencies with authority over biological resources in the study areas are listed on Table 7.2-5.

7.2.7 PERMITS REQUIRED AND PERMIT SCHEDULE

Wetlands temporarily disturbed during water line installation at Kirker Creek, near Arcy Lane, would likely require a (nationwide) 404 permit from the USACE. Work in these areas will also likely require a Streambed Alteration Agreement from the CDFG, and 401 Water Quality Certification from the RWQCB. Because California red-legged frog could be present in Kirker Creek Section 7 consultation with the USACE would be required. Permits required for this project are listed in Table 7.2-6.

7.2.8 REFERENCES

- APLIC (Avian Power Line Interaction Committee), 1996. *Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1996*. Edison Electric Institute. Washington, D.C.
- CDFG (California Department of Fish and Game), 1994. Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California. Sacramento, CA. November 8, 1994.
- CDFG (California Department of Fish and Game), 1995. California Department of Fish and Game. *Staff Report on Burrowing Owl Mitigation*. October 17, 1995.
- CDFG (California Department of Fish and Game), 2008. California Natural Diversity Database (CNDDDB), Rarefind 3, Accessed April 2008.
- City of Pittsburg, 2001. Pittsburg 2020: A Vision for the 21st Century. City of Pittsburg General Plan Hearing Draft.
- CNPS (California Native Plants Society), 2008. Inventory of Rare and Endangered Plants of California (online edition, v7-06b). Sacramento, CA. <http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>. February 2008.
- Contra Costa County, 1996. Contra Costa County General Plan: 1995-2010.
- Contra Costa County, 2005. *Contra Costa County General Plan 2005-2020*. Community Development Department, Contra Costa County. January.
- Davis, F. W., D. M. Stoms, A. D. Hollander, K. A. Thomas, P. A. Stine, D. Odion, M. I. Borchert, J. H. Thorne, M. V. Gray, R. E. Walker, K. Warner, and J. Graae, 1998. *The California Gap Analysis Project-Final Report*. University of California, Santa Barbara, CA.
- Ebasco Environmental, 1993. *Assessment and Mitigation for Endangered Vernal Pool Fairy Shrimp*. Published by Ebasco Environmental for the American Society of Civil Engineers 1993 Water Resources Planning and Management Division Conference, May 15.
- England, A. S., M. J. Bechard, and C. S. Houston, 1997. Swainson's Hawk (*Buteo swainsoni*). In: A. Poole and F. Gill (eds.), *The Birds of North America*, No. 265. The Academy of Natural Sci. Philadelphia, PA, and the American Ornithologists' Union, Washington, D.C.
- Federal Register, 1994. Federal Register Final Rule; determination of endangered status for the conservancy fairy shrimp, longhorn fairy shrimp, and the vernal pool tadpole shrimp; and threatened status for the vernal pool fairy shrimp. September 19, 1994. 59 Fed. Reg. 48136.
- Haug, E. A., B. A. Millsap, and M.S. Martell, 1993. Burrowing Owl (*Speotyto cunicularia*). In *The Birds of North America*, No. 61 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.
- Ingles, L., 1965. *Mammals of the Pacific States*. Palo Alto: Stanford University Press.

- Jennings, M. and M. Hayes, 1994. *Amphibian and Reptile Species of Special Concern in California*. Prepared for the California Department of Fish and Game, Inland Fisheries Division.
- KCWPG and CCRCDC (Kirker Creek Watershed Planning Group and Contra Costa Resource Conservation District), 2004. Kirker Creek Watershed Management Plan. January. <http://www.ccrdc.org/Kirker/full%20book.pdf>. May 2008.
- Owen-Parsons, Jeannette, 2004. *Natural Environment Study/Biological Assessment, State Route 4 (East) Widening Project: Loveridge Road to State Route 160*. August.
- U.S. EPA (U.S. Environmental Protection Agency), 1996. *Long-term Management Strategy for the Placement of Dredged Material in the San Francisco Bay Region: Policy Environmental Impact Statement/Programmatic Environmental Impact Report*.
- USFWS (U.S. Fish and Wildlife Service), 1996. *Interim Survey Guidelines to Permittees Under Section 10(a)(1)(A) of the Endangered Species Act for the Endangered Conservancy Fairy Shrimp, Longhorn Fairy Shrimp, Riverside Fairy Shrimp, Vernal Pool Tadpole Shrimp, and the Threatened Vernal Pool Fairy Shrimp*. U.S. Department of the Interior. April 19.
- USFWS (U.S. Fish and Wildlife Service), 2002. *Wildland Fire Management Plan, Antioch Dunes National Wildlife Refuge*. U.S. Department of the Interior.
- USFWS (U.S. Fish and Wildlife Service), 2008a. National Wetlands Inventory website. <http://www.fws.gov/nwi/>. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C.
- USFWS (U.S. Fish and Wildlife Service), 2008b. Species list for 7.5-minute topographic quadrangles: Honker Bay and Antioch North. April 2008.
- WBC (Wood Biological Consulting), and NEC (Nomad Ecological Consulting), 2008. *Draft Biological Assessment for the proposed West 8th Street flood improvements project, City of Pittsburg, Contra Costa County, California*. February 21.
- Zeiner, D. C., et al. (compiling eds.), 1988. *California's Wildlife. Vol. I, Amphibians and Reptiles; Vol. II, Birds; Vol. II, Mammals*. California Department of Fish and Game, Sacramento, CA.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 1 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
Animals				
<i>Acipenser medirostris</i>	green sturgeon	Federal: T DFG: SSC	Spawns in the Sacramento River and the Klamath River. Spawns at temperatures between 8 and 14 degrees Celsius. Preferred spawning substrate is large cobble, but can range from clean sand to bedrock.	High – Suisun Bay/New York Slough serves as suitable habitat, but will not be impacted as a result of this project.
<i>Actinemys marmorata</i>	western pond turtle	DFG: SSC	Aquatic; a thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation; need basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg-laying.	High – Wetlands associated with Suisun Bay/New York Slough serve as suitable habitat, but will not be impacted as a result of this project. Suitable habitat may occur at four waterways crossed by the water line.
<i>Agelaius tricolor</i>	tricolored blackbird	DFG: SSC USFWS: BCC	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 km of the colony.	High – Wetlands associated with Suisun Bay/New York Slough serve as suitable habitat, but will not be impacted as a result of this project.
<i>Ambystoma californiense</i>	California tiger salamander	Federal: T DFG: SSC	Cismontane woodland; vernal pools and stock ponds, prefers open grassland. Central valley DPS listed as threatened. Santa Barbara and Sonoma Counties DPS listed as endangered.; need underground refuges, especially ground squirrel burrows and vernal pools or other seasonal water sources for breeding	Low – Combination of suitable breeding habitat surrounded by suitable upland habitat lacking from immediate vicinity. Known occurrences are from hills to the south, all more than approximately 3 kilometers (km) away in less developed areas.
<i>Andrena blennospermatis</i>	A vernal pool andrenid bee	None	Vernal pool; this bee is oligolectic on vernal pool blennosperma; bees nest in the uplands around vernal pools.	Low – The only known occurrence within 10 miles is from the hills 4 miles south of the project area.
<i>Anniella pulchra pulchra</i>	silvery legless lizard	DFG: SSC	Chaparral; sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. Prefers soils with high moisture content.	Low – Recorded from nearby Antioch dunes, but unlikely to approach project area.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 2 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Anthicus antiochensis</i>	Antioch Dunes anthicid beetle	None	Interior dunes; extirpated from Antioch dunes but present in several localities along the Sacramento and Feather Rivers.	Low – Recorded from nearby Antioch dunes, but unlikely to approach project area.
<i>Anthicus sacramento</i>	Sacramento anthicid beetle	None	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.	Low – Recorded from nearby Antioch dunes, but unlikely to approach project area.
<i>Antrozous pallidus</i>	Pallid bat	DFG: SSC	Deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	Moderate – May roost in rock crevices, under bridges, and in tree hollows in the project vicinity. May forage over project vicinity. Unlikely to be impacted by proposed activities.
<i>Apodemia mormo langei</i>	Lange's metalmark butterfly	Federal: E	Inhabits stabilized dunes along the San Joaquin River. Endemic to Antioch dunes, Contra Costa County. Primary host plant is <i>Eriogonum nudum</i> var. <i>auriculatum</i> ; feeds on nectar of other wildflowers, as well as host plant.	Low – Recorded from nearby Antioch dunes, but unlikely to approach project area.
<i>Archoplites interruptus</i>	Sacramento perch	DFG: SSC	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.	High – Suisun Bay/New York Slough serves as suitable habitat, but it will not be impacted as a result of this project.
<i>Ardea herodias</i>	great blue heron (rookery site)	None	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.	High – Potential for nesting in landscaped trees near Suisun Bay/New York Slough.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 3 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Asio flammeus</i>	short-eared owl (nesting)	DFG: SSC	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.	Moderate – Transitional habitats associated with Suisun Bay/New York Slough, as well as some grassland areas north of the offsite water line/Pittsburg-Antioch Highway, particularly near Dowest Slough, may provide suitable habitat, but will not be impacted by this project.
<i>Athene cunicularia</i>	burrowing owl (burrow and some wintering sites)	DFG: SSC USFWS: BCC	Coastal prairie; open, dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation; subterranean nester, dependent upon burrowing mammals, most notably the California ground squirrel.	Moderate – California ground squirrels are present in disturbed grassland/ruderal habitats in the project area. Grassland habitats in the project vicinity provide suitable habitat.
<i>Branchinecta conservatio</i>	Conservancy fairy shrimp	Federal: E	Endemic to the grasslands of the northern two thirds of the Central Valley; found in large, turbid vernal pools. Astatic pools located in swales formed by old, braided alluvium; filled by winter/spring rains and last until June.	Low – Pools of the size typically occupied by <i>B. conservatio</i> are lacking from the project area.
<i>Branchinecta lynchi</i>	vernal pool fairy shrimp	Federal: T	Valley and foothill grassland; endemic to the grasslands of the Central Valley, Central Coast Mountains., and South Coast Mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	Moderate – One vernal pool and two depressions near the water pipeline alignment may have the hydrology necessary to support fairy shrimp. There is one known occurrence from within 1 mile of project area.
<i>Branchinecta mesovallensis</i>	midvalley fairy shrimp	None	Vernal pools in the Central Valley.	Moderate – One vernal pool and two depressions near the water pipeline alignment may have the hydrology necessary to support fairy shrimp. There are no known occurrences within 5 miles of the project area.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 4 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Buteo swainsoni</i>	Swainson's hawk	State: T USFWS: BCC	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.	High – May forage over grasslands and ruderal habitats in the project vicinity. May nest in tall trees in the project vicinity.
<i>Callophrys mossii bayensis</i>	San Bruno elfin butterfly	Federal: E	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on steep, north-facing slopes within the fog belt. Larval host plant is <i>Sedum spathulifolium</i> .	Low – Immediate vicinity lacks suitable habitat with proper exposure for this species. Nearest occurrence is at Mount Diablo.
<i>Charadrius montanus</i>	mountain plover (wintering)	DFG: SSC USFWS: BCC	Short grasslands, freshly plowed fields, newly sprouting grain fields, and sometimes sod farms. Short vegetation, bare ground and flat topography. Prefers grazed areas and areas with burrowing rodents.	Low – Immediate vicinity lacks suitable habitat. Grassland and ruderal vegetation in the project area is tall and dense. No occurrences have been documented from within 5 miles of the project area.
<i>Circus cyaneus</i>	northern harrier (nesting)	DFG: SSC	Coastal salt water and freshwater marsh. Nest and forage in grasslands. Nests on ground in shrubby vegetation, usually at marsh edge.	High – May occur in association with larger expanses of marsh and grassland habitat in project vicinity, which will not be impacted by the proposed project.
<i>Coelus gracilis</i>	San Joaquin dune beetle	None	Interior dunes; inhabits fossil dunes along the western edge of San Joaquin valley; extirpated from Antioch dunes (type locality); inhabits sites containing sandy substrates.	Low – Recorded from nearby Antioch dunes, but unlikely to approach project area.
<i>Desmocerus californicus dimorphus</i>	valley elderberry longhorn beetle	Federal: T	Associated with elderberry bushes (<i>Sambucus mexicana</i>), riparian forests along rivers and streams. Prefers to lay eggs in elderberries 2 to 8 inches in diameter; some preference shown for "stressed" elderberries.	Low – The project area lacks elderberry bushes.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 5 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Dipodomys heermanni berkeleyensis</i>	Berkeley kangaroo rat	None	Open, grassy hilltops and open spaces in chaparral and blue oak/grey pine woodlands. Needs fine, deep, well-drained soil for burrowing.	Low – Immediate vicinity lacks suitable habitat. Nearest occurrence from Mount Diablo in 1936.
<i>Efferia antiochi</i>	Antioch efferian robberfly	None	Interior dunes; known only from Contra Costa and Fresno counties.	Low – Recorded from nearby Antioch dunes, but unlikely to approach project area.
<i>Elanus leucurus</i>	white-tailed kite (nesting)	DFG: Fully Protected	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.	Moderate – High levels of disturbance make habitat in project vicinity less suitable, but some potential foraging and nesting habitat is present within 1 mile of the project area.
<i>Elaphrus viridis</i>	delta green ground beetle	Federal: T	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 percent cover.	Low – The project area is outside of the known range of this species.
<i>Eucerceris ruficeps</i>	redheaded sphecid wasp	None	Interior dunes; central California interior dunes; nest in hard-packed sand using abandoned halictine bee burrows.	Low – Recorded from nearby Antioch dunes, but unlikely to approach project area.
<i>Geothlypis trichas sinuosa</i>	saltmarsh common yellowthroat	DFG: SSC USFWS: BCC	Marsh and swamp; resident of the San Francisco Bay region, in freshwater and salt water marshes; requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	High – Marshes associated with Suisun Bay/New York Slough provide suitable habitat, but will not be affected by the proposed project. Some potential to drainage south of PPP.
<i>Hygrotus curvipes</i>	curved-foot hygrotus diving beetle	N	Aquatic; known only from Alameda and Contra Costa Counties.	Low – This species is very restricted, and known only from a few small ponds and ditches.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 6 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Hypomesus transpacificus</i>	Delta smelt	Federal: T & critical habitat State: T	Aquatic; Sacramento-San Joaquin Delta. Seasonally in Suisun bay, Carquinez Strait and San Pablo Bay; seldom found at salinities > 10 parts per thousand (ppt). Most often at salinities <2 ppt.	High – Suisun Bay/New York Slough serves as suitable habitat, but it will not be impacted as a result of this project.
<i>Idiostatus middlekauffi</i>	Middlekauff's shieldback katydid	None	Interior dunes.	Low – Known only from the Antioch dunes. Is not expected to range from this habitat.
<i>Lanius ludovicianus</i>	loggerhead shrike	DFG: SSC USFWS: BCC	Broadleaved upland forest; broken woodlands, 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.	Moderate – Small pieces of moderately suitable habitat are present in the project vicinity.
<i>Lasiurus blossevillii</i>	western red bat	DFG: SSC	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.	Moderate – Might be able to roost in small cottonwood stands found in the project vicinity. May forage over project vicinity. Unlikely to be impacted by proposed activities.
<i>Lasiurus cinereus</i>	hoary bat	None	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.	Low – Forested roosting habitat absent from project vicinity. No known occurrences from within 5 miles of the project area.
<i>Laterallus jamaicensis coturniculus</i>	California black rail	State: T DFG: Fully Protected USFWS: BCC	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.	High – Marshes associated with Suisun Bay/New York Slough provide suitable habitat but will not be impacted by the proposed project.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 7 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Lepidurus packardii</i>	vernal pool tadpole shrimp	Federal: E	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.	Moderate – One vernal pool and two depressions near the water pipeline alignment may have the hydrology necessary to support tadpole shrimp.
<i>Linderiella occidentalis</i>	California linderiella	None	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.	Moderate – One vernal pool and two depressions near the water pipeline alignment may have the hydrology necessary to support fairy shrimp. There is one known occurrence from within 1 mile of project area.
<i>Lytta molesta</i>	molestan blister beetle	None	Vernal pool; inhabits the central valley of California, from Contra Costa to Kern and Tulare counties.	Low – Project area is outside of the known range for this species. Nearest historic occurrences south of Brentwood.
<i>Masticophis lateralis euryxanthus</i>	Alameda whipsnake	Federal: T State: T	Cismontane woodland; restricted to valley-foothill hardwood habitat of the coast ranges between Monterey and the San Francisco Bay. It inhabits south-facing slopes and ravines where shrubs form a vegetative mosaic with oak trees and grasses.	Low – The project vicinity lacks suitable habitat.
<i>Melospiza melodia maxillaris</i>	Suisun song sparrow	DFG: SSC USFWS: BCC	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.	High – Marshes associated with Suisun Bay/New York Slough provide suitable habitat. Drainage channel south of PPP may provide suitable habitat.
<i>Metapogon hurdi</i>	Hurd's metapogon robberfly	None	Interior dunes; known only from Antioch and Fresno areas.	Low – Recorded from nearby Antioch dunes, but unlikely to approach project area.
<i>Myrmosula pacifica</i>	Antioch multilid wasp	None	Interior dunes	Low – Recorded from nearby Antioch dunes, but unlikely to approach project area.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 8 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Nyctinomops macrotis</i>	big free-tailed bat	DFG: SSC	Low-lying, arid areas in southern California. Needs high cliffs or rocky outcrops for roosting sites.	Low – Known mostly from southern California. Rocky outcrops and cliffs used for roosting absent from project area.
<i>Oncorhynchus mykiss</i>	Central Valley steelhead	Federal: T & critical habitat	Populations in the Sacramento and San Joaquin Rivers and their tributaries.	High - Suisun Bay/New York Slough serves as suitable habitat, but it will not be impacted as a result of this project.
<i>Oncorhynchus tshawytscha</i>	Central Valley spring-run Chinook salmon	Federal: T & critical habitat	Adult numbers. Depend on pool depth and volume, amount of cover, and proximity to gravel. Water temperature >27° C is lethal to adults. Federal listing refers to population spawning in Sacramento River and tributaries.	High - Suisun Bay/New York Slough serves as suitable habitat, but it will not be impacted as a result of this project.
<i>Oncorhynchus tshawytscha</i>	winter-run Chinook salmon (Sacramento River)	Federal: E & critical habitat	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 and 14°C for spawning.	High - Suisun Bay/New York Slough serves as suitable habitat, but it will not be impacted as a result of this project.
<i>Perdita scitula antiochensis</i>	Antioch andrenid bee	None	Interior dunes; known only from Antioch dunes and Oakley; visits flowers of <i>Eriogonum</i> sp., <i>Gutierrezia californica</i> , <i>Heterotheca grandiflora</i> , and <i>Lessingia glandulifera</i> .	Low – Recorded from nearby Antioch dunes, but unlikely to approach project area.
<i>Perognathus inornatus inornatus</i>	San Joaquin pocket mouse	None	Coastal scrub; typically found in grasslands and blue oak savannas; needs friable soils.	Low – Project area lacks suitable habitat.
<i>Phalacrocorax auritus</i>	double-crested cormorant (rookery site)	DFG: Watch List	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.	High – Suisun Bay/New York Slough provide suitable habitat but will not be impacted by the proposed project.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 9 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Philanthus nasalis</i>	Antioch specid wasp	None	Interior dunes; previously known only from Antioch dunes, in Contra Costa County. Now known only from the inland sand hills in Santa Cruz County.	Low – Recorded from nearby Antioch dunes, but unlikely to approach project area.
<i>Phrynosoma coronatum</i>	coast horned lizard	DFG: SSC	Frequents a wide variety of habitats. Most common in lowlands along sandy washes with scattered low bushes. Uses open areas for sunning, bushes for cover, and patches of loose ground for burial.	Low – High level of disturbance in project vicinity would likely have resulted in extirpation of this species if it historically occurred here.
<i>Pogonichthys macrolepidotus</i>	Sacramento splittail	DFG: SSC	Endemic to the lakes and rivers of the Central Valley but now confined to the delta, Suisun Bay and associated marshes. Slow moving river sections, dead end sloughs, and flooded vegetation for spawning.	High – Suisun Bay/New York Slough serves as suitable habitat, but it will not be impacted as a result of this project.
<i>Rallus longirostris obsoletus</i>	California clapper rail	Federal: E State: E DFG: Fully Protected	Salt and brackish marshes, typically dominated by pickleweed, Pacific cordgrass. Restricted to major sloughs and rivers, tidal marsh areas.	High – Marshes associated with Suisun Bay/New York Slough provide suitable habitat but will not be impacted by the proposed project.
<i>Rana aurora draytonii</i>	California red-legged frog	Federal: T DFG: SSC	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).	Moderate – Although known from upper Kirker Creek watershed, approximately 2.5 km south of the offsite water line, highly disturbed nature of habitats in the project vicinity makes occurrence of this species less likely.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 10 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Reithrodontomys raviventris</i>	salt-marsh harvest mouse	Federal: E State: E DFG: Fully Protected	Marsh and swamp; only in the saline emergent wetlands of San Francisco Bay and its tributaries; pickleweed is primary habitat. Do not burrow, build loosely organized nests. Require higher areas for flood escape.	High – Marshes associated with Suisun Bay/New York Slough provide suitable habitat but will not be impacted by the proposed project.
<i>Riparia riparia</i>	bank swallow (nesting)	State: 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.	Moderate – May be some suitable habitat in project vicinity, particularly along New York Slough/Suisun Bay, but will not be impacted by proposed project.
<i>Sorex ornatus sinuosus</i>	Suisun shrew	DFG: SSC	Tidal marshes of the northern shores of San Pablo and Suisun Bays. Require dense low-lying cover, driftweed, and other litter above the mean high tide line for nesting and foraging.	Moderate – Marshes associated with Suisun Bay/New York Slough provide suitable habitat but will not be impacted by the proposed project.
<i>Sphecodogastra antiochensis</i>	Antioch Dunes halcetid bee	None	Interior dunes; restricted to Antioch dunes; host plant is <i>Oenothera deltoides howellii</i> . This bee nests in the ground in stabilized sand dunes in open, xeric areas.	Recorded from nearby Antioch dunes, but unlikely to approach project area.
<i>Sternula antillarum browni</i>	California least tern (nesting colony)	Federal: E State: E DFG: Fully Protected	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.	High – Known from brackish marshes immediately west of the PPP, which will not be impacted by the proposed project.
<i>Taxidea taxus</i>	American badger	DFG: SSC	Coastal scrub; most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils; needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Moderate – Nearest known occurrences are from more extensive grassland habitats over 5 miles south of project. A skeleton likely from a badger was found along the water pipeline alignment.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 11 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Thamnophis gigas</i>	giant garter snake	Federal: T State: T	Marsh and swamp; overwinters in animal burrows from 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.	Low – Known range of this species does not extend as far west in the San Francisco Bay/Delta as the proposed project area.
<i>Vulpes macrotis mutica</i>	San Joaquin kit fox	Federal: E State: 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.	Low – Although occurs in extensive grassland habitat located several miles south of the project area, the immediate project vicinity lacks suitable habitat.
Plants				
<i>Amsinckia grandiflora</i>	large-flowered fiddleneck	Federal: E State: E CNPS: 1B.1	Cismontane woodland; cismontane woodland, valley and foothill grassland; annual grassland in various soils. 275 to 550 m.	Low – Potential suitable habitat, but unexpected due to low elevation. Not observed during May rare plant surveys. <i>Amsinckia</i> sp. was observed, but was determined to not be this species.
<i>Amsinckia lunaris</i>	bent-flowered fiddleneck	CNPS: 1B.2	Coastal bluff scrub, Cismontane woodland, Valley and foothill grassland.	Low – Potential suitable habitat. No occurrence in CNDDDB data file or in 5-mile map. Not observed during May rare plant surveys. <i>Amsinckia</i> sp. was observed, but was determined to not be this species.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 12 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Anomobryum julaceum</i>	slender silver moss	CNPS: 2.2	Broadleaved upland forest; broad-leafed upland forest, lower montane coniferous forest, north coast coniferous forest; moss which grows on damp rocks and soil; usually seen on roadcuts. 100 to -1,000 m.	Low – No potential suitable habitat. Elevation too low.
<i>Arctostaphylos auriculata</i>	Mt. Diablo manzanita	CNPS: 1B.3	Chaparral; chaparral; in canyons and on slopes. On sandstone. 120 to 500 m.	Low – No suitable habitat is present near the project area. Elevation is too low.
<i>Arctostaphylos manzanita</i> ssp. <i>laevigata</i>	Contra Costa manzanita	CNPS: 1B.2	Chaparral; chaparral; rocky slopes. 500 to 1,100 m.	Low – No suitable habitat is present near the project area. Elevation is too low.
<i>Astragalus tener</i> var. <i>tener</i>	alkali milk-vetch	CNPS: 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. 1 to 170 m.	Moderate - Suitable habitat is present in depressions with seasonal wetland vegetation and vernal pools near project, not all of which were surveyed due to lack of access.
<i>Atriplex cordulata</i>	heartscale	CNPS: 1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland(sandy)/saline or alkaline. 1 to 375 m.	Moderate - Suitable habitat is present in depressions with seasonal wetland vegetation and vernal pools near project, not all of which were surveyed due to lack of access. No occurrences from CNDDDB within 5 miles.
<i>Atriplex depressa</i>	brittlescale	CNPS: 1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools/alkaline, clay. 1 to 320 m.	Moderate - Suitable habitat is present in depressions with seasonal wetland vegetation and vernal pools near project, not all of which were surveyed due to lack of access.
<i>Atriplex joaquiniana</i>	San Joaquin spearscale	CNPS: 1B.2	Chenopod scrub; chenopod scrub, alkali meadow, valley and foothill grassland; in seasonal alkali wetlands or alkali sink scrub with <i>Distichlis spicata</i> , frankenia, etc. 1 to 250 m.	Moderate - Suitable habitat is present in depressions with seasonal wetland vegetation and nearby grass areas near project, not all of which were surveyed due to lack of access.
<i>Atriplex persistens</i>	vernal pool small-scale	CNPS: 1B.2	Vernal pools (alkaline). 10 to 115 m.	Low – Not within 5 miles of the site, no information in CNDDDB file.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 13 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Blepharizonia plumosa</i>	big tarplant	CNPS: 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. 15 to 455 m.	Moderate - Limited suitable habitat occurs in ruderal/disturbed grassland areas. Associated species observed. May plant surveys did not occur during the blooming period. Follow-up summer surveys are suggested for this species.
<i>California macrophylla</i>	round-leaved filaree	CNPS: 1B.1	Cismontane woodland; cismontane woodland, valley and foothill grassland; clay soils. 15 to 1,200 m.	Low – Suitable habitat in disturbed grasslands and abandoned fields. Not observed during plant surveys.
<i>Calochortus pulchellus</i>	Mt. Diablo fairy-lantern	CNPS: 1B.2	Chaparral; chaparral, cismontane woodland, riparian woodland, valley and foothill grassland; on wooded and brushy slopes. 200 to 800 m.	Low – No suitable habitat is present near the project area. Elevation is too low.
<i>Calystegia atriplicifolia</i> ssp. <i>buttensis</i>	Butte County morning-glory	CNPS: 1B.2	Lower montane coniferous forest; lower montane coniferous forest; dry, mostly open slopes. 600 to 1,200 m.	Low – No suitable habitat is present near the project area. Elevation is too low.
<i>Campanula exigua</i>	chaparral harebell	CNPS: 1B.2	Chaparral (rocky, usually serpentinite). 275 to 1,250 m.	Low – No suitable habitat. Elevation is too low.
<i>Centromadia parryi</i> ssp. <i>congdonii</i>	Congdon's tarplant	CNPS: 1B.2	Valley and foothill grassland(alkaline). 1 to 230 m.	Moderate - Potential to occur in grasslands near marshes/depressions. Associated species observed at site. No occurrences within 5 miles. Not observed during May surveys (beginning of blooming period). Recommended for follow-up summer survey.
<i>Centromadia parryi</i> ssp. <i>parryi</i>	pappose tarplant	CNPS: 1B.2	Chaparral, Coastal prairie, Meadows and seeps, Marshes and swamps(coastal salt), Valley and foothill grassland(vernally mesic)/often alkaline. 2 to 420 m.	Moderate - Potential to occur in depressions/swales. No occurrences within 5 miles. Low potential for occurrence in unsurveyed vernal pools and depressions with seasonal wetland vegetation.
<i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>	Suisun thistle	Federal: E CNPS: 1B.1	Marshes and swamps(salt). 0 to 1 m.	Moderate - Potential for occurrence along Suisun Bay/New York Slough, outside of project impact area.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 14 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Cordylanthus mollis</i> ssp. <i>hispidus</i>	hispid bird's-beak	CNPS: 1B.1	Meadows and seeps, Playas, Valley and foothill grassland/alkaline. 1 to 155 m.	Low – No occurrences within 5 miles. Potential habitat near Suisun Bay, but species typically found in brackish rather than fresh waters. No suitable habitat within the project impact area.
<i>Cordylanthus mollis</i> ssp. <i>mollis</i>	soft bird's-beak	Federal: E State: R CNPS: 1B.2	Marsh and swamp; coastal salt marsh; in coastal salt marsh with <i>Distichlis</i> , <i>Slicornia</i> , <i>Frankenia</i> , etc. 0 to 3 m.	Low – No occurrences within 5 miles. Potential habitat near Suisun Bay/New York Slough, but species typically found in brackish rather than fresh waters. No suitable habitat within the project impact area.
<i>Cordylanthus nidularis</i>	Mt. Diablo bird's beak	State: R CNPS: 1B.1	Chaparral; grassy or rocky areas within serpentine chaparral. One site known, 765 m.	Low – Only known from one occurrence — elevation is too low.
<i>Cryptantha hooveri</i>	Hoover's cryptantha	CNPS: 1A	Valley and foothill grassland; valley and foothill grassland; in coarse sand. 9 to 150 m.	Low – Potential habitat does occur in surrounding grasslands, but there are only 3 reported occurrences of this species. It is thought to be expatriated to Contra Costa County. Not observed during May plant surveys.
<i>Delphinium californicum</i> ssp. <i>interius</i>	Hospital Canyon larkspur	CNPS: 1B.2	Chaparral (openings), Cismontane woodland (mesic). 230 to 1,095 m.	Low – No suitable habitat. Elevation is too low.
<i>Didymodon norrisii</i>	Norris' beard moss	CNPS: 2.2	Cismontane woodland, Lower montane coniferous forest/intermittently mesic, rock. 600 to 1973 m.	Low – No suitable habitat. Elevation is too low.
<i>Downingia pusilla</i>	dwarf downingia	CNPS: 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. 1 to 485 m.	Moderate - Suitable habitat in vernal pool. Pool was not surveyed during May surveys due to lack of access.
<i>Eriastrum brandegeae</i>	Brandegee's eriastrum	CNPS: 1B.2	Chaparral, Cismontane woodland/volcanic, sandy. 305 to 1030m	Low – No suitable habitat. Elevation is too low.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 15 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Eriogonum truncatum</i>	Mt. Diablo buckwheat	CNPS: 1B.1	Chaparral; chaparral, coastal scrub, valley and foothill grassland; dry, exposed clay or sandy substrates. 100 to 600 m.	Low – Suitable habitat in grassland areas, but unexpected due to low elevation. Other known occurrences are at higher elevations on Mount Diablo. Not observed during May plant surveys.
<i>Erysimum capitatum</i> var. <i>angustatum</i>	Contra Costa wallflower	Federal: E & critical habitat State: E CNPS: 1B.1	Interior dunes; inland dunes; stabilized dunes of sand and clay near Antioch along the San Joaquin River. 3 to 20 m.	Low – No suitable habitat within project area.
<i>Eschscholzia rhombipetala</i>	diamond-petaled California poppy	CNPS: 1B.1	Valley and foothill grassland; valley and foothill grassland; alkaline, clay slopes and flats. 0 to 975 m.	Low – Potential habitat, but occurrence is unlikely. The only reported nearby occurrence is from 1889 and is thought to be an expatriated specimen. Not observed in May survey.
<i>Fritillaria liliacea</i>	fragrant fritillary	CNPS: 1B.2	Coastal prairie; coastal scrub, valley and foothill grassland, coastal prairie; often on serpentine; various soils reported though usually clay, in grassland. 3 to 410 m.	Low – No suitable habitat. No associated species observed. No serpentine or clay soils. No nearby occurrences.
<i>Helianthella castanea</i>	Diablo helianthella	CNPS: 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. 25 to 1150 m.	Low – No suitable habitat is present near the project area. Elevation may be too low.
<i>Hesperolinon breweri</i>	Brewer's western flax	CNPS: 1B.2	Chaparral; chaparral, cismontane woodland, valley and foothill grassland; often in rocky serpentine soil in serpentine chaparral and serpentine grassland. 30 to 885 m.	Low – No serpentine habitat is present. Elevation may be too low.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 16 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Hibiscus lasiocarpus</i>	woolly rose-mallow	CNPS: 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. 0 to 150 m.	Low – There are some marsh areas to the north of the WPGS along the Suisun Bay/New York Slough, but no peat islands or sloughs in the vicinity. There are no nearby reports of this species.
<i>Isocoma arguta</i>	Carquinez goldenbush	CNPS: 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. 1 to 20 m.	Moderate - Some habitat, but not ideal. All reported occurrences are from Solano County, and not near the project area. Recommend followup late summer survey to detect presence.
<i>Juglans hindsii</i>	Northern California black walnut	CNPS: 1B.1	Riparian forest; riparian forest, riparian woodland. Few extant native stands remain; widely naturalized; deep alluvial soil associated with a creek or stream. 0 to 395 m.	Low – No suitable habitat is present near the project area. Was not observed during site visit.
<i>Lasthenia conjugens</i>	Contra Costa goldfields	Federal: E CNPS: 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. 1 to 445 m.	Low – Potential suitable habitat in vernal pools and disturbed grasslands. Habitat is not ideal and highly disturbed. Occurrence in Antioch North thought to be expatriated. Not observed during May plant surveys.
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	Delta tule pea	CNPS: 1B.2	Freshwater marsh; freshwater and brackish marshes; often found with <i>Typha</i> , <i>Aster lentus</i> , <i>Rosa californica</i> , <i>Juncus</i> spp., <i>Scirpus</i> , etc. Usually on marsh and slough edges.	Moderate - Potential to occur in marsh habitat along the Suisun Bay/New York Slough, but not near impact areas.
<i>Legenere limosa</i>	legenere	CNPS: 1B.1	Vernal pools. 1 to 880 m.	Moderate - Potential to occur in vernal pool, which was not surveyed due to lack of access.
<i>Lessingia hololeuca</i>	woolly-headed lessingia	CNPS: 3	Broad-leafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland/clay, serpentinite. 15 to 305 m.	Low – No suitable habitat. No serpentinite.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 17 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	State: R CNPS: 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. 0 to 10 m.	Moderate - Potential to occur in marsh habitat along the Suisun Bay/New York Slough, but not near project impact areas.
<i>Limosella subulata</i>	Delta mudwort	CNPS: 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 <i>Lilaeopsis masonii</i> . 0 to 3 m.	Moderate - Potential to occur in marsh habitat along the Suisun Bay/New York Slough, but not near project impact areas.
<i>Madia radiata</i>	showy madia	CNPS: 1B.1	Chenopod scrub; valley and foothill grassland, cismontane woodland, chenopod scrub; mostly on adobe clay in grassland or among shrubs. 25 to 1125 m.	Low – Suitable habitat in disturbed grassland areas. However, presence is unlikely as there are only three records from 1938 and 1941. Not observed in May survey.
<i>Malacothamnus hallii</i>	Hall's bush-mallow	CNPS: 1B.2	Chaparral, coastal scrub. 10 to 760 m.	Low – No potential habitat.
<i>Micropus amphibolus</i>	Mt. Diablo cottonweed	CNPS: 3.2	Broad-leafed upland forest, Chaparral, Cismontane woodland, Valley and foothill grassland/rocky. 45-825 m.	Low – No potential habitat. Elevation is too low.
<i>Monardella villosa</i> ssp. <i>globosa</i>	robust monardella	CNPS: 1B.2	Broad-leafed upland forest(openings), Chaparral(openings), Cismontane woodland, Coastal scrub, Valley and foothill grassland. 100 to 915 m.	Low – No potential habitat. Elevation is too low.
<i>Neostapfia colusana</i>	Colusa grass	Federal: T CNPS: 1B.1	Vernal pools. Usually in large, or deep vernal pool bottoms; adobe soils. 5 to 110 m.	Low – No suitable habitat. No nearby occurrence records.
<i>Oenothera deltoides</i> ssp. <i>howellii</i>	Antioch Dunes evening-primrose	Federal: E & critical habitat State: E CNPS: 1B.1	Interior dunes; remnant river bluffs and sand dunes east of Antioch. 0 to 30 m.	Low – No potential habitat in project area.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 18 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Phacelia phacelioides</i>	Mt. Diablo phacelia	CNPS: 1B.2	Chaparral, Cismontane woodland/rocky. 500 to 1370 m.	Low – No suitable habitat. Elevation is too low.
<i>Plagiobothrys hystriculus</i>	bearded popcorn-flower	CNPS: 1B.1	Valley and foothill grassland(mesic), Vernal pools margins/often vernal swales. 0 to 52 m.	Moderate - Potential to occur in vernal pool, the channelized portion of Kirker Creek, and Los Medanos Wasteway, which were not surveyed during May due to lack of access.
<i>Potamogeton zosteriformis</i>	eel-grass pondweed	CNPS: 2.2	Marsh and swamp; marshes and swamps; ponds, lakes, streams. 0 to 1860 m.	Low – Potential habitat does occur in the project area, but there are no nearby known occurrences.
<i>Sanicula saxatilis</i>		State: R CNPS 1B.2	Broad-leafed upland forest, Chaparral, Valley and foothill grassland/rocky. 620 to 1175 m.	Low – No suitable habitat. Elevation is too low.
<i>Senecio aphanactis</i>	chaparral ragwort	CNPS 2.2	Cismontane woodland; cismontane woodland, coastal scrub; drying alkaline flats. 20 to 575 m.	Low – No suitable habitat is present near the project area. Elevation is too low.
<i>Streptanthus albidus</i> ssp. <i>peramoenus</i>	most beautiful jewel-flower	CNPS 1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland/serpentinite. 94 to 1000 m.	Low – No suitable habitat is present near the project area. Elevation is too low.
<i>Streptanthus hispidus</i>	Mt. Diablo jewel-flower	CNPS 1B.2	Chaparral, Valley and foothill grassland/rocky. 365 to 1200 m.	Low – No suitable habitat is present near the project area. Elevation is too low.
<i>Symphotrichum lentum</i>	Suisun Marsh aster	CNPS 1B.2	Brackish marsh; marshes and swamps (brackish and freshwater); most often seen along sloughs with <i>Phragmites</i> , <i>Scirpus</i> , blackberry, <i>Typha</i> , etc., 0 to 3 m.	Low – No potential habitat in project area.
<i>Triquetrella californica</i>	coastal triquetrella	CNPS 1B.2	Coastal bluff scrub, coastal scrub. Moss growing on soil. 10 to 100m	Low – No suitable habitat.

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 19 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
<i>Tropidocarpum capparideum</i>	caper-fruited tropidocarpum	CNPS 1B.1	Valley and foothill grassland; valley and foothill grassland; alkaline clay. 0 to 455 m.	Low – Thought to be extinct. Last known record from 1957. Occurrences near project area from 1889 and 1896.
<i>Viburnum ellipticum</i>	oval-leaved viburnum	CNPS: 2.3	chaparral, cismontane woodland, lower montane coniferous forest. 215 to 1400 m.	Low – No suitable habitat is present near the project area. Elevation is too low.
Habitat Type				
N	Alkali Meadow	N	Areas where the water table is shallow (1 to 3 meters deep), and soils are alkaline. In California, outside the Eastern Sierra alkali meadows remain only in small fragments in the southern Central Valley, and on the Modoc Plateau (Davis et al., 1998).	Low
N	Alkali Seep	N	Scattered throughout the desert regions of California; less common in other areas. Permanently moist or wet alkaline seeps. Often associated with Alkali Meadows. Low-growing perennial herbs, usually forming relatively complete cover.	Low
N	Cismontane Alkali Marsh	N	Lake beds, flood plains of the Sacramento and San Joaquin Rivers. Low-lying areas of Kings and Kern Counties in the southwestern San Joaquin Valley, occasionally near the Colorado River in eastern Riverside and Imperial counties. Elevation below 1,000 feet. Standing water or saturated soil present during most or all of year. High evaporation and low input of fresh water render these marshes somewhat salty, especially during the summer.	Low

**Table 7.2-1
Special-Status Species Reported Within a 10-Mile Radius¹ and Potential for Occurrence (Page 20 of 20)**

Scientific Name	Common Name	Special Status	Habitat	Probability of Occurrence Within Project Vicinity
N	Coastal and Valley Freshwater Marsh	N	Along the coast, in coastal valleys near river mouths, around the margins of lakes and springs. Most extensive in upper Delta. Common in river oxbows and other areas on the floodplain. Sites lacking significant current permanently flooded by fresh water. Prolonged saturation permits accumulation of deep, peaty soils. Dominated by perennial, emergent monocots to 4 to 5 m tall.	High
N	Coastal Brackish Marsh	N	At the interior edges of coastal bays and estuaries or in coastal lagoons. Most extensively developed around Suisun Bay at the mouth of the Delta. Dominated by perennial, emergent, herbaceous monocots to 2m tall. Salinity may vary considerably, and may increase at high tide or during seasons of low freshwater runoff or both.	High
N	Northern Claypan Vernal Pool	N	Central San Joaquin Valley north to Glenn and Colusa counties. Pools may be small (a few square meters) or quite large (covering several ha). Fairly old, circum-neutral to alkaline, Si-cemented hardpan soils. Often more or less saline.	High
N	Serpentine Bunchgrass	N	Upper slopes and ridge tops that are flat to moderately steep.	Low
N	Stabilized Interior Dunes	N	Interior dunes	Low

Notes:

¹ This includes the WPGS site, onsite linears, construction laydown and parking areas, and offsite water pipeline alignment

Special-status abbreviations: T=Threatened, E=Endangered, R=Rare, N=None, SSC=Species of Special Concern, BCC=Bird of Conservation Concern; CNPS List (1st number): _____; CNPS Threat Code Rankings (decimal): 1=Seriously endangered in California, 2=Fairly endangered in California, 3=Not very endangered in California.

Scientific Name	Common Name	Seasonal Wetland	Freshwater/ brackish Marsh	Riparian	Grassland/ ruderal	Landscaped/ ornamental
<i>Acacia melanoxylon</i>	blackwood acacia					X
<i>Acacia</i> sp. (possibly <i>A. verticillata</i>)	star acacia					X
<i>Agrostis</i> sp.	bent grass	X				
<i>Ailanthus altissima</i>	tree of heaven				X	
<i>Amsinkia</i> sp. (likely <i>A. manzeisii</i>)	fiddleneck				X	
<i>Arctostaphylos</i> sp.	manzanita					X
<i>Artemisia californica</i>	California sagebrush				X	
<i>Asclepias fascicularis</i>	narrow leaf milkweed				X	
<i>Atriplex</i> sp. (likely <i>A. semibaccata</i>)	Australian saltbrush				X	
<i>Atriplex</i> sp. (likely <i>Atriplex argentea</i>)	silverscale	X			X	
<i>Atriplex triangularis</i>	fat hen	X			X	
<i>Avena barbata</i>	slender wild oats				X	
<i>Avena fatua</i>	common wild oats				X	
<i>Baccharis pilularis</i>	coyote brush				X	X
<i>Baccharis salicifolia</i>	mulefat	X				
<i>Brassica nigra</i>	black mustard	X				
<i>Brassica rapa</i>	field mustard				X	
<i>Bromus diandrus</i>	ripgut brome				X	
<i>Bromus madritensis</i>	foxtail brome	X				
<i>Callistemon citrinus</i>	crimson bottlebrush				X	X
<i>Campsis radicans</i>	trumpet creeper				X	
<i>Carduus pycnocephalus</i>	Italian thistle				X	
<i>Carex</i> sp.	sedge	X				
<i>Centaurea solstitialis</i>	yellow star thistle				X	
<i>Chamaesyce</i> sp.	spurge	X			X	
<i>Chenopodium</i> sp. (possibly <i>C. berlandieri</i>)	goosefoot	X			X	
<i>Cirsium vulgare</i>	bull thistle	X				
<i>Convolvulus arvensis</i>	bindweed				X	
<i>Conzysa</i> sp.	horseweed				X	
<i>Cortaderia jubata</i>	pampas grass		X			
<i>Crepis</i> sp.	hawksbeard				X	
<i>Cynara cardunculus</i>	artichoke thistle				X	
<i>Cyperus eragrostis</i>	tall flatsedge	X				
<i>Cyperus</i> sp.	flatsedge	X				

**Table 7.2-2
Plant Species Observed in the Local Study Area (Page 2 of 4)**

Scientific Name	Common Name	Seasonal Wetland	Freshwater/brackish Marsh	Riparian	Grassland/ruderal	Landscaped/ornamental
<i>Dactylis glomerata</i>	orchard grass				X	
<i>Datura wrightii</i>	jimsonweed				X	
<i>Deschampsia</i> sp.	hairgrass	X				
<i>Digitaria sanguinalis</i>	hairy crabgrass				X	
<i>Distichlis spicata</i>	saltgrass	X			X	
<i>Downingia ornitissima</i>	Folded downingia	X				
<i>Elymus glaucus</i>	blue wildrye				X	
<i>Epilobium</i> sp.	willowherb	X				
<i>Epilobium</i> sp. (<i>E. brachycarpum</i> ?)	fireweed				X	
<i>Eremocarpus setigerus</i>	turkey mullien				X	
<i>Erodium botrys</i>	broadleaf filaree				X	
<i>Erodium cicutarium</i>	redstem filaree				X	
<i>Eschscholzia californica</i>	California poppy	X				
<i>Foeniculum vulgare</i>	fennel				X	
<i>Fraxinus latifolia</i>	Oregon ash	X	X			
<i>Gnaphalium luteo-album</i>	everlasting cudweed	X				
<i>Gnaphalium stramineum</i>	small flowered cudweed	X				
<i>Grindelia camporum</i> ssp. <i>camporum</i>	Great Valley gumplant				X	
<i>Heliotropium europaeum</i>	European heliotrope	X				
<i>Hemizonia</i> sp.	tarplant				X	
<i>Hirschfeldia incana</i>	Short pod mustard				X	
<i>Hordeum murinum</i>	foxtail barley				X	
<i>Juglans californica</i>	California black walnut					X
<i>Juncus balticus</i>	Baltic rush		X			
<i>Lactuca serriola</i>	Prickly lettuce				X	
<i>Lepidium latifolium</i>	broadleaf pepperweed		X		X	
<i>Leymus triticoides</i>	Creeping wildrye	X			X	
<i>Lithrum hysopifolium</i>	Loosestrife	X				
<i>Lolium perenne</i>	Perennial rye grass				X	
<i>Lolium temulentum</i>	Darnel ryegrass				X	
<i>Lotus corniculatus</i>	bird's foot trefoil	X				
<i>Lupinus</i> sp. (likely <i>L. albifrons</i>)	lupine				X	
<i>Malva parviflora</i>	Cheeseweed				X	
<i>Malva</i> sp. (possibly <i>M. leprosa</i>)	mallow				X	

Scientific Name	Common Name	Seasonal Wetland	Freshwater/ brackish Marsh	Riparian	Grassland/ ruderal	Landscaped/ ornamental
<i>Medicago polymorpha</i>	Bur clover				X	
<i>Melilotus</i> sp.	Sweet clover				X	
<i>Mentha spicata</i>	spearmint	X				
<i>Mimosa</i> sp.	mimosa				X	
<i>Nerium oleander</i>	Oleander					X
<i>Oenanthe sarmentosa</i>	water parsley	X				
<i>Panicum</i> sp. (likely <i>P. capillare</i>)	witchgrass				X	
<i>Paspalum dilatatum</i>	Dallis grass	X				
<i>Phalaris aquatica</i>	Harding grass	X				
<i>Phalaris</i> sp.	canarygrass	X				
<i>Phragmites australis</i>	common reed	X	X			
<i>Phytolacca americana</i>	pokeweed				X	
<i>Picris echioides</i>	bristly oxtongue	X	X	X	X	
<i>Pinus</i> sp.	Pine					X
<i>Pittosporum</i> sp.	pittosporum					X
<i>Poa</i> sp.	bluegrass	X				
<i>Polygonum</i> sp.	beard grass				X	
<i>Polypogon interruptis</i>	ditch beard grass	X				
<i>Polypogon monspeliensis</i>	Rabbit's foot grass	X				
<i>Populus balsamifera</i> spp. <i>trichocarpa</i>	Cottonwood	X		X		
<i>Prunus</i> sp.	fruit tree					X
<i>Quercus agrifolia</i>	Coast live oak				X	X
<i>Raphanus sativus</i>	wild radish				X	
<i>Rhamnus californica</i>	California coffeeberry					X
<i>Rubus discolor</i>	Himalayan blackberry				X	
<i>Rumex crispus</i>	curly dock	X			X	
<i>Salicornia virginica</i>	pickleweed	X				
<i>Salix exigua</i>	sandbar willow			X		
<i>Salix laevigata</i>	red willow			X	X	
<i>Salsola kali</i>	Russian thistle				X	
<i>Schinus molle</i>	Peruvian peppertree					X
<i>Schoenoplectus pungens</i>	common threesquare	X				
<i>Scirpus acutus</i>	common tule	X				
<i>Scirpus californicus</i>	California bulrush		X			

Table 7.2-2 Plant Species Observed in the Local Study Area (Page 4 of 4)						
Scientific Name	Common Name	Seasonal Wetland	Freshwater/brackish Marsh	Riparian	Grassland/ruderal	Landscaped/ornamental
<i>Silybum marianum</i>	Milk thistle				X	
<i>Solanum sarrachoides</i>	nightshade				X	
<i>Sonchus oleraceus</i>	common sowthistle				X	
<i>Sorghum halepensis</i>	Johnson grass				X	
<i>Stipitatus micranthus</i>	Slender popcorn flower	X				
<i>Torilis arvensis</i>	hedge parsley	X				
<i>Tribulus terrestris</i>	cowtrop				X	
<i>Trifolium hirtum</i>	rose clover				X	
<i>Typha angustifolia</i>	narrow leaf cattail	X	X			
<i>Vicia villosa</i> ssp. <i>villosa</i>	hairy vetch				X	
<i>Washingtonia filifera</i>	fan palm				X	X
<i>Xanthium strumarium</i>	rough cocklebur	X			X	

**Table 7.2-3
Wildlife Species Observed in the Project Vicinity**

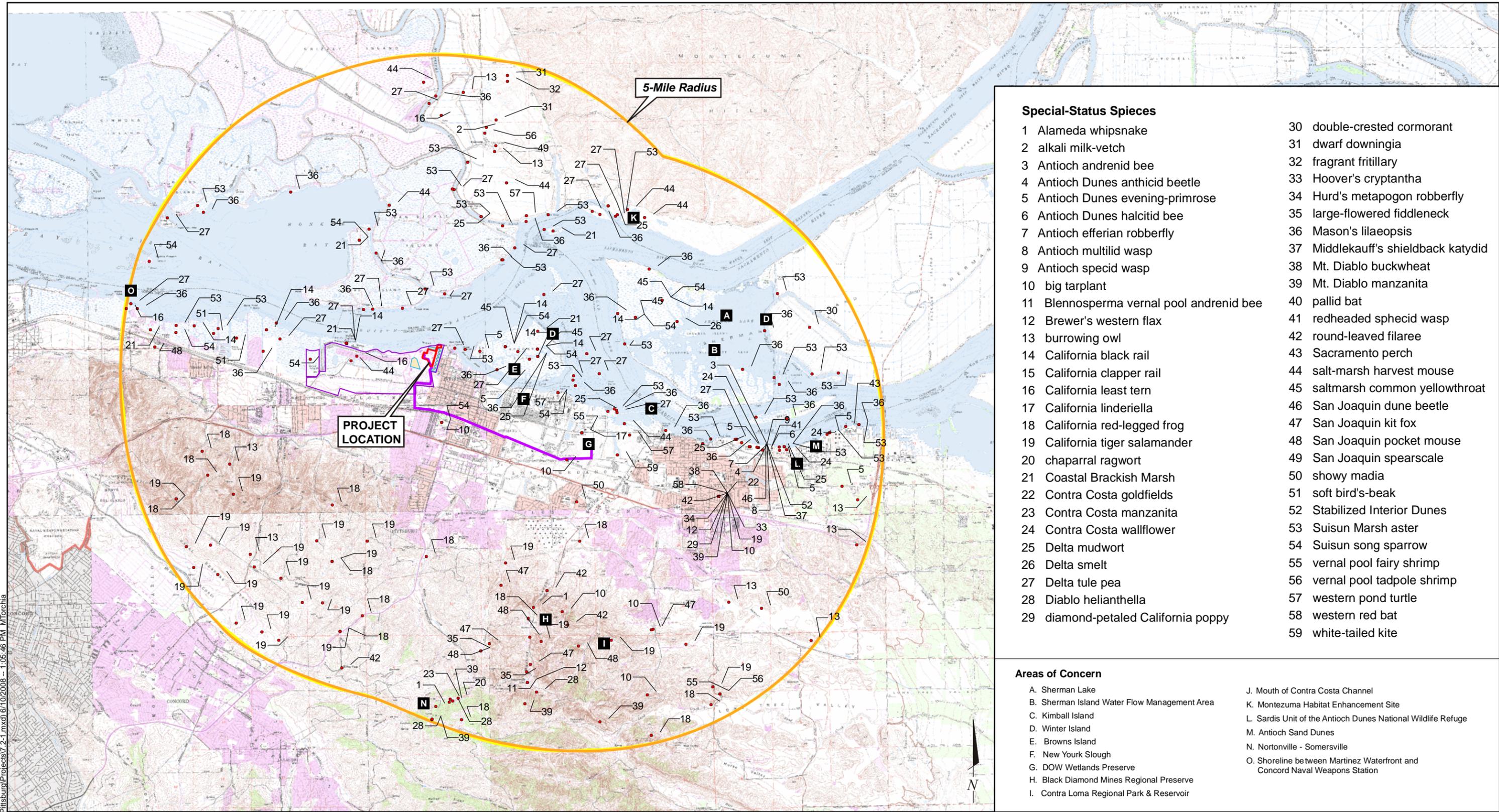
Scientific Name	Common Name	Direct Observation	Scat or Tracks	Nest or Burrow	Skeleton or Remains
<i>Agelaius phoeniceus</i>	Red-winged blackbird	X			
<i>Anas platyrhynchos</i>	Mallard duck	X			
<i>Aphelocoma coerulescens</i>	Scrub jay	X			
<i>Branta canadensis</i>	Canada goose	X			
<i>Buteo jamaicensis</i>	Red-tailed hawk	X			
<i>Butorides virescens</i>	Green heron	X			
<i>Canis latrans</i>	Coyote		X		
<i>Cathartes aura</i>	Turkey vulture	X			
<i>Charadrius vociferus</i>	Killdeer	X			
<i>Cistothorus palustris</i>	Marsh wren	X			
<i>Columbia livia</i>	Rock dove	X			
<i>Corvus brachyrhynchos</i>	American crow	X			
family Astacidae	Crayfish				X
<i>Felis catus</i>	Domestic cat	X			
<i>Gambusia affinis</i>	Mosquito fish	X			
<i>Hirundo rustica</i>	Barn swallow			X	
<i>Lepus californicus</i>	Black-tailed jackrabbit	X	X	X	
<i>Mimus polyglottos</i>	Northern mockingbird	X			
<i>Papilio glaucas</i>	Tiger swallowtail butterfly	X			
<i>Pituophis catenifer</i>	Gopher snake				X
<i>Procyon lotor</i>	Raccoon		X		
<i>Pseudacris regilla</i>	Pacific chorus frog	X			
<i>Sayornis nigricans</i>	Black phoebe	X			
<i>Sceloporus occidentalis</i>	Western fence lizard	X			
<i>Spermophilus beecheyi</i>	California ground squirrel	X		X	
<i>Taxidea taxus</i>	American badger				X
<i>Thomomys</i> sp.	Pocket gopher			X	
<i>Turdus migratorius</i>	American robin	X			
<i>Tyto alba</i>	Barn owl				X
<i>Zenaida macroura</i>	Mourning dove	X			

Table 7.2-4 Applicable Biological Resources Laws, Ordinances, Regulations, and Standards (Page 1 of 2)			
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.	7.2.1.6, 7.2.2.4, 7.2.4.3, 7.2.5.1
Section 7 of Fish and Wildlife Coordinating Act, 16 USC 742 et seq., 16 USC 1531 et seq., and 50 CFR 17.	U.S. Fish and Wildlife Service; National Marine Fisheries Service	Requires consultation if any project facilities could jeopardize the continued existence of an endangered species. Applicability depends on federal jurisdiction over some aspect of the project.	7.2.1.6, 7.2.2.4, 7.2.4.3, 7.2.5.1
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.	7.2.1.6, 7.2.2.4, 7.2.4.3, 7.2.5.1
Section 401 of the Clean Water Act of 1977 (Rivers and Harbors Act § 10; 33 USC § 401 et seq.)	San Francisco Regional Water Quality Control Board	Requires the applicant to conduct water quality impact analysis for the project when using 404 permits.	7.2.1.4, 7.2.2.2, 7.2.4.1, 7.2.5.1
Section 404 of the Clean Water Act; 33 USC § 1251-1376; 30 CFR § 330.5(a)(26)	U.S. Army Corps of Engineers	Gives USACE authority to regulate discharges of dredge or fill in water of the United States, including wetlands.	7.2.1.4, 7.2.2.2, 7.2.4.1, 7.2.5.1
Executive Order 11990, Protection of Wetlands (May 24, 1977)	U.S. Army Corps of Engineers	Protection of wetlands.	7.2.1.4, 7.2.2.2, 7.2.4.1, 7.2.5.1
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.	7.2.1.6, 7.2.2.4, 7.2.4.3, 7.2.5.2
Fish and Game Code: Fully Protected Species, Significant Natural Areas, Designated Ecological Reserves	California Department of Fish and Game	Prohibits the taking of listed plants and animals that are Fully Protected in California. Designates certain areas as significant wildlife habitats.	7.2.2, 7.2.4

Table 7.2-4 Applicable Biological Resources Laws, Ordinances, Regulations, and Standards (Page 2 of 2)			
Laws, Ordinances, Regulations, and Standards	Administering Agency	Applicability	Section
Section 2081 Endangered Species Memorandum of Understanding (MOU)	California Department of Fish and Game	MOU issued when the “taking” of a species is incidental to the lawful operation of a project.	7.2.1.6, 7.2.2.4, 7.2.4.3, 7.2.5.2
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.	7.2.1.6, 7.2.2.4, 7.2.4.3, 7.2.5.2
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.	7.2.1.6, 7.2.2.4, 7.2.4.3, 7.2.5.2
California Fish and Game Code §1600, Streambed Alteration Agreement	California Department of Fish and Game	Requires authorization impact waterways, including impacts to vegetation and wildlife from sediment, diversions, and other disturbances.	7.2.2.1, 7.2.4.1
California Environmental Quality Act (CEQA), PRC § 21000 et seq.	California Energy Commission (for this project)	Protects of the environment within the state of California. CEQA clearance is received through review of the AFC.	7.2, 7.2.5.2
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)	Protects of rare or endangered species.	7.2.1.6, 7.2.2.4, 7.2.4.3, 7.2.5.2
Local			
Contra Costa County General Plan (2005) Goal 8-D, Goal 8-E, Goal 8-F	Contra Costa County Community Development Department	Specific policy goals and objectives of the County. Does not supersede State and Federal authority.	7.2, 7.2.5.3
Contra Costa County Tree Ordinance: 816-4 and 816-6	Contra Costa County	Protects trees in the unincorporated parts of Contra Costa County.	7.2.2.3, 7.2.4.3
City of Pittsburg General Plan: 9-P-2, 9-P-9, 9-P-19, 9-P-25	City of Pittsburg	Specific policy goals and objectives of the City. Does not supersede State and Federal authority.	7.2, 7.2.5.3

Table 7.2-5 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
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

Table 7.2-6 Permits Required		
Responsible Agency	Permit/Approval	Expected Schedule After Submitting Application
U.S. Army Corps of Engineers	Nationwide Permit #12 (utility line activities)	12 to 16 months
U.S. Fish and Wildlife Service	Section 7 consultation for listed species; issuance of a Biological Opinion by the USFWS (the Corps would be the federal agency responsible for initiating consultation with the USFWS)	12 to 15 months
California Department of Fish and Game	Streambed Alteration Agreement (Section 1600) for Kirker Creek	6 to 8 months
Regional Water Quality Control Board	401 Water Quality Certification or waiver	1 month after the USACOE issues its authorization



- Special-Status Species**
- | | |
|------------------------------------------|-------------------------------------|
| 1 Alameda whipsnake | 30 double-crested cormorant |
| 2 alkali milk-vetch | 31 dwarf downingia |
| 3 Antioch andrenid bee | 32 fragrant fritillary |
| 4 Antioch Dunes anthicid beetle | 33 Hoover's cryptantha |
| 5 Antioch Dunes evening-primrose | 34 Hurd's metapogon robberfly |
| 6 Antioch Dunes halcitic bee | 35 large-flowered fiddleneck |
| 7 Antioch efferian robberfly | 36 Mason's lilaeopsis |
| 8 Antioch multilid wasp | 37 Middlekauff's shieldback katydid |
| 9 Antioch specid wasp | 38 Mt. Diablo buckwheat |
| 10 big tarplant | 39 Mt. Diablo manzanita |
| 11 Blennosperma vernal pool andrenid bee | 40 pallid bat |
| 12 Brewer's western flax | 41 redheaded sphecid wasp |
| 13 burrowing owl | 42 round-leaved filaree |
| 14 California black rail | 43 Sacramento perch |
| 15 California clapper rail | 44 salt-marsh harvest mouse |
| 16 California least tern | 45 saltmarsh common yellowthroat |
| 17 California linderiella | 46 San Joaquin dune beetle |
| 18 California red-legged frog | 47 San Joaquin kit fox |
| 19 California tiger salamander | 48 San Joaquin pocket mouse |
| 20 chaparral ragwort | 49 San Joaquin spearscale |
| 21 Coastal Brackish Marsh | 50 showy madia |
| 22 Contra Costa goldfields | 51 soft bird's-beak |
| 23 Contra Costa manzanita | 52 Stabilized Interior Dunes |
| 24 Contra Costa wallflower | 53 Suisun Marsh aster |
| 25 Delta mudwort | 54 Suisun song sparrow |
| 26 Delta smelt | 55 vernal pool fairy shrimp |
| 27 Delta tule pea | 56 vernal pool tadpole shrimp |
| 28 Diablo helianthella | 57 western pond turtle |
| 29 diamond-petaled California poppy | 58 western red bat |
| | 59 white-tailed kite |

- Areas of Concern**
- | | |
|----------------------------------------------|----------------------------------------------------------------------------|
| A. Sherman Lake | J. Mouth of Contra Costa Channel |
| B. Sherman Island Water Flow Management Area | K. Montezuma Habitat Enhancement Site |
| C. Kimball Island | L. Sardis Unit of the Antioch Dunes National Wildlife Refuge |
| D. Winter Island | M. Antioch Sand Dunes |
| E. Browns Island | N. Nortonville - Somersville |
| F. New Yourk Slough | O. Shoreline between Martinez Waterfront and Concord Naval Weapons Station |
| G. DOW Wetlands Preserve | |
| H. Black Diamond Mines Regional Preserve | |
| I. Contra Loma Regional Park & Reservoir | |

- LEGEND**
- | | |
|-------------------------------------|-------------------------------------------|
| Pittsburg Power Plant Boundary | Water Supply and Discharge Pipeline Route |
| Willow Pass Generating Station Site | 5-Mile Radius |
| Construction Laydown Area | |

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



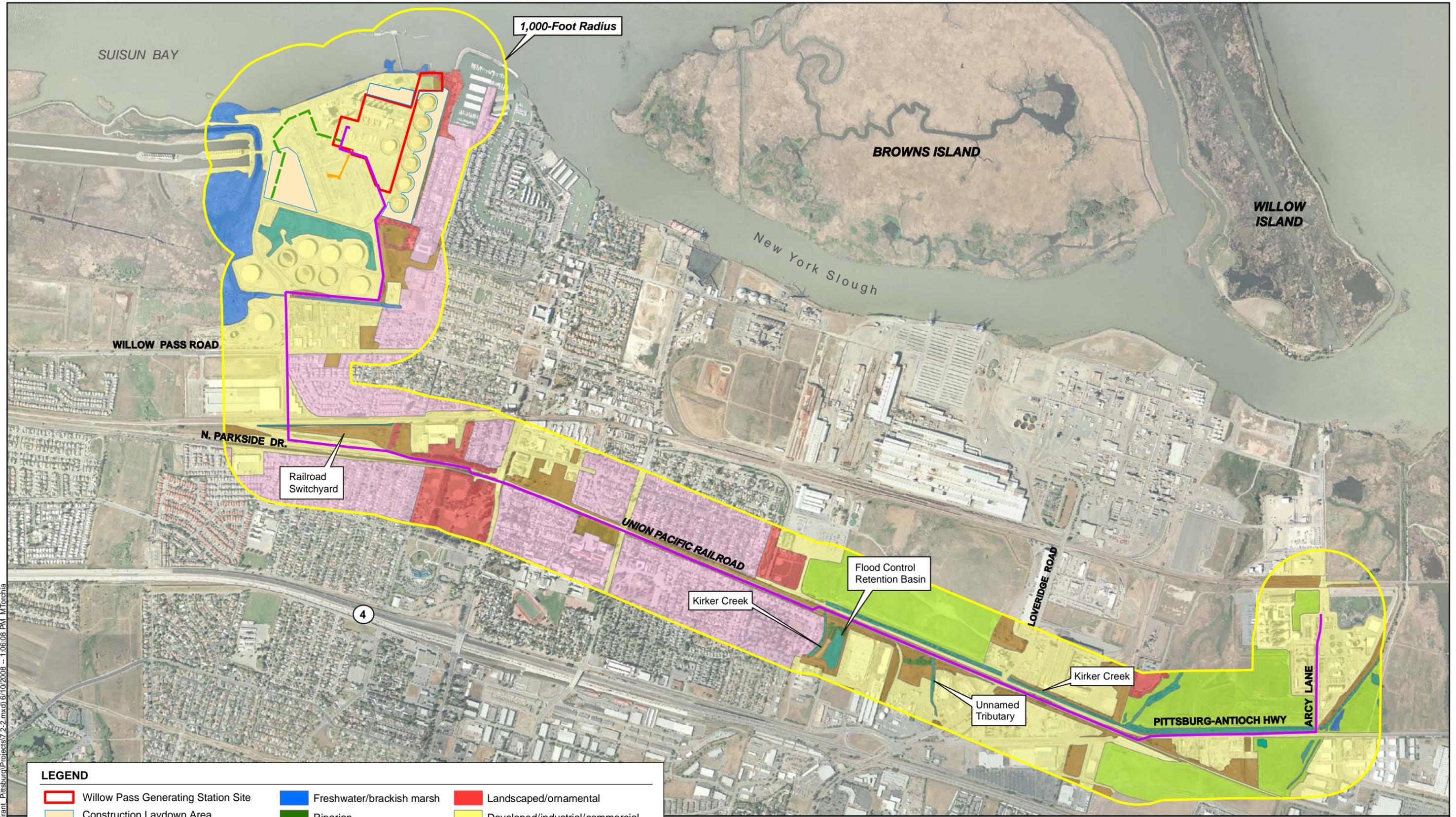
REGIONAL OVERVIEW OF SPECIAL-STATUS SPECIES AND AREAS OF SIGNIFICANT BIOLOGICAL RESOURCES: 5-MILE RADIUS (CNDDB)

Willow Pass Generating Station
 Mirant Willow Pass, LLC
 Pittsburg, California

June 2008
 28067343

FIGURE 7.2-1

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LEGEND

- | | | |
|-------------------------------------------|---------------------------|---------------------------------|
| Willow Pass Generating Station Site | Freshwater/brackish marsh | Landscaped/ornamental |
| Construction Laydown Area | Riparian | Developed/industrial/commercial |
| Water Supply and Discharge Pipeline Route | Grassland/ruderal | Developed/residential |
| Proposed Transmission Line | Ruderal/bare ground | Seasonal wetland |
| Proposed Gas Transmission Line | | |

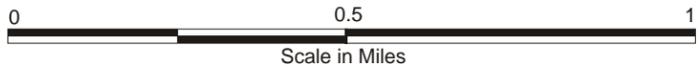
VEGETATION TYPES

Willow Pass Generating Station
 Mirant Willow Pass, LLC
 Pittsburg, California

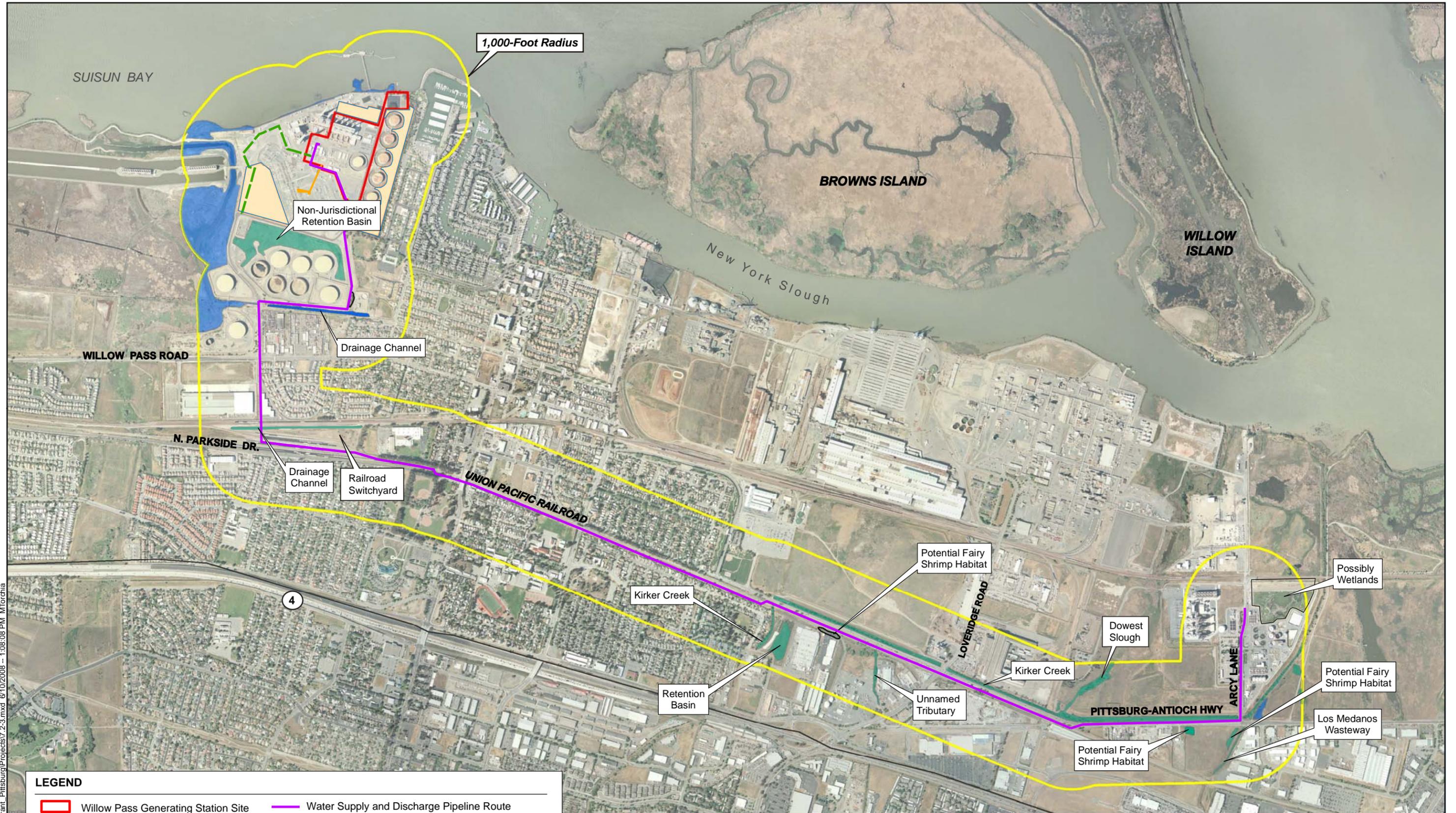
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FIGURE 7.2-2



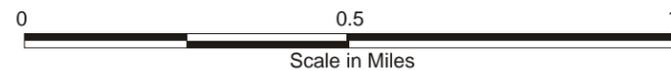
Map Document: U:\GIS\Mirant_Pittsburg\Projects\7.2-2.mxd 6/10/2008 1:06:08 PM M.Torchia



LEGEND

- | | |
|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
|  Willow Pass Generating Station Site |  Water Supply and Discharge Pipeline Route |
|  Construction Laydown Area |  Proposed Transmission Line |
|  Freshwater/Brackish Marsh |  Proposed Gas Transmission Line |
|  Seasonal Wetland | |

*NOTE: Potential wetlands are identified but have not been formally delineated, nor has Corps jurisdiction been determined.



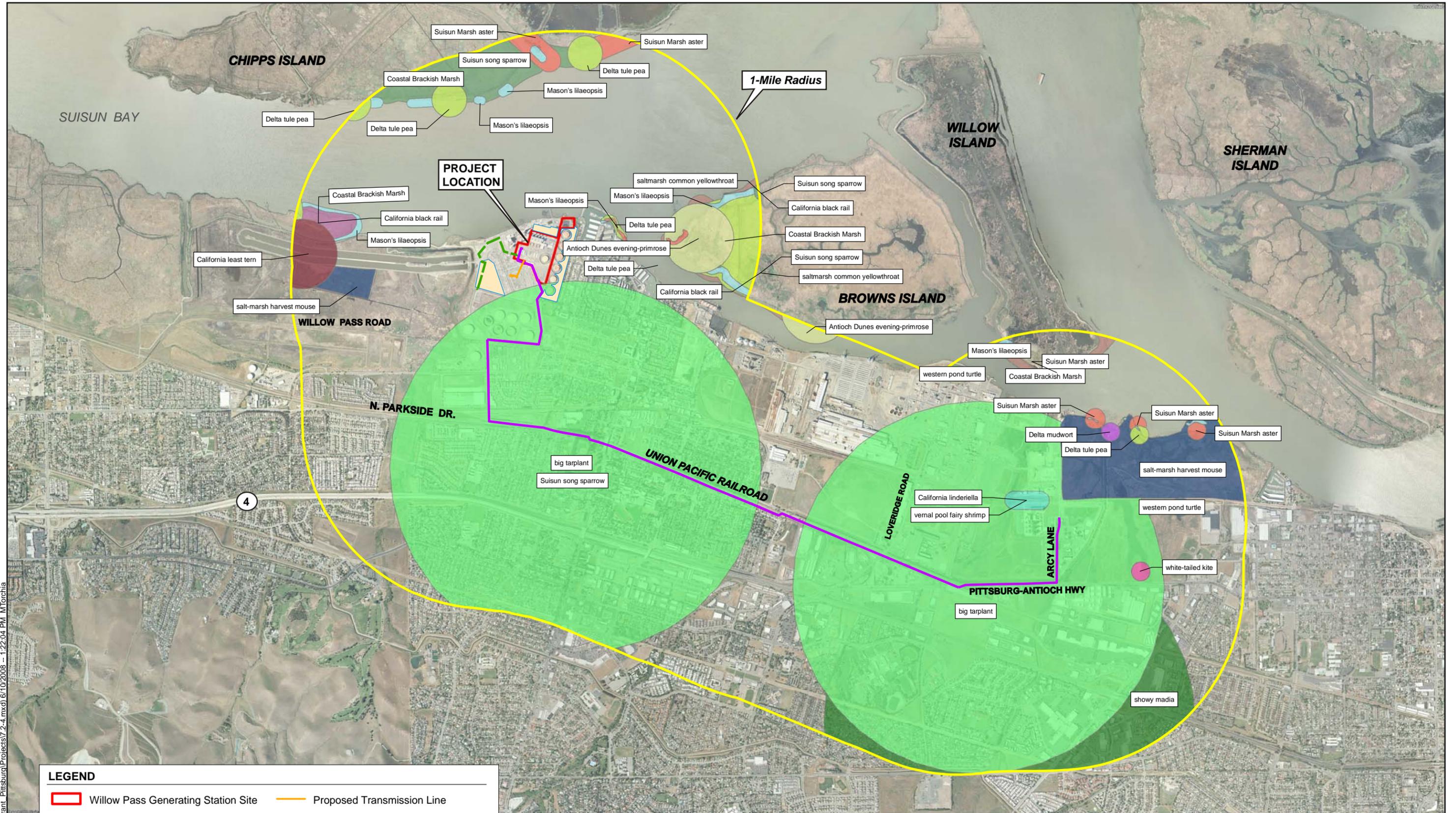
POTENTIAL JURISDICTIONAL WETLANDS

Willow Pass Generating Station
 Mirant Willow Pass, LLC
 Pittsburg, California

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FIGURE 7.2-3



LEGEND

 Willow Pass Generating Station Site	 Proposed Transmission Line
 Construction Laydown Area	 Proposed Gas Transmission Line
 Water Supply and Discharge Pipeline Route	

LOCAL MAP OF BIOLOGICAL RESOURCES
 Willow Pass Generating Station
 Mirant Willow Pass, LLC
 Pittsburg, California

June 2008
 28067343

URS

FIGURE 7.2-4

0 0.5 1
 Scale in Miles

Map Document: U:\GIS\Mirant_Pittsburg\Projects\7.2-4.mxd 6/10/2008 1:22:04 PM M.Torchia