5.2 Biological Resources

This section describes biological resources in and near the proposed Contra Costa Generating Station (CCGS) project, and the potential effects that the project may have on these resources. Section 5.2.1 discusses the affected environment, including an overview of the region, habitat and vegetation communities, and special-status species. Section 5.2.1.4 presents the results of biological surveys in and near the proposed CCGS site. Section 5.2.2 presents an environmental analysis of the proposed CCGS project, including standards of significance, potential impacts of construction and operation of the CCGS facility, and impacts to special-status species. Section 5.2.3 evaluates any potential cumulative effects to biological resources in the project vicinity, and Section 5.2.4 addresses proposed mitigation measures that would avoid, minimize, or compensate for adverse impacts. Section 5.2.5 describes the laws, ordinances, regulations and standards (LORS) that apply to the project. Section 5.2.6 presents agency contacts, and Section 5.2.7 presents permit requirements. Section 5.2.8 contains the references used to prepare this section.

5.2.1 Affected Environment

This section provides an overview of the region including discussions of regional habitat and vegetation communities, regional special-status plant species, and the methods and results of biological surveys in and near the CCGS site.

For the purposes of this document, the CCGS site includes the main CCGS facility site, the adjacent temporary construction laydown area to the east of the CCGS facility, and the 230-kV/60-kV transmission line south and west of the CCGS facility. The regional overview of the project area includes, but is not limited to, the area within 10 miles of the CCGS site (Figure 5.2-1).

The project site is approximately 15 feet above mean sea level and can be found on the U.S. Geological Survey (USGS) Jersey Island, California 7.5-minute series topographic quadrangle within Section 22, Township 2 North, Range 2 East. The main CCGS facility will be located 0.25 mile north of State Route (SR) 4 and 0.1 mile east of SR160. Land use in the region includes residential, commercial, industrial, and agricultural.

A description of regional biogeography and habitat types was obtained from reference sources including *Ecological Subregions of California* (USDA, 1997), *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland, 1986), *A Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995), the California Department of Fish and Game (CDFG) *Biological Information and Observation System* (BIOS, 2009), and the *California Environmental Resources Evaluation System* (CERES, 2008). The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) was also queried to determine the location of reported wetlands in proximity to the site (USFWS, 2009). These sources, as well as aerial photographs and USGS topographical maps, were consulted to determine the terrestrial and aquatic biological resources with potential to occur within 10 miles of the CCGS site.

A list of sensitive biological resources for the region including natural communities and special-status plant and wildlife species was compiled for the project using the CDFG California Natural Diversity Database (CNDDB) RareFind3 database full condensed report for thirteen 7.5-minute USGS quadrangles including Birds Landing, Rio Vista, Isleton,

Antioch North, Honker Bay, Jersey Island, Bouldin Island, Clayton, Antioch South, Brentwood, Woodward Island, Tassajara, and Byron Hot Springs (Appendix 5.2A, CDFG, 2009); California Native Plant Society's (CNPS) online Inventory (CNPS, 2000) for the 13 quadrangle region (Skinner et al., 1994); a USFWS species list for the 13 quadrangle region (Appendix 5.2B, USFWS 2009b); East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan (ECCC HCP/NCCP) (Jones and Stokes, 2006); the Contra Costa County Breeding Bird Atlas (Herr, 2002); and project-specific onsite field surveys. A list of potentially occurring sensitive biological resources was generated for the region based on the combined results of these reference sources. The information in the reference sources listed above is based on known occurrences, historical records, or the presence of suitable habitat for any given life stage of a particular species. Regional biological resources are depicted in Figure 5.2-1. Appendix 5.2C includes tables listing regional special-status plant and wildlife species.

5.2.1.1 Regional Overview

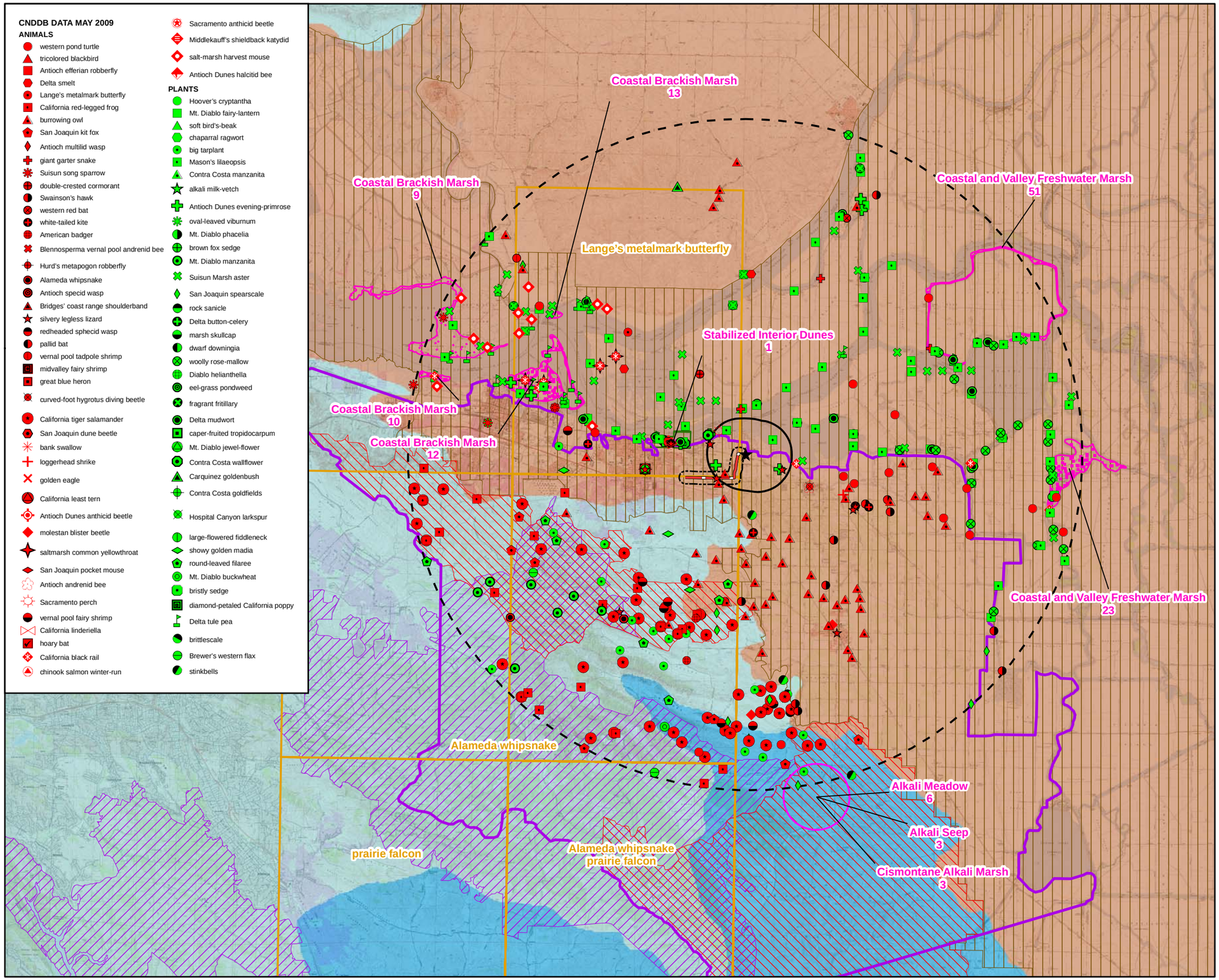
Ecoregions are ecosystems of regional extent that share common climatic and vegetation characteristics. Ecoregions are hierarchically organized into domains, divisions, provinces, and sections. The CCGS site lies within the Westside Alluvial Fans and Terraces subsection of the Great Valley Ecological Section (USDA, 1997). This subsection occurs on terraces and alluvial fans along the western edge of the San Joaquin Valley, adjacent to the Coast Ranges (Figure 5.2-1).

Generally, the predominant natural plant community in the Westside Alluvial Fans and Terraces subsection is needlegrass grassland, although none is reported or mapped in the CNDDB within 10 miles of the CCGS site. Valley oak, northern claypan vernal pools, and stabilized interior dune communities are also present in the region. The Delta subsection to the north and east of the CCGS site also contains several emergent aquatic natural plant communities including coastal and valley freshwater marsh and coastal brackish marsh along the San Joaquin River banks. The Central California Coast Range ecological section to the south of the site also contains cismontane alkali marsh, alkali seep, and alkali meadow natural communities (Figure 5.2-1).

The regional climate is hot and semi-arid to subhumid with a mean annual temperature of about 59 degrees Fahrenheit (°F) to 62°F. The mean annual precipitation is about 8 to 16 inches, and increases both toward the mountains of the southern California Coast Ranges and toward the northern end of the subsection. The mean freeze-free period is about 250 to 275 days.

Current land use within the region is mixed, with agriculture dominating the delta areas to the north and residential, commercial, and industrial uses near developed urban areas including Oakley (1.75 miles west of the site), Antioch (1.5 miles to the west), and Brentwood (4.5 miles to the south). SR 160 is approximately 0.1 mile west of the site, SR 4 is 0.25 mile to the south and a Burlington Northern-Santa Fe (BNSF) Railway is immediately adjacent to the south side of the CCGS site. These transportation corridors connect the region to the San Francisco Bay Area and Sacramento-San Joaquin Delta (Figure 5.2-1).

The CCGS site is approximately 0.6 mile south of the San Joaquin River, within the San Joaquin Delta Hydrologic Unit of the San Joaquin Hydrologic Region (BIOS, 2009).



LEGEND

- PROJECT LOCATION
- EXISTING 60kV TRANSMISSION LINE
- 1000 FOOT BUFFER
- 1 MILE BUFFER
- 10 MILE BUFFER

CRITICAL HABITAT

- CONTRA COSTA WALLFLOWER
- DELTA SMELT
- ALAMEDA WHIPSNAKE
- CALIFORNIA RED-LEGGED FROG
- EAST CONTRA COSTA HABITAT CONSERVATION INVENTORY AREA

CALIFORNIA ECOREGIONS

- Central California Coast
- Central Valley Coast Ranges
- Great Valley

Notes:
1. Source: U.S. Fish and Wildlife Service Critical Habitat Data, June 2003, Commission for Environmental Cooperation, 1997, USDA Forest Service Pacific Southwest Region, 2008. California Dept. of Fish and Game, Califinia Natural Diversity Database (CNDDB) May, 2009.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

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Miles

FIGURE 5.2-1
REGIONAL BIOLOGICAL RESOURCES
CONTRA COSTA GENERATING STATION
OAKLEY, CALIFORNIA

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The CCGS site is within the ECCC HCP/NCCP Inventory Area. The ECCC HCP/NCCP proposes coverage for 9 plant and 15 animal species that could occur within 10 miles of the CCGS site.

5.2.1.2 Regional Habitat and Vegetation Communities

Sensitive habitats within 10 miles of the CCGS site include natural plant communities and critical habitat designated for federally listed species. This section discusses sensitive natural communities identified by the CNDDB, including stabilized interior dunes, coastal and valley freshwater marsh, and coastal brackish marsh as well as critical habitat for Contra Costa Wallflower, delta smelt, Alameda whipsnake and California red-legged frog (Figure 5.2-1). Additional land use areas that provide moderate to low habitat value for plants and animals, such as residential, commercial, industrial, agriculture, open space, and recreation areas, occur in the region and are discussed in relation to the CCGS project site in Section 5.2.1.5

5.2.1.2.1 Stabilized Interior Dunes

Holland (1986) describes stabilized interior dunes as a riverbank community that includes the Antioch Dunes National Wildlife Refuge, located on the lower reaches of the San Joaquin River just above its confluence with the Sacramento River, approximately 2.25 miles west of the CCGS site. The dunes were deposited by winds that reworked glacial outwash from the Sierra Nevada during the Pleistocene, with a distribution that is restricted to the mouth of the Sacramento-San Joaquin Delta and is now much reduced by agricultural development and sand quarrying.

Stabilized interior dunes provide an open, primarily perennial, winter- and spring-growing herbaceous community with a scattering of low shrubs, or coast live oak (*Quercus agrifolia*) trees. Shrubs are typically less than waist-high and contribute less than 10 percent of cover. Characteristic species include California croton (*Croton californicus)*, San Joaquin snakeweed (*Gutierrezia californica)*, telegraph weed (*Heterotheca grandiflora)*, naked buckwheat (*Eriogonum [nudum* var.*] auriculatum)*, Contra Costa wallflower (*Erysimum capitatum angustatum)*, and Antioch Dunes evening primrose (*Oenothera deltoides* spp. *howellii)*.

5.2.1.2.2 Coastal and Valley Freshwater Marsh

Coastal and valley freshwater marshes are permanently flooded by fresh water but lack significant current. The prolonged saturation permits the accumulation of deep, peaty soils that are capable of supporting perennial, emergent monocots that can grow up to 15 feet tall, often forming completely closed canopies (Holland, 1986). Characteristic species include cattails (*Typha angustifolia*, *T. domingensis*, *T. latifolia*) and bulrushes (*Scirpus acutus, S. americanus, S. californicus*). Other smaller hydrophytic species are also present, including sedges (*Carex* spp.), flat-sedges (*Cyperus* spp.) bur-reed (*Sparganium eurycarpum*), and penny-wort (*Hydrocotyle verticillata*)(LSA, 2007).

These marshes are most extensive in the upper portion of the Sacramento-San Joaquin River Delta but are common in the Sacramento and San Joaquin valleys in river oxbows and other areas on the floodplain. This type of marsh occurs occasionally along the coast and in coastal valleys near river mouths and around the margins of lakes and springs, and is much reduced in area through its entire natural range (Holland, 1986).

5.2.1.2.3 Coastal Brackish Marsh

Brackish marsh vegetation develops in shallow, standing or slow-moving waters in coastal bays, estuaries, and coastal lagoons where fresh water meets salt water in a tidal area. Salinity may vary daily and seasonally depending on tide and level of freshwater input. Brackish marsh usually intergrades with saltmarsh toward the saline waterbody, and with freshwater marsh at the mouths of rivers, especially in the Sacramento-San Joaquin River Delta. Brackish marsh generally has species in common with both coastal saltmarsh and freshwater marsh and is typically dominated by perennial, emergent, herbaceous plants up to two meters in height. The most common species are cattails (*Typha* spp.) and species of bulrush (*Scirpus* spp.), especially alkali rush (*Scirpus robustus*). Depending on the salinity, species of sedge (*Carex* spp.), rush (*Juncus* spp.), pickleweed (*Salicornia depressa*), and others, may be present.

Brackish marsh is extensively developed around the mouth of the Sacramento-San Joaquin River Delta. Many of the brackish marsh communities occur in diked environments that are managed for waterfowl habitats (nesting, feeding, resting, and hunting). As with the northern salt marsh communities, the altered hydrological conditions in the diked, non-tidal brackish communities often do not support many of the uncommon plant and animal species found in the more natural tidal marshes; however, such marshes can be highly important to other special-status wildlife species (LSA, 2007).

5.2.1.2.4 Contra Costa Wallflower Critical Habitat

Critical habitat for Contra Costa wallflower is designated within the Antioch Dunes west of the CCGS site as an area of land, water, and airspace of T2N R2E SW 1/4 of Section 17 and the E 2/3 of the S 1/2, Section 18 (50 CFR 17.96 (a)). The CCGS site is not within critical habitat for this species.

5.2.1.2.5 Delta Smelt Critical Habitat

Critical habitat for delta smelt has been designated in areas of all water and all submerged lands below ordinary high water and the entire water column bounded by and contained in Suisun Bay (including the contiguous Grizzly and Honker bays); the length of Goodyear, Suisun, Cutoff, First Mallard (Spring Branch), and Montezuma sloughs; and the existing contiguous waters contained within the delta, as defined in section 12220 of the California Water Code. Although the CCGS project area is within the legal delta as defined in section 12220 of the California Water Code, no existing contiguous waters contained within the delta are present at the CCGS site; therefore, the site is not within critical habitat for this species.

5.2.1.2.6 Alameda Whipsnake Critical Habitat

Approximately 154,834 acres of critical habitat within six units was designated for Alameda whipsnake on October 2, 2006 (Federal Register [FR] 71:58175). These areas contain primary constituent elements consisting of scrub/shrub communities with a mosaic of open and closed canopy, contiguous woodland or annual grassland plant communities, and lands containing rock outcrops, talus, and small mammal burrows that are within or adjacent to scrub/shrub, woodland or grassland communities. Alameda whipsnake critical habitat unit 4 is composed of 23,225 acres approximately 9 miles southwest of the CCGS site.

5.2.1.2.7 California Red-legged Frog Critical Habitat

Approximately 450,288 acres of critical habitat within 34 units was designated for California red-legged frog on April 13, 2006 (FR 71:19243). On September 18, 2008, USFWS proposed an increase in critical habitat that has not been finalized. These areas contain primary constituent elements consisting of aquatic breeding habitat, non-aquatic breeding habitat, upland habitat, and dispersal habitat. Critical habitat unit CCS-1A is composed of a 4,095-acre area approximately 6 miles south of the CCGS site. The proposed increase in critical habitat would not involve areas closer to the CCGS site.

5.2.1.3 Regional Sensitive or Special-status Species

Special-status species information was compiled from a variety of sources and are summarized in tables provided in Appendix 5.2C (Tables 5.2C-1a and 5.2C-1b). The tables list all special-status species found within the project region including regional species listed as threatened or endangered that have special requirements under the federal Endangered Species Act (ESA) (USFWS, 1970) and the California Endangered Species Act (CESA) (Fish and Game Code, Sections 2050 et seq). Other non-listed sensitive and special-status species including CNPS List 1-4 species, CDFG Species of Special Concern, CDFG Fully Protected Species, CDFG Special Animals and bird species addressed by the Migratory Bird Treaty Act (MBTA) are also tabulated in Appendix 5.2C. This appendix includes the status designation for each species, habitat types that may support these species in the project region, a determination of potential for these species to occur within the CCGS 1-mile survey area, and a rationale for the occurrence determination. The known locations of special-status species identified in the CNDDB records within a 10-mile range of the CCGS site are shown on Figure 5.2-1.

Plants were considered to be sensitive or special-status if one or more of the following criteria were met:

- Federally or state-listed, proposed, or candidate for listing, as rare, threatened or endangered (USFWS, 1996; CDFG, 2009a)
- State Special Plant as defined by the CNDDB (CDFG, 2009a)
- Designated by the CNPS in its Inventory of Rare and Endangered Plants of California (CNPS, 2007)

Animals were considered to be sensitive or special-status if one or more of the following criteria were met:

- Federally- or state-listed, proposed, or candidate for listing as threatened or endangered (USFWS, 1996; CDFG, 2009a)
- California State Species of Concern as defined by the CNDDB (CDFG, 2009a)
- California State Fully Protected Species (CDFG, 2009b)
- State Special Animal as defined by the CNDDB (CDFG, 2009a)

Information acquired from the sources listed in Section 5.2.1 resulted in a list of 59 special-status plant species (Table 5.2C-1a in Appendix 5.2C) and 244 special-status animal species (Table 5.2C-1b in Appendix 5.2C) with potential to occur in the region. Sensitive and

special-status species from the regional lists with habitat(s) and/or known distribution within the 1-mile survey area for the project were evaluated for potential impacts from CCGS project construction and operation, and the results of the evaluation are discussed below in Section 5.2.1.4. Special-status species from the regional lists with habitats or known distribution that do not occur within the project area were not evaluated beyond the tables in Appendix 5.2C.

5.2.1.4 Biological Surveys

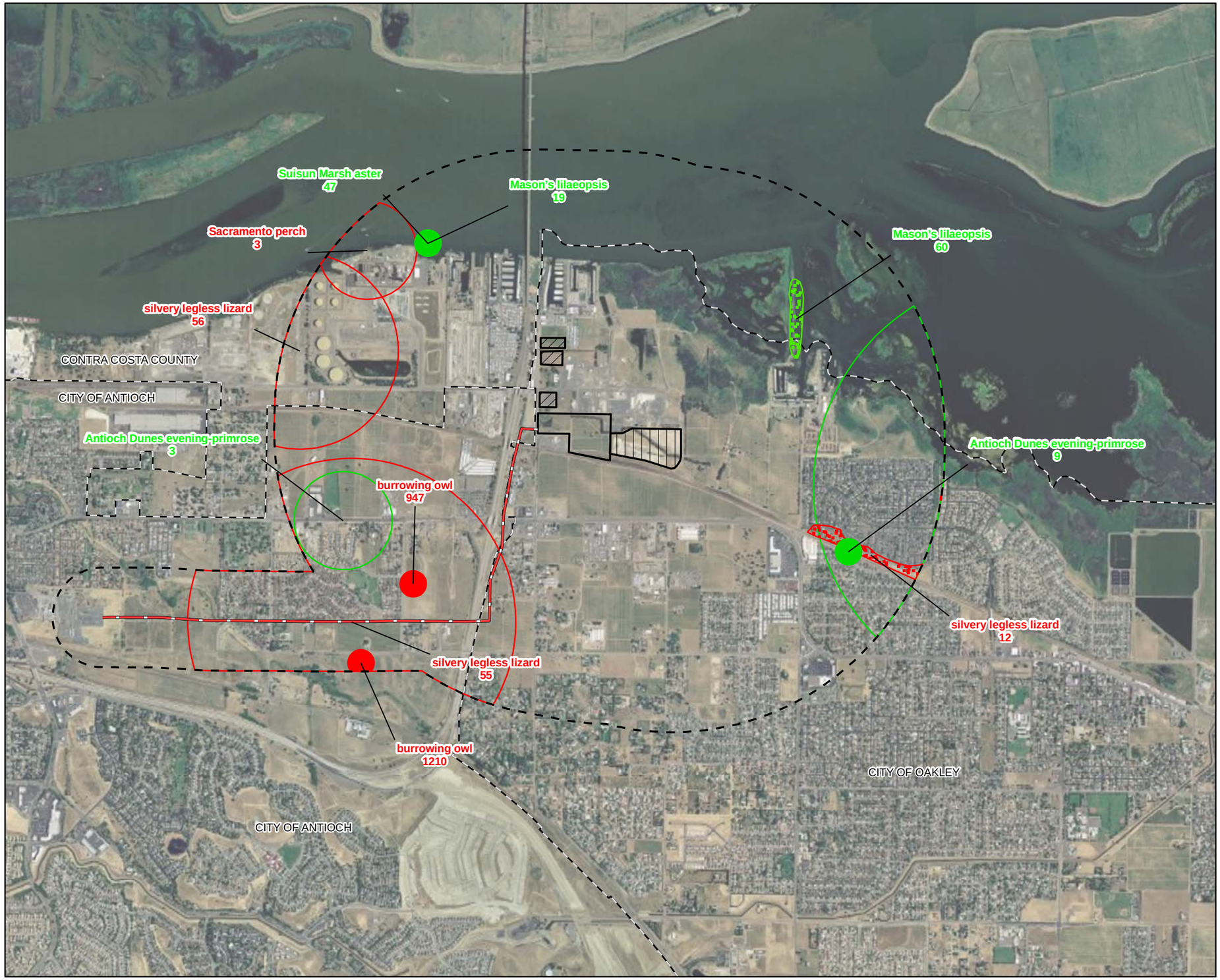
Biological resources evaluated for project impacts included plant communities, wildlife habitat, wetlands, and special-status species within the temporary and permanent CCGS site impact locations. Information obtained during the literature review and field surveys was used to determine which special-status species might have the potential to occur within the CCGS site. Information on species status, habitat preferences, geographic distribution, elevation range, and known locations near the project site was researched before starting the field surveys.

Habitat and plant community surveys were conducted within a 1-mile radius of the proposed CCGS facility and within 1,000 feet of the proposed single-pole electrical transmission tower footings (Figure 5.2-2). In this section, these areas are referred to collectively as the CCGS survey area. The Application for Certification (AFC) data adequacy requirements do not include a separate survey area for related non-linear facilities, including temporary laydown areas; however, the 20-acre construction laydown area is well within the survey area described above. Plant community and wildlife habitat assessments were conducted within the survey area to determine if sensitive habitats occur within or near the CCGS site and electrical transmission towers.

The CCGS survey area was accessed from existing roads by vehicle and/or on foot. Habitat conditions within the CCGS survey area were assessed, and a preliminary classification of the vegetation types was developed. All field surveys were aided by aerial images. Photographs were also taken to document biological resources in the CCGS survey area.

The regional special-status species lists described in Section 5.2.1.3 were evaluated against conditions within the CCGS survey area to determine the likelihood of special-status species occurrence in the area. The potential for special-status species to occur within the CCGS survey area was assessed by researching special-status species with potential to be found within the project region, compiling information on their conservation status, distribution, habitat characteristics, and known presence in the project region, including nearest known locations. A species was determined to have potential to occur within the CCGS survey area if its known or expected geographic range includes the project vicinity and if suitable habitat for the species was observed or had potential to occur within the project survey area.

The field surveys were aided by aerial imagery, which helped identify potential habitat and plant community boundary areas. The presence, or potential presence, of sensitive biological resources was determined from information gathered during reconnaissance surveys, focused wildlife and botanical surveys, and wetland delineations conducted for the project, as well as published and unpublished literature and natural resource agency databases.



LEGEND

- EXISTING 60kV TRANSMISSION LINE
- DIRT STOCKPILE AREAS
- LAYDOWN AREA
- PROJECT SITE
- CITY LIMITS
- BUFFER

CNDDB DATA MAY 2009

- PLANT (80m)
- PLANT (SPECIFIC)
- PLANT (NON-SPECIFIC)
- PLANT (CIRCULAR)
- ANIMAL (80m)
- ANIMAL (SPECIFIC)
- ANIMAL (NON-SPECIFIC)
- ANIMAL (CIRCULAR)

Notes:
1. Source: California Dept. of Fish and Game, California Natural Diversity Database (CNDDB) May, 2009.
2. 1 mile around Project Site, 1000 feet around existing Transmission Corridor.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

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FIGURE 5.2-2
SPECIAL-STATUS SPECIES WITHIN THE CCGS SURVEY AREA
CONTRA COSTA GENERATING STATION
OAKLEY, CALIFORNIA

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The following sections describe the biological conditions within the CCGS survey area, including habitat and vegetation communities, species with potential to occur, and observed species. Biological field surveys of the CCGS site and 1-mile survey area were performed by Mr. Michael Clary on March 4 and April 13, 2009. Rare plant surveys were conducted by Ms. Virginia Dains on March 4, 2009 and are provided in Appendix 5.2D. Bird surveys were conducted by Mr. Dan Williams on April 13, 2009. Resumes for Ms. Dains, Mr. Williams, and Mr. Clary are provided in Appendix 5.2E. Table 5.2-1 (included at the end of this section because of its size) lists plant and animal species observed during the field surveys.

5.2.1.5 CCGS Survey Area Habitat and Vegetation Communities

As discussed previously, habitat and plant community surveys were conducted within the CCGS survey area, including the CCGS site. The following sections discuss habitat and vegetation communities within the CCGS survey area. Figure 5.2-2 shows the vegetation communities within these areas at a scale of 1:6,000.

Reconnaissance surveys within the CCGS survey area were conducted to classify habitat and plant communities, and to assess the likelihood of special-status species occurrence. An aerial image at a scale of 1:6,000 was used to locate, access, and characterize habitat and plant communities within the 1-mile survey area. Land uses within the survey area include residential, commercial, industrial, agriculture, open space, and recreational. Non-native annual grassland, marsh, and riparian plant communities within several of these land use types provide habitat for sensitive species. The following sections discuss habitat and vegetation communities within the CCGS project survey area.

5.2.1.5.1 Urban

Land developed for urban and suburban uses, including residential, commercial and industrial uses, collectively represents the largest land use in the survey area. These areas are located to the east, south and west of the CCGS site (Figures 5.2-3a through 5.2-3j). Several segments of the proposed 230-kV transmission line occur in residential, commercial and industrial areas. These developed areas may provide habitat for birds protected under the MBTA, such as house finch (*Carpodacus mexicanus*), northern mockingbird (*Mimus polyglottos*), and Canada goose (*Branta canadensis*), among other avian and terrestrial species.

5.2.1.5.2 Agriculture

Agriculture within the area is primarily vineyard, such as is present within the CCGS site and several segments of the 230-kV electrical transmission line (Figure 5.2-3). Although not optimum forage habitat, the vineyard provides some foraging opportunities for Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), and other sensitive species.

5.2.1.5.3 Grassland

Discontinuous open space occurs throughout the survey area, including the far west end of the 230-kV electrical transmission line (Figures 5.2-3a through 5.2-3j). These areas are dominated by non-native annual grassland that provides foraging opportunities for white-tailed kite Swainson's hawk, western burrowing owl (*Athene cunicularia hypugaea*), and San Joaquin kit fox (*Vulpes macrotis mutica)*, among other avian and terrestrial species.

A grassland area 0.9 mile southeast of the CCGS site is designated as park land that provides habitat for silvery legless lizard (*Anniella pulchra pulchra*), a state species of special concern and Antioch Dunes evening primrose, a federal and state endangered plant species.

5.2.1.5.4 Marsh

Areas north of the CCGS site associated with San Joaquin delta marshes are designated as recreational land use (Figures 5.2-3a through 5.2-3j)). These areas contain palustrine emergent wetlands that provide habitat for Sacramento perch (*Archoplites interruptus*), California black rail (*Laterallus jamaicensis coturniculus*), California least tern (*Sternula antillarum browni*), tricolored blackbird (*Agelaius tricolor*), and other sensitive species.

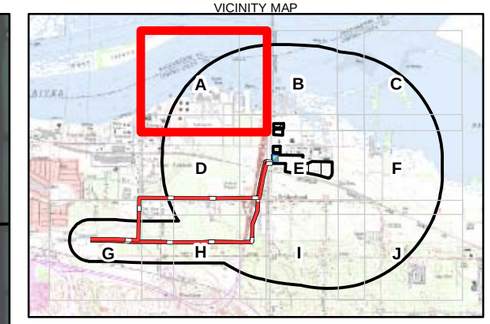
5.2.1.5.5 CCGS Facility and Temporary Construction Laydown Area

The CCGS project area, including the CCGS facility, laydown, and stockpile areas, is located on a former DuPont manufacturing facility site. The proposed location of the CCGS facility is in an area of active vineyard agriculture with a central cluster of oak trees. The proposed laydown area is located east of the proposed facility that consists of two distinct sections. One of these is DuPont's former titanium dioxide disposal site, now consisting of open grasslands, that covers approximately 14 acres. The second section consists of a 6-acre area that is entirely paved. There is a row of mature eucalyptus trees between the two sections. The proposed CCGS facility is also bordered to the north by a narrow row of mature eucalyptus trees that separates both the CCGS site, currently a vineyard, from the rest of the former DuPont manufacturing site. The western 'panhandle' of the CCGS property consists of a small conserved wetland, called Wetland E. This is discussed below. The project site consists of 21.95 contiguous acres, 13.5 acres of which is in agricultural production as a vineyard.

Vegetation at the CCGS site is vineyard agriculture primarily composed of zinfandel wine grape (*Vitus vinifera*). A cluster of four interior live oak trees (*Quercus wislizeni*) is present within the vineyard. The proposed laydown area is vegetated with ripgut brome (*Bromus diandrus*), redstem stork's bill (*Erodium cicutarium*), miniature lupine (*Lupinus bicolor*), and common deerweed (*Lotus scoparius*) that provide foraging and/or nesting habitat for wildlife including special-status birds and bats such as white-tailed kite, killdeer (*Charadrius vociferous*), and western red bat (*Lasiurus blossevillii*). A row of Tasmanian blue gum (*Eucalyptus globulus*) lines the northern edge of the site, with several additional trees growing atop a berm near the eastern edge of the laydown area. These trees may provide suitable nesting and roosting habitat for bird and bat species such as white-tailed kite and western red bat.

An isolated wetland area, constructed in 1996 as mitigation for offsite impacts related to the Lauritzen Yacht Harbor is adjacent to the western end of the CCGS site. The entire conservation easement area is 1.6 acres in size. The wetland receives runoff from the adjacent vineyard and portions of the DuPont property. Common tule (*Schoenoplectus acutus*) and common cattail (*Typha latifolia*) are the dominant species present in the open water portion of the 0.62-acre wetland, while willows (*Salix lasiolepis*) dominate the narrow slope between the edge of water and top of the bank. The area is isolated from other wetlands, and hydrology is supported by direct precipitation, sheetflow runoff from Bridgehead Road and surface water inputs from the area of the proposed CCGS site. Red-winged blackbirds (*Agelaius phoeniceus*) have been observed in this wetland, and it may provide habitat for the tricolored blackbird (*Agelaius tricolor*).

VICINITY MAP



LEGEND

- EXISTING 60kV TRANSMISSION LINE
- DIRT STOCKPILE AREAS
- LAYDOWN AREA
- PROJECT SITE
- BUFFER

VEGETATION TYPE

- AGRICULTURAL
- ANNUAL GRASSLAND
- COMMERCIAL
- DELTA RECREATION
- EUCALYPTUS
- INDUSTRIAL
- INTERIOR LIVE-OAK
- CONSERVATION EASEMENT
- OPEN SPACE
- PARKS
- RESIDENTIAL
- RIGHT-OF-WAY
- RIPARIAN
- UTILITIES
- WETLANDS

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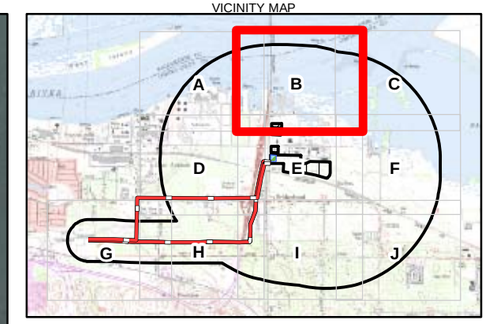
Notes:
1. Source: Delineation Report for Potential Jurisdictional Waters of the United States Including Wetlands, Dupont Oakely Site, April 2007.
2. 1 mile around Project Site, 1000 feet around existing Transmission Corridor.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

FIGURE 5.2-3A
CCGS SURVEY AREA
CONTRA COSTA GENERATING STATION
OAKLEY, CALIFORNIA

VICINITY MAP



LEGEND

- EXISTING 60kV TRANSMISSION LINE
- DIRT STOCKPILE AREAS
- LAYDOWN AREA
- PROJECT SITE
- BUFFER

VEGETATION TYPE

- AGRICULTURAL
- ANNUAL GRASSLAND
- COMMERCIAL
- DELTA RECREATION
- EUCALYPTUS
- INDUSTRIAL
- INTERIOR LIVE-OAK
- CONSERVATION EASEMENT
- OPEN SPACE
- PARKS
- RESIDENTIAL
- RIGHT-OF-WAY
- RIPARIAN
- UTILITIES
- WETLANDS

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Notes:
1. Source: Delineation Report for Potential Jurisdictional Waters of the United States Including Wetlands, Dupont Oakely Site, April 2007.
2. 1 mile around Project Site, 1000 feet around existing Transmission Corridor.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

FIGURE 5.2-3B
CCGS SURVEY AREA

CONTRA COSTA GENERATING STATION
OAKLEY, CALIFORNIA

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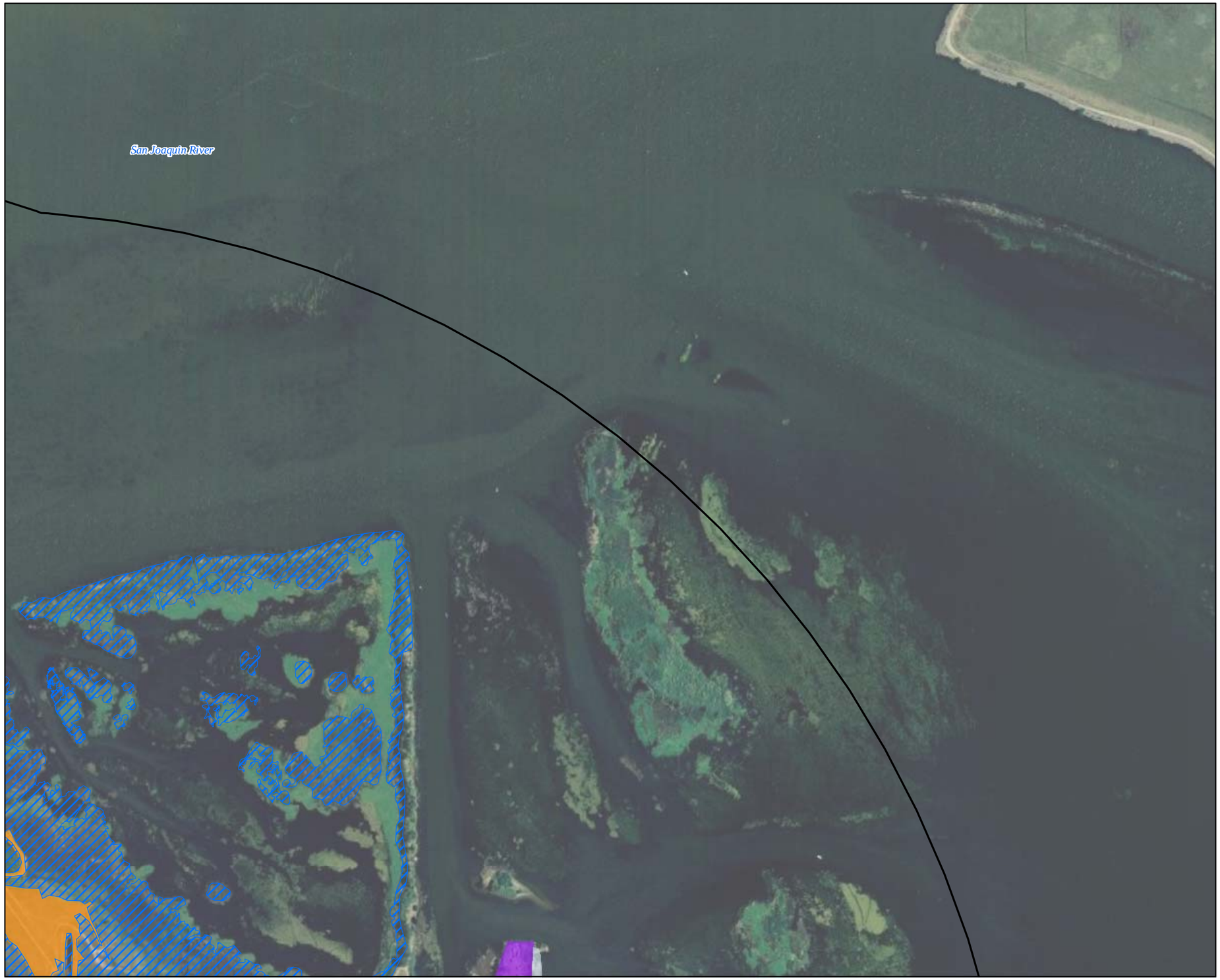

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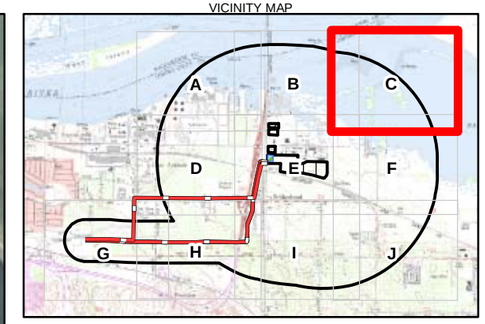

LEGEND

- EXISTING 60kV TRANSMISSION LINE
- DIRT STOCKPILE AREAS
- LAYDOWN AREA
- PROJECT SITE
- BUFFER

VEGETATION TYPE

- AGRICULTURAL
- ANNUAL GRASSLAND
- COMMERCIAL
- DELTA RECREATION
- EUCALYPTUS
- INDUSTRIAL
- INTERIOR LIVE-OAK
- CONSERVATION EASEMENT
- OPEN SPACE
- PARKS
- RESIDENTIAL
- RIGHT-OF-WAY
- RIPARIAN
- UTILITIES
- WETLANDS

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Feet
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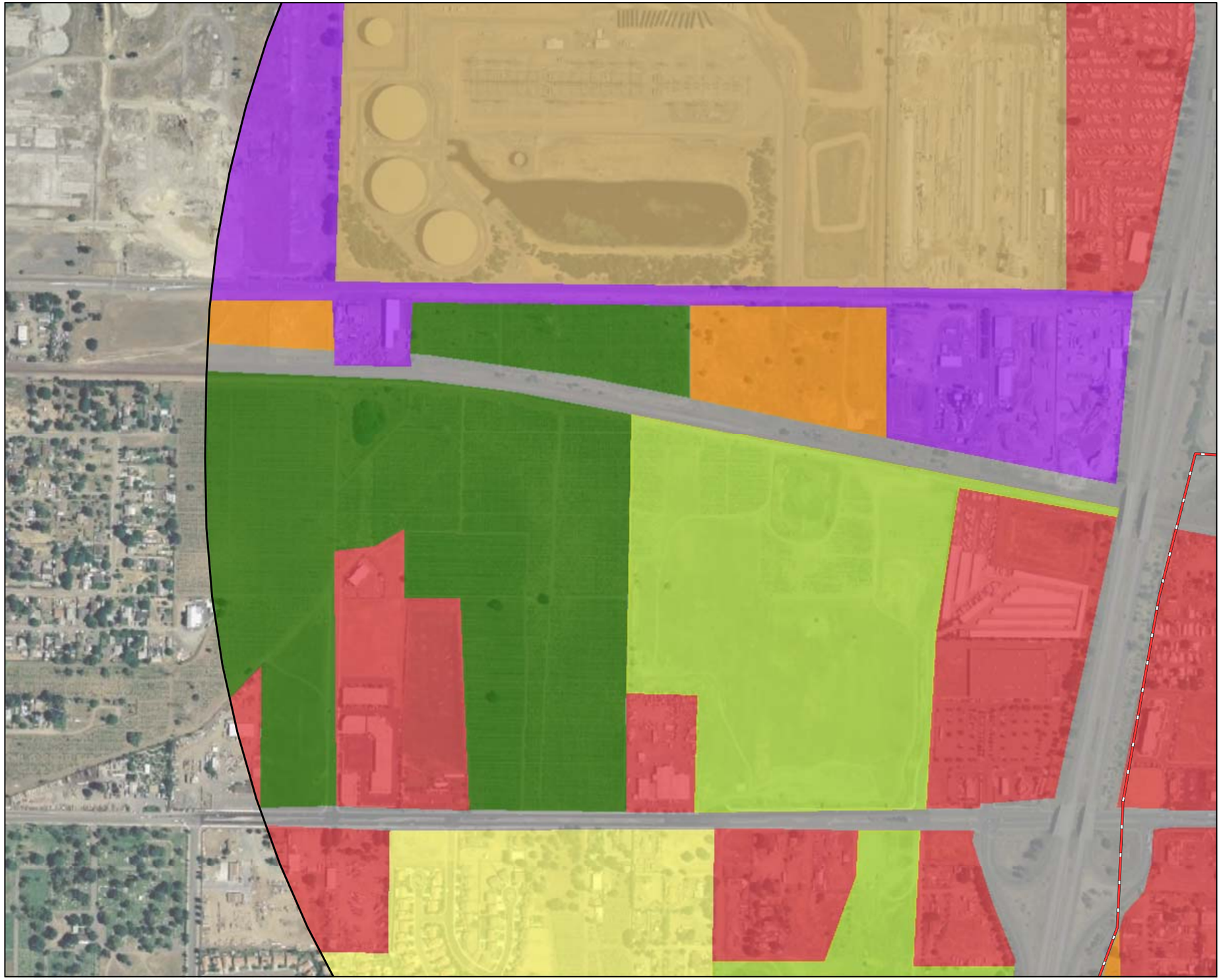
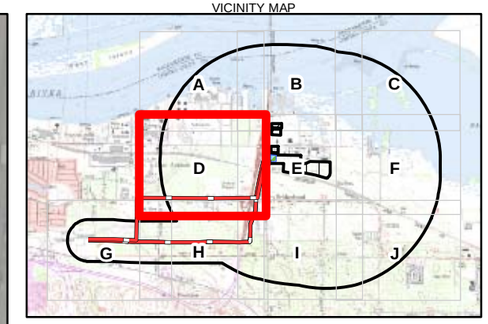
Notes:
1. Source: Delineation Report for Potential Jurisdictional Waters of the United States Including Wetlands, Dupont Oakely Site, April 2007.
2. 1 mile around Project Site, 1000 feet around existing Transmission Corridor.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

FIGURE 5.2-3C
CCGS SURVEY AREA
CONTRA COSTA GENERATING STATION
OAKLEY, CALIFORNIA



VICINITY MAP



LEGEND

- EXISTING 60kV TRANSMISSION LINE
- DIRT STOCKPILE AREAS
- LAYDOWN AREA
- PROJECT SITE
- BUFFER

VEGETATION TYPE

- AGRICULTURAL
- ANNUAL GRASSLAND
- COMMERCIAL
- DELTA RECREATION
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- INDUSTRIAL
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Feet
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Notes:
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FIGURE 5.2-3D
CCGS SURVEY AREA
CONTRA COSTA GENERATING STATION
OAKLEY, CALIFORNIA

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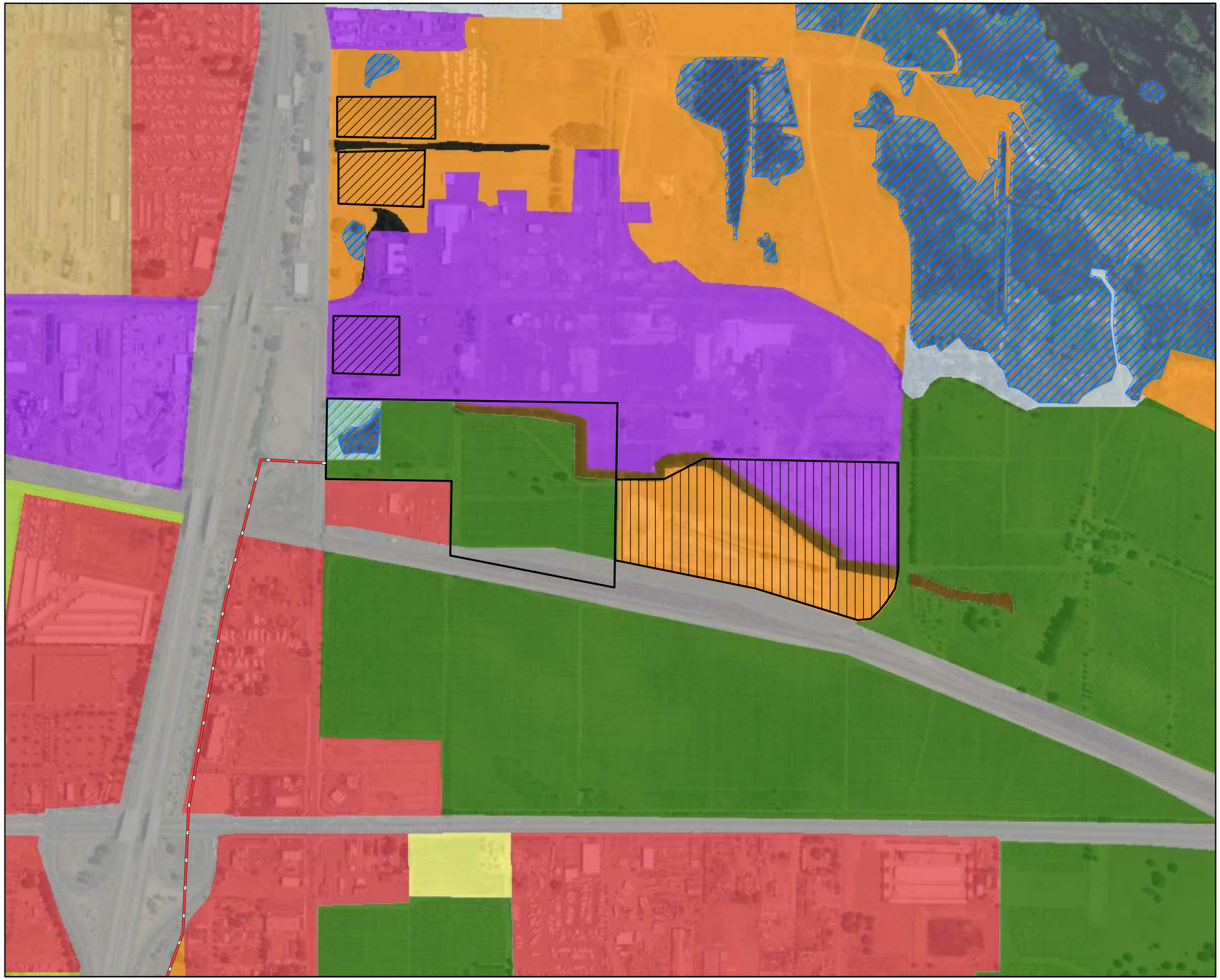

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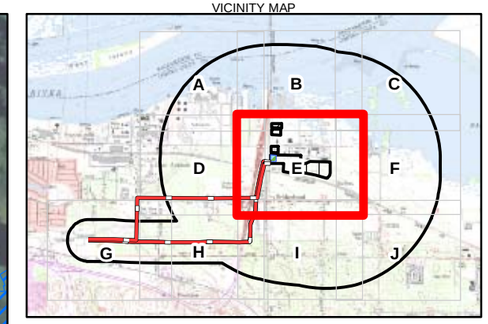

LEGEND

- EXISTING 60kV TRANSMISSION LINE
- DIRT STOCKPILE AREAS
- LAYDOWN AREA
- PROJECT SITE
- BUFFER

VEGETATION TYPE

- AGRICULTURAL
- ANNUAL GRASSLAND
- COMMERCIAL
- DELTA RECREATION
- EUCALYPTUS
- INDUSTRIAL
- INTERIOR LIVE-OAK
- CONSERVATION EASEMENT
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- WETLANDS

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Feet
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Notes:
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FIGURE 5.2-3E
CCGS SURVEY AREA
CONTRA COSTA GENERATING STATION
OAKLEY, CALIFORNIA

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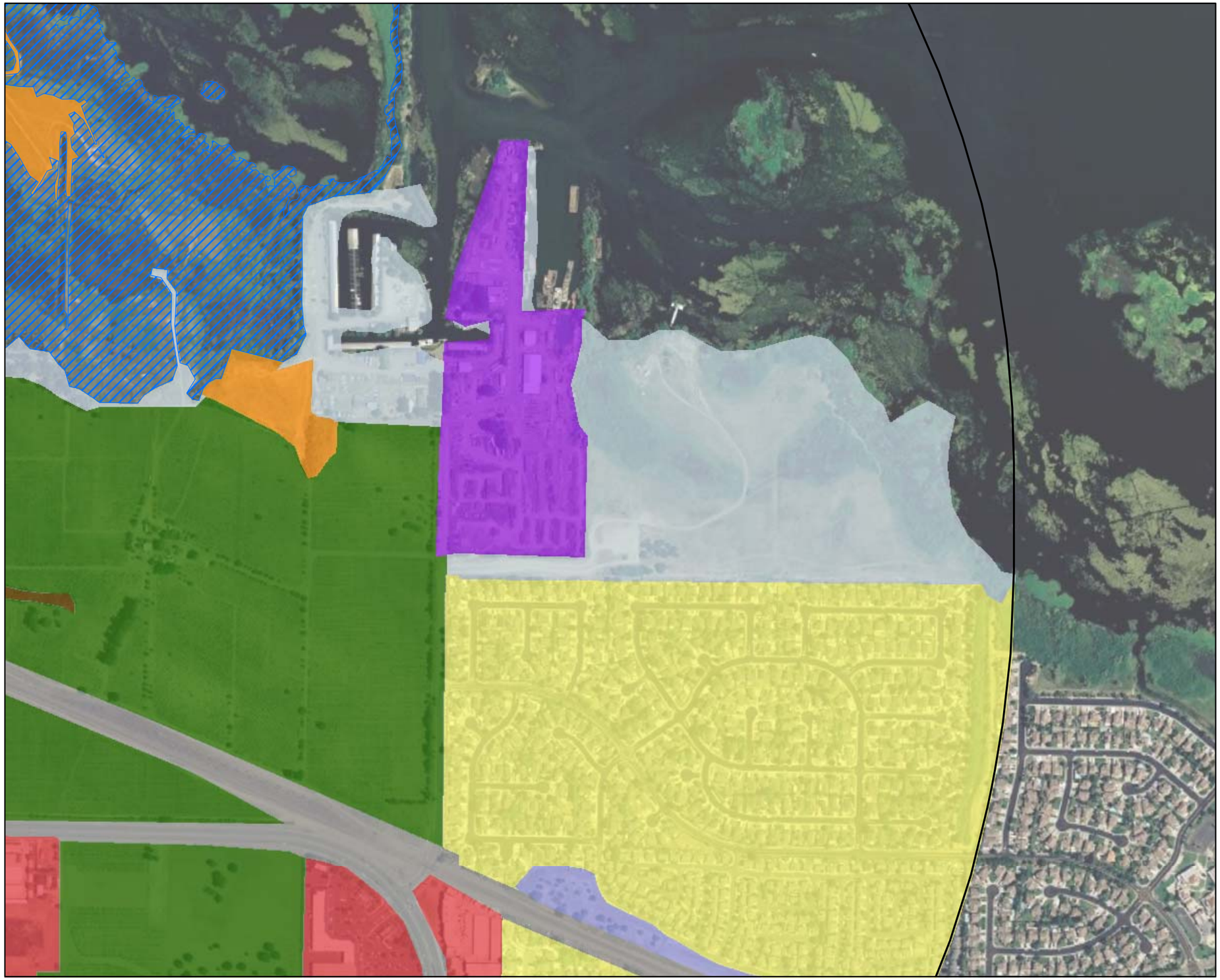
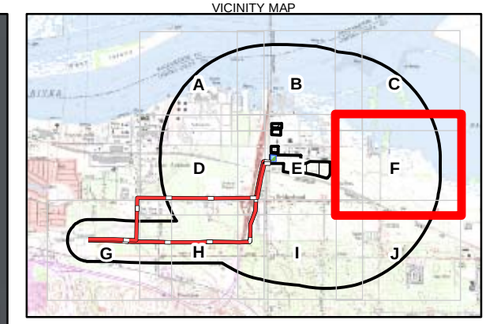


VICINITY MAP



LEGEND

- EXISTING 60kV TRANSMISSION LINE
- DIRT STOCKPILE AREAS
- LAYDOWN AREA
- PROJECT SITE
- BUFFER

VEGETATION TYPE

- AGRICULTURAL
- ANNUAL GRASSLAND
- COMMERCIAL
- DELTA RECREATION
- EUCALYPTUS
- INDUSTRIAL
- INTERIOR LIVE-OAK
- CONSERVATION EASEMENT
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- UTILITIES
- WETLANDS

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Feet
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Notes:
1. Source: Delineation Report for Potential Jurisdictional Waters of the United States Including Wetlands, Dupont Oakely Site, April 2007.
2. 1 mile around Project Site, 1000 feet around existing Transmission Corridor.

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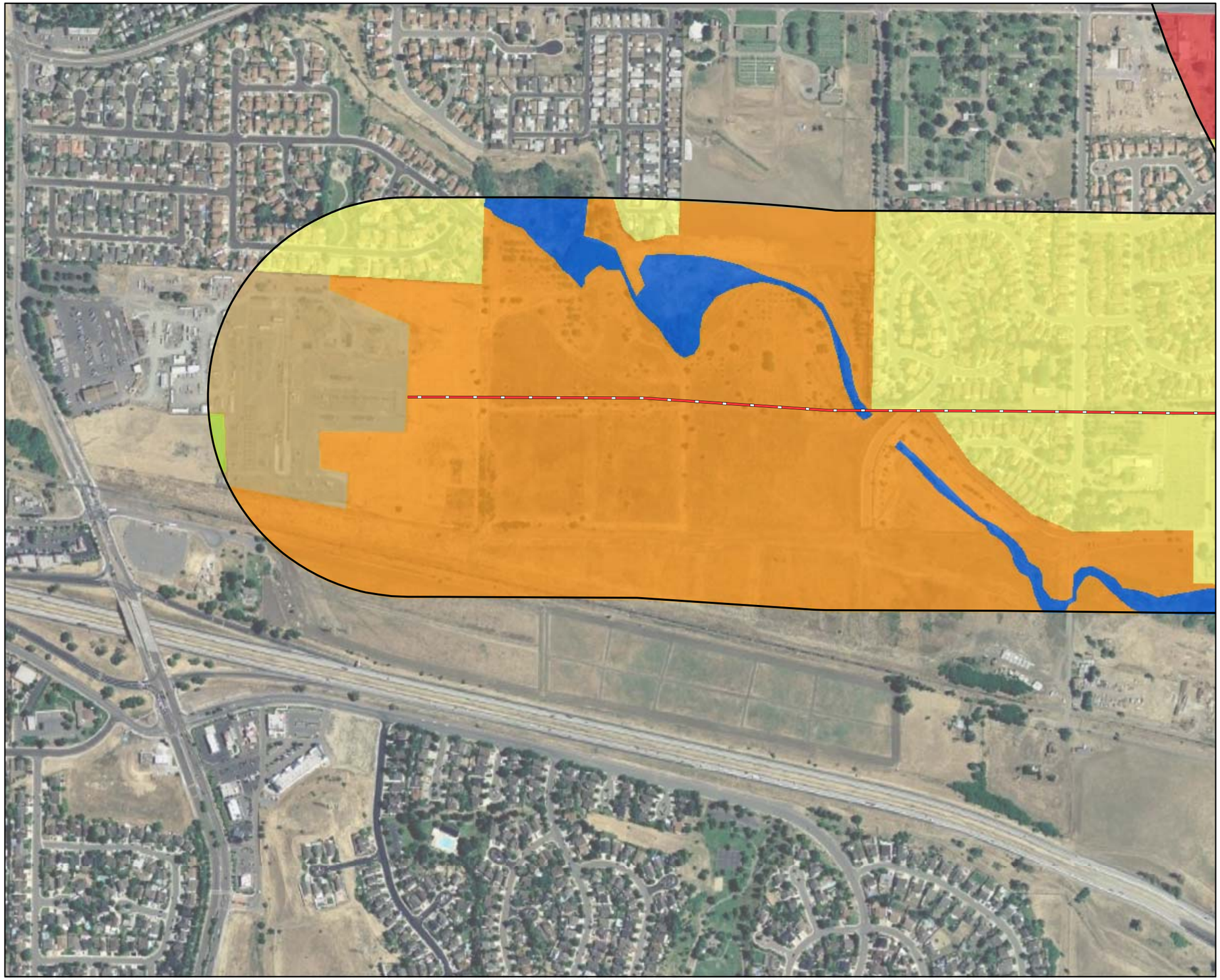
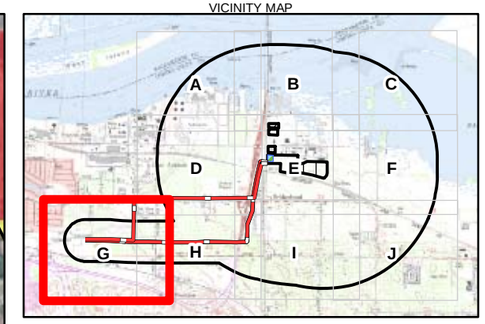
FIGURE 5.2-3F
CCGS SURVEY AREA
CONTRA COSTA GENERATING STATION
OAKLEY, CALIFORNIA



VICINITY MAP



LEGEND

- EXISTING 60kV TRANSMISSION LINE
- DIRT STOCKPILE AREAS
- LAYDOWN AREA
- PROJECT SITE
- BUFFER

VEGETATION TYPE

- AGRICULTURAL
- ANNUAL GRASSLAND
- COMMERCIAL
- DELTA RECREATION
- EUCALYPTUS
- INDUSTRIAL
- INTERIOR LIVE-OAK
- CONSERVATION EASEMENT
- OPEN SPACE
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- UTILITIES
- WETLANDS

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Notes:
1. Source: Delineation Report for Potential Jurisdictional Waters of the United States Including Wetlands, Dupont Oakely Site, April 2007.
2. 1 mile around Project Site, 1000 feet around existing Transmission Corridor.

This map was compiled from various scale source data and maps and is intended for use as only an approximate representation of actual locations.

FIGURE 5.2-3G
CCGS SURVEY AREA
CONTRA COSTA GENERATING STATION
OAKLEY, CALIFORNIA

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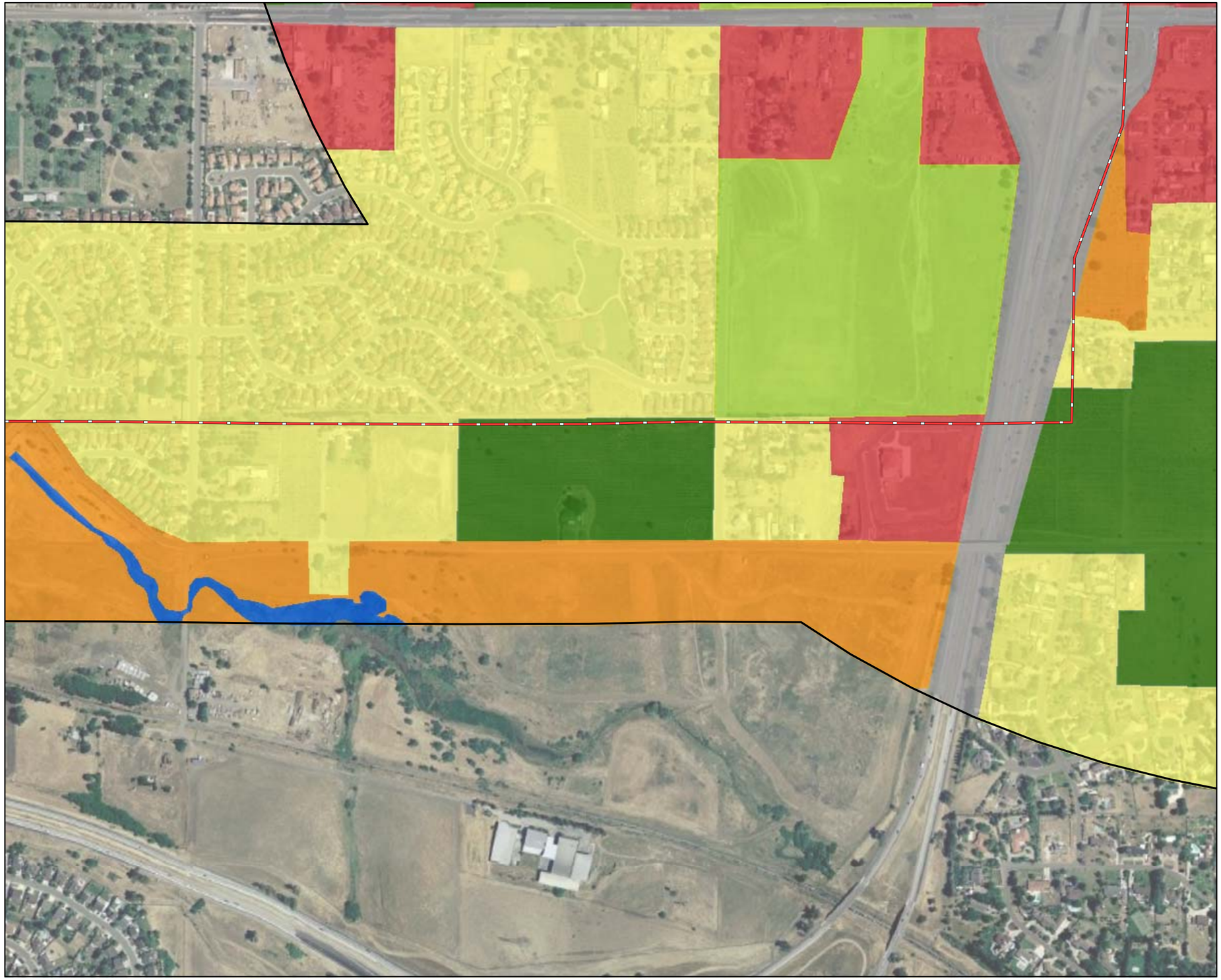

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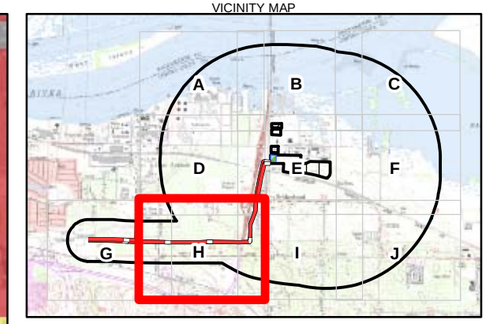

LEGEND

- EXISTING 60kV TRANSMISSION LINE
- DIRT STOCKPILE AREAS
- LAYDOWN AREA
- PROJECT SITE
- BUFFER

VEGETATION TYPE

- AGRICULTURAL
- ANNUAL GRASSLAND
- COMMERCIAL
- DELTA RECREATION
- EUCALYPTUS
- INDUSTRIAL
- INTERIOR LIVE-OAK
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Notes:
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2. 1 mile around Project Site, 1000 feet around existing Transmission Corridor.

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FIGURE 5.2-3H
CCGS SURVEY AREA
CONTRA COSTA GENERATING STATION
OAKLEY, CALIFORNIA

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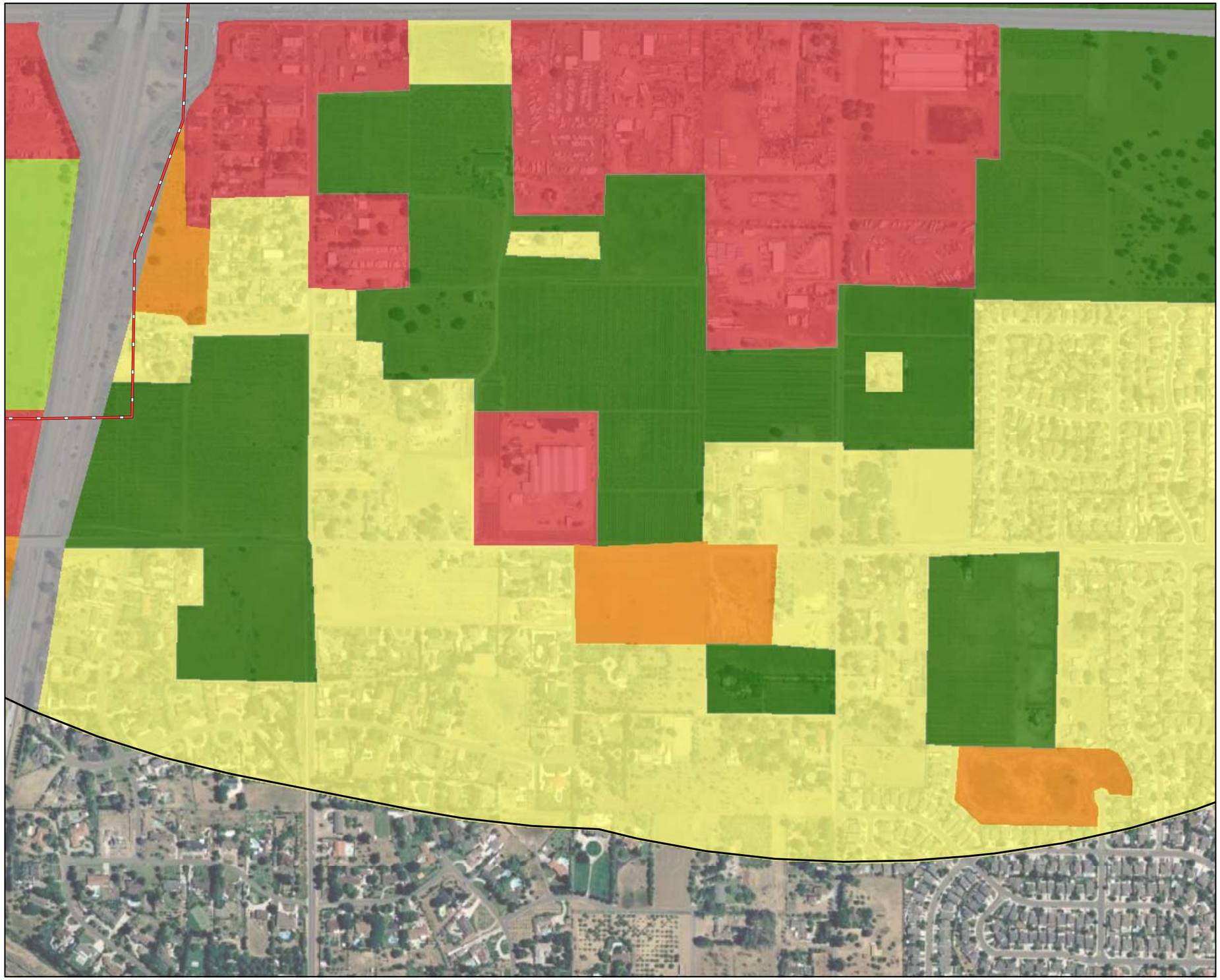

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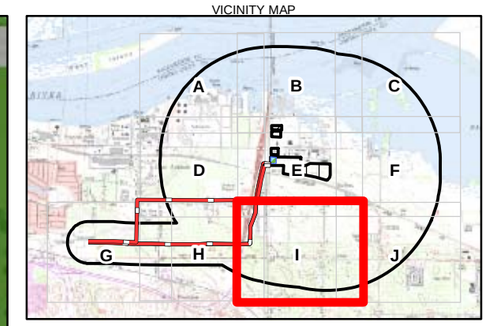

LEGEND

- EXISTING 60kV TRANSMISSION LINE
- DIRT STOCKPILE AREAS
- LAYDOWN AREA
- PROJECT SITE
- BUFFER

VEGETATION TYPE

- AGRICULTURAL
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Notes:
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FIGURE 5.2-3I
CCGS SURVEY AREA
CONTRA COSTA GENERATING STATION
OAKLEY, CALIFORNIA

CH2MHILL

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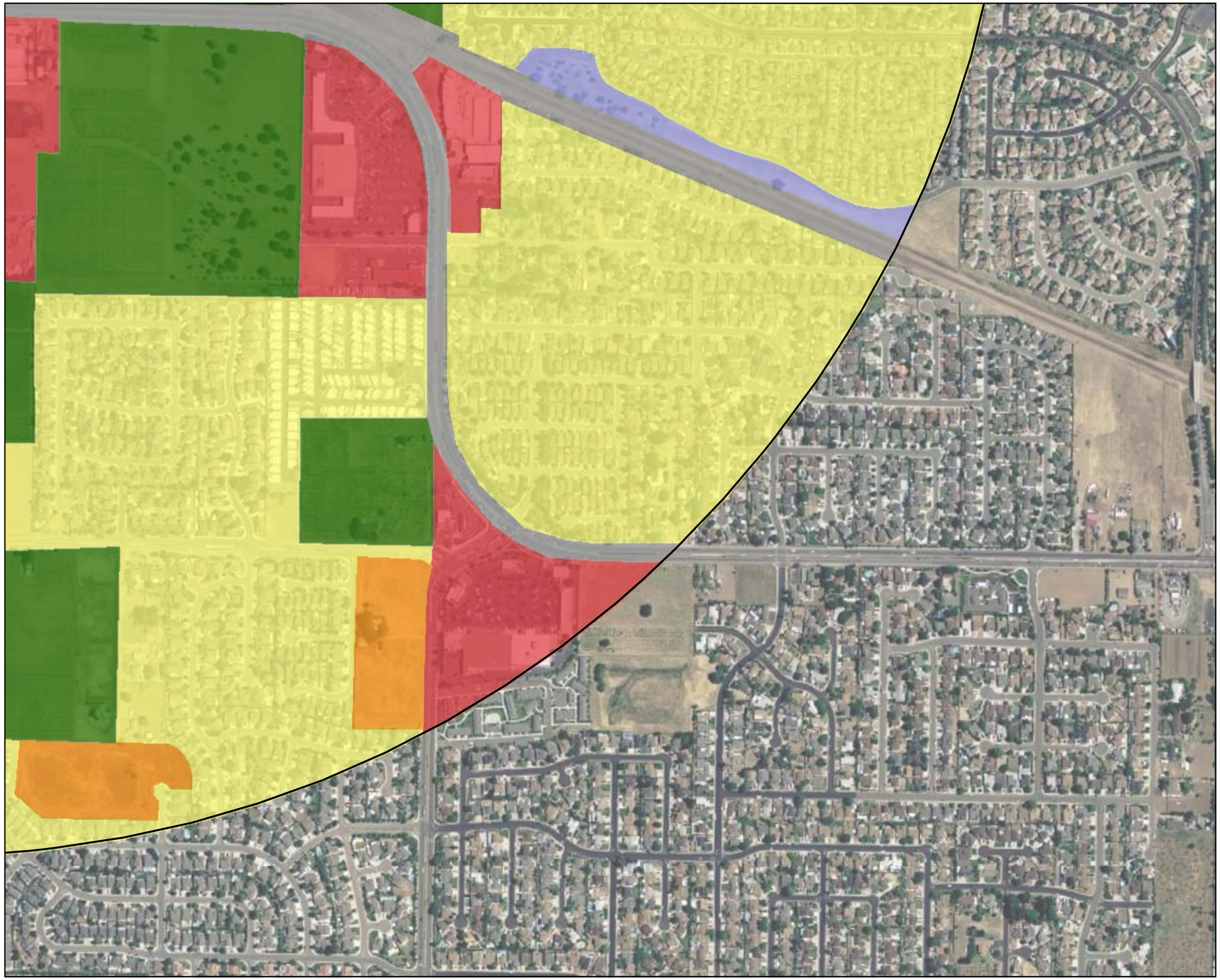
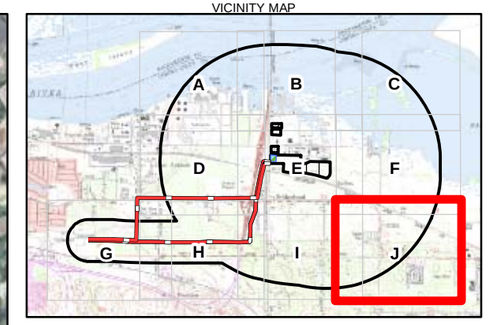


VICINITY MAP



LEGEND

- EXISTING 60kV TRANSMISSION LINE
- DIRT STOCKPILE AREAS
- LAYDOWN AREA
- PROJECT SITE
- BUFFER

VEGETATION TYPE

- AGRICULTURAL
- ANNUAL GRASSLAND
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- DELTA RECREATION
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Notes:
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FIGURE 5.2-3J
CCGS SURVEY AREA
CONTRA COSTA GENERATING STATION
OAKLEY, CALIFORNIA

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This wetland, known as Wetland E, was delineated as part of a wetland delineation study of the entire DuPont property in 2006 (DuPont Engineering, 2007; 2008) The U.S. Army Corps of Engineers (USACE), in its verification, declared this wetland to be non-jurisdictional because it lacks a connection to jurisdictional waters (is an isolated wetland) (Dady, 2008). This wetland, however, is under perpetual conservation easement. The Applicant has designed the CCGS stormwater drainage system as a system of bioswales, in accordance with the Contra Costa County C.3 drainage design requirements and in consultation with CDFG, to ensure that existing drainage from the CCGS site is not altered in a way that impairs this wetland, and may enhance it.

5.2.1.5.6 Soil Stockpile Areas

Three areas north of the CCGS site are proposed for the temporary stockpiling of soil associated with the project (Figures 5.2-2 and 5.2-3a-j). Stockpile area 1 will be located on an existing paved surface. Stockpile areas 2 and 3 are located further north in annual grassland on either side of a row of beach sheoak (*Casuarina equisetifolia*). Stockpile area 2 is south of the beach sheoak and is 84 feet north of a 0.37-acre wetland. Stockpile area 3 is north of the beach sheoak and is 46 feet south of a 0.38-acre wetland. Vegetation in both areas is composed of such species as rat-tail fescue (*Vulpia myuros*), redmaids (*Calandrinia* sp.), and old-man-in-the-Spring (*Senecio vulgaris*). The wetlands are both classified as palustrine emergent and are outside of the CCGS project area. The non-native annual grasslands may provide nesting and foraging habitat for several sensitive species including white-tailed kite, Swainson's hawk, and San Joaquin pocket mouse (*Perognathus inornatus inornatus*).

5.2.1.6 Electrical Transmission Line

5.2.1.6.1 Electrical Transmission Line

The proposed 230-kV transmission line will connect the CCGS facility to an existing Pacific Gas and Electric Company (PG&E) substation in Antioch, approximately 1.75 miles southwest of the CCGS site. Within the City of Oakley, the transmission line will be placed in areas zoned for utility and commercial uses. Within the City of Antioch, the alignment is within areas zoned as Planned Development Districts (P-D) associated with the SR 4 Industrial Frontage Focus Area (LSA, 2003). The 230-kV transmission line would require the replacement of 17 existing steel-lattice towers with steel monopole towers. The current 60-kV towers are placed in a variety of land uses including active industrial and commercial properties, vacant lots composed of non-native annual grassland, active vineyard agricultural, landscaped residential, and inactive non-native annual grassland habitat (Figure 5.2-2). Tower footings located in non-native annual grasslands may provide suitable habitat for several sensitive species including silvery legless lizard, white-tailed kite, western burrowing owl, San Joaquin kit fox, and San Joaquin pocket mouse. The towers themselves may also provide nesting habitat for protected bird species such as common raven (*Corvus corax*).

The portion of the transmission line that is within the City of Antioch (1.4 miles, including 12 of the 17 tower bases) is not covered under the ECCC HCP/NCCP, because Antioch does not participate in the HCP/NCCP process. For this reason, it will be necessary to approach the biological resources agencies regarding individual project permitting procedures for this part of the project.

5.2.1.7 Sensitive and Special-status Plant Species

As discussed previously, the regional special-status plant species lists (Table 5.2C-1a in Appendix 5.2C) was evaluated against observed conditions and the results of botanical surveys to develop a list of plant species with potential to occur within the CCGS survey area. This list includes regulatory status, habitat requirements, occurrence determination, and a rationale for the occurrence determination. Figures 5.2-1 and 5.2-2 show the previously recorded locations of special-status plant species within 10- and 1-mile radiuses, respectively, of the CCGS site.

Of the 59 special-status plant species determined during the pre-field investigation to have potential to occur within the region, field surveys determined that 15 of these have potential to occur within the CCGS survey area (See Table 5.2C-2a in Appendix 5.2C). Special-status plant species with potential to occur in the CCGS survey area occur within the marsh, grassland, and inland dune communities.

Of the 15 special-status plant species determined to have potential to occur within the CCGS survey area, none were observed during surveys or were previously reported within the CCGS site, including the CCGS facility site or electrical transmission alignment (Table 5.2C-2a in Appendix 5.2C)

All habitats within the CCGS site have been previously altered, and there are no natural plant communities within areas of ground disturbance for the CCGS facility or electrical transmission towers. The rare plant survey determined special-status plant species do not occur within the CCGS construction disturbance areas.

5.2.1.8 Sensitive or Special-Status Wildlife Species

During field surveys, the regional special-status wildlife species list was evaluated against observed conditions to determine which species could occur or have the potential to occur in the CCGS survey area. Table 5.2C-1b in Appendix 5.2C lists sensitive and special-status wildlife species determined during the pre-field investigation to have potential to occur within the region, and Table 5.2C-2b in Appendix 5.2C lists sensitive and special-status wildlife species determined during field surveys to have potential to occur within the CCGS survey area. Each table lists species, their regulatory status, habitat requirements, occurrence potential determination, and a rationale for the occurrence determination within the respective area. Observed, reported, or special-status terrestrial wildlife species that have the potential to occur within the CCGS survey area are known or have potential to occur in the non-native annual grassland, marsh or riparian plant communities. Several special-status fish species have potential to occur in aquatic habitat associated with the San Joaquin River. No aquatic habitat occurs on the site that would support special-status fish.

Table 5.2-2 (located at the end of this section due to its length) lists species with potential to occur within the CCGS site, their regulatory status, habitat requirements, occurrence potential determination, and a rationale for the occurrence determination. Observed, reported, or special-status wildlife species that have the potential to occur within the CCGS site are known or have potential to occur in agricultural, non-native grassland habitats, and freshwater marsh plant communities.

Each of the sensitive or special-status wildlife species with potential to occur in the CCGS site can be categorized under one or more of the following regulatory authorities and/or

sensitive status categories: the federal MBTA, the Bald and Golden Eagle Protection Act (BGEPA), ESA, CESA, State Fully Protected Species, State Species of Special Concern, and State Special Animals. These categories are discussed in the following subsections. Several of these wildlife species with potential to occur in the CCGS site are protected under multiple regulatory authorities, and 15 of these are addressed in the ECCC HCP/NCCP.

5.2.1.8.1 Migratory Bird Treaty Act

Each of the 195 special-status bird species determined to have potential to occur on the CCGS site (Table 5.2-2) are protected under the MBTA including white-tailed kite, Swainson's hawk, killdeer, and common raven. The MBTA protects all migratory birds, including nests and eggs.

5.2.1.8.2 Bald and Golden Eagle Protection Act

Two bird species with potential to occur regionally and at the CCGS site, bald eagle (*Haliaeetus leucocephalus*) and golden eagle (*Aquila chrysaetos*), are protected under the federal BGEPA. The BGEPA specifically protects bald and golden eagles from harm or trade in body parts of these species. In addition to the protections of the BGEPA, bald and golden eagles are protected under the MBTA. Golden eagles are also a state fully protected species and are addressed in the ECCC HCP/NCCP.

No known nesting habitat for bald eagles is present within 10 miles of the CCGS site; however, these species may forage in the San Joaquin River, and may occasionally forage over the CCGS site and in nearby open areas. The eucalyptus trees at the site may provide suitable winter roosting habitat. Bald eagles have been reported in the project region through the Audubon Society Christmas Bird Counts (National Audubon Society, Inc. 2009).

Habitat for golden eagles is typically rolling foothills, mountain areas, and desert. Golden eagles need open terrain for hunting and prefer grasslands, deserts, savannah, and early successional stages of forest and shrub habitats. This species prefers to nest in rugged, open habitats with canyons and escarpments, with overhanging ledges and cliffs and large trees used as cover. Golden eagles are reported in the region by the Christmas Bird Counts and the CNDDB. The nearest golden eagle occurrence reported in the CNDDB (occurrence #145) is a nest observed in blue oak savannah and grasslands approximately 9.8 miles southwest of the CCGS site in the Diablo Range.

Golden eagle foraging habitat is present in the region and potentially within or adjacent to the CCGS site. No suitable golden eagle nesting habitat is present at the site, and no bald or golden eagles were observed during field surveys.

5.2.1.8.3 Federal Endangered Species Act

Twenty-one species with potential to occur in the 10-mile project region are protected under the federal ESA. Three of these, including two avian and one mammalian species, have been determined to have potential to occur at the CCGS site.

California Brown Pelican

California brown pelican (*Pelecanus occidentalis californicus*) and California least tern are both federally listed as endangered, and are both also protected under the MBTA. Neither California brown pelican nor California least tern has suitable habitat in or near the CCGS site, as they both require open water and shoreline habitat for nesting and foraging; however, these species may pass through the site.

San Joaquin Kit Fox

The ECCC HCP/NCCP states that San Joaquin kit fox may occur in a variety of habitats, including grasslands, scrublands, vernal pool areas, alkali meadows and playas, and an agricultural matrix of row crops, irrigated pastures, orchards, vineyards, and grazed annual grasslands (USFWS, 1998). They prefer habitats with loose-textured soils (Grinnell et al., 1937; Hall, 1946; Egoscue, 1962) that are suitable for digging, but they occur on virtually every soil type. Dens are generally located in open areas with grass or grass and scattered brush, and seldom occur in areas with thick brush. Preferred sites are relatively flat, well-drained terrain (USFWS, 1998, Roderick and Mathews, 1999). They are seldom found in areas with shallow soils due to high water tables (McCue et al., 1981) or impenetrable bedrock or hardpan layers (O'Farrell and Gilbertson, 1979; O'Farrell et al., 1980). However, kit foxes may occupy soils with a high clay content where they can modify burrows dug by other animals, such as ground squirrels (*Spermophilus beecheyi*) (Orloff et al., 1986). In the northern part of its range (including San Joaquin, Alameda and Contra Costa Counties) where most habitat on the valley floor has been eliminated, kit foxes now occur primarily in foothill grasslands (Swick, 1973; Hall, 1983; USFWS, 1998), valley oak savanna, and alkali grasslands (Bell, 1994). Less frequently they occur adjacent to and forage in tilled and fallow fields and irrigated row crops (Bell, 1994). These foxes will den within small parcels of native habitat that is surrounded by intensively maintained agricultural lands (Knapp, 1978) and adjacent to dryland farms (Jensen, 1972; Orloff et al., 1986; USFWS, 1998).

The ECCC HCP/NCCP indicates that the CCGS site is adjacent to the reported range of this species and is within modeled potential habitat. The nearest reported San Joaquin kit fox siting is 5 miles southwest of the CCGS site in non-native annual grassland containing a small drainage (CNDDB, 2009).

No San Joaquin kit fox were observed at the site or within the survey area; however, potential habitat for this species is present in grasslands and vineyards in these areas. A potential burrow was observed in a berm associated with a row of Tasmanian blue gum trees near the eastern edge of the laydown area.

5.2.1.8.4 California Endangered Species Act

Five plant and 14 animal species protected under CESA have the potential to occur in the project region, with no plants and 8 animals having some potential to occur at the CCGS site. Brown pelican, golden eagle, peregrine falcon (*Falco peregrinus*), and California least tern are each listed by the State of California as endangered. Sandhill crane (*Grus canadensis*) and bank swallow (*Riparia riparia*) are listed as threatened. None of these species have suitable forage or nesting habitat within the CCGS site; however, they may pass through the site. Swainson's hawk, a state threatened species, was observed above the site during wildlife surveys and may possess suitable nesting and foraging habitat in the trees and grasslands at the CCGS site. San Joaquin kit fox, a state threatened species, is also listed as endangered under the federal ESA and is discussed above.

Swainson's hawk

Swainson's hawks generally inhabit a variety of open habitats. In California's Central Valley, suitable primary habitat consists of suitable nest trees and proximity to high-quality foraging habitat. This species nests within riparian forest or in remnant riparian trees and forages in agricultural lands (such as fallow fields and alfalfa fields) (Estep 1989, Babcock 1995). Swainson's hawks also use isolated trees near forage habitat. Agricultural patterns

and cover types influence suitability of foraging and home-range habitat. Habitat with the highest foraging value includes ruderal fields, fallow fields, grain crops, and alfalfa fields.

The CCGS project is near the edge of Swainson's hawk summer range (Zeiner et al., 1998) and is adjacent to areas identified in the ECCC HCP/NCCP as suitable nesting and foraging habitat. The nearest Swainson's hawk occurrence reported in the CNDDB (occurrence #1312) was observed 3.7 miles southeast of the CCGS site in a eucalyptus tree surrounded by agricultural fields.

The CCGS site contains marginal Swainson's hawk nesting and foraging habitat; however, Swainson's hawk were observed foraging above grasslands near the soil stockpile areas north of the site during field surveys, and large trees are present within the project site that could provide suitable nesting habitat. Potential grassland foraging habitat is also located in the laydown area and at the western end of the electrical transmission line.

5.2.1.8.5 State Fully Protected Species

Ten animal species with potential to occur in the region are designated as Fully Protected under the California Fish and Game Code Sections 3511, 4700, 5050 and 5515. Seven of these ten animal species are birds with potential to occur at the CCGS site. In addition to MBTA protections, six of the seven fully protected bird species are also protected by the BGEPA, ESA, and/or CESA, and are discussed under sections 5.2.1.8.2, 5.2.1.8.3 and 5.2.1.8.4 above. These are the brown pelican, golden eagle, bald eagle, peregrine falcon, sandhill crane, and California least tern. White-tailed kite is a California fully protected species that is not federally listed and that has not been addressed previously.

White-tailed kite

The white-tailed kite is a California state fully protected species. Additionally, it is protected under the MBTA and several CDFG codes including 3503, 3503.5, and 3513. This species is a common to uncommon, apparently non-migratory, year-long resident in coastal and valley lowlands. It is rarely found away from agricultural areas, inhabiting herbaceous and open areas throughout cismontane California. White-tailed kites have extended their range and increased in number in recent decades.

The nearest white-tailed kite occurrence reported in the CNDDB (occurrence #87) was a nest observed 2.4 miles south of the CCGS site in a pine tree at the edge of an orchard. Although white-tailed kit was not observed during field surveys, the CCGS site contains suitable white-tailed kite nesting and foraging habitat.

5.2.1.8.6 State Species of Special Concern

Twenty-one state species of special concern have potential to occur in the region, 19 of which have potential to occur at the CCGS site. Fourteen of these are birds are also protected by the MBTA. These are the "tule" greater white-fronted goose (*Anser albifrons elgasi*), redhead (*Aythya americana*), northern harrier(*Circus cyaneus*), mountain plover (*Charadrius montanus*), short-eared owl (*Asio flammeus*), western burrowing owl (*Athene cunicularia hypugaea*), loggerhead shrike (*Lanius ludovicianus*), yellow warbler (*Dendroica petechia*), yellow-breasted chat (*Icteria virens*), grasshopper sparrow (*Ammodramus savannarum*), song sparrow "Modesto" population (*Melospiza melodia*), Suisun song sparrow (Melospiza melodia maxillaries), tricolored blackbird (*Agelaius tricolor*), and yellow-headed blackbird (*Xanthocephalus xanthocephalus*). Two reptiles (silvery legless lizard and coast

horned lizard [(*Phrynosoma coronatum*]) and three mammals (American badger (*Taxidea taxus*), pallid bat (*Antrozous pallidus*), western red bat (*Lasiurus blossevillii*)) are also state species of special concern and have potential to occur at the CCGS site. Western burrowing owl, silvery legless lizard and coast (California) horned lizard and western red bat are discussed below.

Western Burrowing Owl

The western burrowing owl is a California state species of special concern. Additionally, it is protected under the MBTA and several CDFG codes including 3503, 3503.5, and 3513. This species is widespread throughout the western United States, but has declined in Contra Costa County and many other areas because of habitat modification, poisoning of its prey, and introduced nest predators. The western burrowing owl is diurnal and usually non-migratory in this portion of its range. This species is known to establish nests within abandoned burrows from ground squirrels and other wildlife. It can occur in much higher densities near agricultural lands where rodent and insect prey tend to be more abundant. Western burrowing owl conservation is tied to the preservation and management of open agricultural lands, similar to Swainson's hawk habitats.

Two western burrowing owl occurrences are reported in the CNDDB within 1,000 feet of the electrical transmission line corridor (Figure 5.2-2). Occurrence #947 is a report from November 2005 of a pair and one adult in open, level grassland with low-lying shrubs, sandy soils and ruderal vegetation. Occurrence #1210 is a report from June 2006 of two adults in sandy, non-native annual grassland north of a freshwater marsh associated with East Antioch Creek.

No western burrowing owls or burrows were observed during field surveys conducted in the CCGS project areas by CH2M HILL staff on June 13, 2008; however, the site provides suitable western burrowing owl nesting and foraging habitat.

Silvery Legless Lizard

Silvery legless lizards occur primarily in areas with sandy or loose loamy soils such as under sparse vegetation of beaches, chaparral, or pine-oak woodland; or near sycamores, cottonwoods, or oaks that grow on stream terraces (Gorman, 1957; Cunningham 1959; Banta and Morafka, 1968; Stebbins, 1985; Jennings and Hayes, 1994). The sandy loam soils of stabilized dunes seem to be especially favorable habitat (Grinnel and Camp, 1917; Miller, 1944; Smith, 1946; Bury, 1985). The species is often found under or in the close vicinity of logs, rocks, old boards, and the compacted debris of woodrat nests (Jennings and Hayes, 1994). Rocky soils or areas disturbed by agriculture, sand mining, or other human uses are not suitable for legless lizards (Miller, 1944; Bury, 1972; Hunt, 1983; Stebbins, 1985). Soil moisture is essential for legless lizards to conserve energy at high temperatures; it also allows shedding to occur (Jennings and Hayes, 1994).

Two silvery legless lizard occurrences are reported in the CNDDB within 1 mile of the CCGS facility and within 1,000 feet of the electrical transmission line (Figure 5.2-2). Occurrence #12 is located east of the CCGS site in disturbed inland dune habitat in the East Bay Regional Park District Legless Lizard Preserve. Occurrence #55 is non-specific occurrence reported in 1966 between 1.4 and 2 miles east of Antioch.

Coast (California) Horned Lizard

Holland and Hayes (1994) report that the Coast or California horned lizard (*Phrynosoma coronatum*) seems to occur in several habitat types, ranging from areas with an exposed gravelly-sandy substrate containing scattered shrubs to clearings in riparian woodlands (Stebbins 1954), to dry uniform chamise chaparral (Banta and Morafka, 1968) to annual grassland with scattered perennial seepweed (*Suaeda fruticosa*: Tollestrup, 1981) or saltbush (*Atriplex polycarpa*; see Montanucci, 1968; Tollestrup, 1981). Montanucci (1968) indicates that California horned lizard reaches it maximum abundance in sandy loam areas and on alkali flats, the latter often dominated by iodine bush (*Allenrolfea occidentalis*). The California horned lizard could apparently survive in vineyards, at least in the manner in which these were tended historically, because the typically sandy soil was suitable, the substrate was infrequently disturbed (Montanucci, 1968), and probably because horned lizards could take refuge in the areas around the trunks of the perennial vines. However, this is probably not the case today given the manner in which vineyards are currently tended because California horned lizard is virtually never observed under such conditions (Jennings and Hayes, 1994). Historically, this taxon was identified as most abundant in relict lake sand dunes and old alluvial fans bordering the San Joaquin Valley (Bryant, 1911; Van Denburgh, 1922). Zeiner et al. (1988) report that coast horned lizards use small mammal burrows or burrow into loose soils under surface objects during extended periods of inactivity or hibernation, but data on over-wintering sites are fragmentary, and the general characteristics of overwintering sites are not well understood. Data on oviposition sites are unavailable.

The nearest California horned lizard occurrence reported in the CNDDB (occurrence #41) is a located south of the CCGS site in non-native grassland on sandy hills. No California horned lizards were observed during field surveys; however, suitable habitat for this species is present in the sandy soils at the CCGS site.

Western Red Bat

Western red bat is a California state species of concern, and is protected under CDFG codes. Several species in the genus *Lasiurus* are commonly referred to as tree bats because they roost only in tree foliage. This species is closely associated with cottonwoods in riparian areas at elevations below 6,500 feet. Especially favored roosts are found where leaves form a dense canopy above and branches do not obstruct the bats' flyway below. Western red bats are also known to roost in orchards, especially in the Sacramento Valley. Western red bats typically feed along forest edges, in small clearings, or around street lights where they can prey on moths.

The nearest western red bat occurrence reported in the CNDDB (occurrence #66) was detected approximately 3.1 miles west of the CCGS site in Antioch. No western red bats were observed during field surveys; however, the CCGS site contains suitable western red bat roosting and foraging habitat.

5.2.1.8.7 State Special Animals

Eighteen state special animals have potential to occur in the region, the following 4 with potential to occur at the CCGS site: Antioch efferian robberfly (*Efferia antiochi*), Antioch multilid wasp (*Myrmosula pacifica*), hoary bat (*Lasiurus cinereus*), and San Joaquin pocket mouse. Very little is known about the habitat requirements for Antioch efferian robberfly and Antioch multilid wasp. The hoary bat occurs throughout California, and the eucalyptus trees at the CCGS site may provide suitable roosting habitat for this species. Non-native

annual grasslands at the CCGS site may provide habitat for the San Joaquin pocket mouse. These species are considered sensitive but do not have regulatory protection.

5.2.1.8.8 Species of Recreational and Commercial Value

Recreational land uses within the CCGS survey area include delta recreational areas, the San Joaquin River, and municipal parks associated with the cities of Oakley and Antioch. Several special-status fish and bird species have potential to occur in these areas, such as Sacramento perch and California brown pelican, but these are not species of recreational or commercial value and recreational or commercial fishing are not expected to impact these species. Recreational activities supported by wildlife species, such as fishing, occur within the San Joaquin River and in other areas within the CCGS 1-mile survey area.

Several active agricultural vineyards occur in the survey area. The grapes grown at the site are primarily Zinfandel and are used in commercial winemaking. Construction of the CCGS facility will permanently affect approximately 13 acres of commercially valuable vineyards.

5.2.2 Environmental Analysis

Potential direct and indirect impacts to biological resources were evaluated to determine the permanent and temporary effects of construction and operation of the proposed CCGS project. Results from the field surveys, habitat evaluations, and aerial imagery interpretation conclude the potential for presence of sensitive biological resources in the CCGS project area. There are no property or project features that would support special-status plants; however, the site currently provides potentially suitable habitat for 244 sensitive and special-status wildlife species. Potential minor and less-than-significant impacts are limited to temporary noise disturbance during construction and possible avian collisions with the air-cooled condenser and other structures.

This section identifies biological resources that may be affected either directly or indirectly by the project. Direct and indirect impacts may be either permanent or temporary. These impact categories are defined below and are applied as part of the environmental analysis.

- **Direct:** The California Environmental Quality Act (CEQA) defines direct impacts as those impacts that result from the project and occur at the same time and place. Any alteration, disturbance, or destruction of biological resources that would result from project-related activities is considered a direct impact. Examples include loss of habitat resulting from clearing vegetation, encroaching into wetlands, diverting natural surface water flows, and the loss of individual species. The permanent and temporary impacts discussed below are examples of direct impacts associated with the CCGS project.
- **Indirect:** CEQA defines indirect impacts as those caused by the project but that occur later in time or are farther removed in distance, though are reasonably foreseeable and are related to the project. As a result of project-related activities, biological resources may also be affected in a manner that is not direct. Examples include elevated noise and dust levels, increased human activity, decreased water quality, and the introduction of invasive plants and wildlife.
- **Permanent:** All impacts that result in the irreversible removal of biological resources are considered permanent. Examples include constructing a building or permanent road on

- **Temporary:** Any impacts considered to have reversible effects on biological resources can be viewed as temporary. Examples include increased vehicle movement and noise from temporary construction activities. The temporary construction laydown area, area of vegetation disturbance around the electrical transmission tower footings, and noise from construction activities represent temporary impacts associated with the CCGS project.

Potential direct and indirect impacts to biological resources were evaluated to determine the permanent and temporary effects of project construction, operation, maintenance, and decommissioning of the project and supporting facilities.

5.2.2.1 Significance Criteria

The project would result in a significant impact on the environment if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as endangered, threatened, candidate, sensitive, or special-status in local or regional plans, policies, or regulations, or by CDFG or USFWS
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFG or USFWS
- Have a substantial adverse effect on federal or state protected waters of the United States (including wetlands) as defined by Sections 404 and 401 of the Clean Water Act or the Porter-Cologne Act, either through direct removal, filling, hydrological alteration, or other means
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory native wildlife corridors, or impede the use of wildlife nursery sites
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan
- Threaten to eliminate a plant or animal community

CEQA Section 15380 provides that a plant or animal species may be treated as "rare or endangered" even if not on one of the official lists if, for example, it is likely to become endangered in the foreseeable future.

5.2.2.2 Potential Impacts of Construction

Construction of the CCGS project is expected to begin in the first quarter of 2011, beginning with site preparation, and will conclude in the fourth quarter of 2013, for a total duration of approximately 33 months. Initial clearing of the 14-acre unpaved portion of the construction

laydown and 21.95-acre CCGS site areas would take place during the first week of construction. The 1.6-acre area that is within the CCGS parcel and under permanent conservation easement and contains Wetland E, would not be graded, so the resulting area of permanent grading and disturbance would be approximately 20.35 acres. In addition, an area approximately 50 feet wide by 1,000 feet long (1.14 acres) within the CCGS project area currently contains mature eucalyptus trees that will remain, so the resulting area of permanent disturbance would be 19.21 acres. Approximately 18.65 acres associated with the unpaved portion of the temporary construction laydown area and replacement of the existing electrical transmission tower footings will be temporarily disturbed.

TABLE 5.2-3
Summary of Unpaved CCGS Permanent and Temporary Disturbance Areas (in acres)

Project Feature	Habitat Type	Permanent	Temporary	Total
CCGS site	Vineyard	19.21	0	19.21
Construction laydown area (unpaved area – paved area is 6 acres)	Non-native annual grassland	0	14	14
230-kV electrical transmission line	Non-native annual grassland	0	<1	<1
Soil stockpile areas	Non-native annual grassland	0	3.65	3.65
Total		**19.21**	**18.65**	**37.86**

5.2.2.2.1 CCGS Facility

Activities related to the construction of the CCGS facility will require site preparation, including vegetation clearance and grading of that portion of the 21.95-acre parcel that is not occupied by the existing row of mature eucalyptus trees or Wetland E. Habitat at the proposed CCGS site is currently active vineyard agriculture, and has been determined to provide suitable nesting and/or foraging habitat for sensitive and special-status species listed in Table 5.2-2. Construction of the CCGS facility will, therefore, result in permanent loss of 19.21 acres of habitat that could be used by special-status species including Swainson's hawk, white-tailed kite, killdeer, silvery legless lizard, and others listed in Table 5.2-2. If vegetation clearance were to occur during the nesting season between February 1 and September 30, it would have the potential to significantly impact nesting birds.

Construction of the CCGS facility may also result in temporary noise impacts to potentially occurring sensitive wildlife species including white-tailed kite and western red bat.

These impacts could be significant without the implementation of protection and/or mitigation measures discussed in Section 5.2.4. With the implementation of the mitigation measures detailed in Section 5.2.4, any potentially significant impacts to biological resources resulting from construction of the CCGS facility will be reduced to less-than-significant levels.

5.2.2.2.2 Construction Laydown Area

Construction of the CCGS facility will require a temporary construction laydown area immediately adjacent to the site for equipment staging, material storage, worker parking, and temporary administrative buildings.

Habitat in the 14-acre unpaved portion of the construction laydown area is currently non-native annual grassland, and has been determined to provide suitable nesting and/or foraging habitat for special-status species listed in Table 5.2-2. Site preparation of the construction laydown area, including site grading, therefore, will result in temporary impacts to an additional 14 acres of suitable habitat for special-status species including Swainson's hawk, white-tailed kite, killdeer, silvery legless lizard, and others listed in Table 5.2-2. If vegetation clearance were to occur between February 1 and September 30, it would have the potential to significantly impact birds, including killdeer, which may nest on site.

Uses of the construction laydown area that produce noise in excess of 60 dBA may also result in temporary noise impacts to potentially occurring sensitive wildlife species including white-tailed kite and western red bat. If vegetation clearance were to occur between February 1 and September 30, it would have the potential to impact nesting birds. These impacts could be potentially significant if the mitigation measures discussed in Section 5.2.4 are not implemented. Site preparation and construction activities would be preceded by a biologist conducting pre-construction and clearance surveys for plant and wildlife species.

To avoid permanent impacts to 14 acres of special-status wildlife species habitat, the temporary construction laydown area will be recontoured and restored to existing conditions following project construction to provide suitable nesting and foraging habitat for special-status bird and bat species.

With the implementation of the mitigation measures detailed in Section 5.2.4, any potentially significant impacts to biological resources resulting from use of the construction laydown area will be reduced to less-than-significant levels.

5.2.2.2.3 230-kV Electrical Transmission Line

Activities related to the construction of the 230-kV electrical transmission line in the existing transmission line corridor will require site preparation, including the removal of the existing towers and tower footings.

The proposed 230-kV electrical transmission line will replace an existing 60-kV transmission line that runs approximately 2.4 miles south and west from the CCGS to the PG&E Contra Costa substation. Seventeen existing transmission towers will be replaced with the same number of single pole towers at the same locations. Each tower will require boring to provide subsurface support for the transmission conductor support towers and installation of 16-square-foot concrete foundations at tower locations. Constructing the transmission line would also involve staging conductor pulling and tensioning equipment at each end of the line. The pull and tensioning trucks would be staged inside of areas already disturbed for the existing PG&E Contra Costa Substation and the CCGS. Because these areas are currently impacted by the existing towers, no permanent impacts will result from construction of the

proposed towers. Construction will require approximately 400 square feet of temporary vegetation clearance in each area where a transmission tower will be located.

Fifteen of the seventeen 230-kV transmission towers are located in areas of non-native annual grassland or in vineyards that have been determined to provide suitable nesting and/or foraging habitat for the special-status species listed in Table 5.2-2. Site preparation and construction of the 230-kV electrical transmission line, therefore, would result in less than 1 acre (approximately 0.16 acre) of temporary impacts to sensitive and special-status species including Swainson's hawk, white-tailed kite, burrowing owl and other species listed in Table 5.2-2.

To avoid permanent impacts to 0.16 acre of special-status species habitat, the 230-kV transmission line temporary impact area will be recontoured and restored to existing conditions following project construction to provide suitable nesting and foraging habitat for sensitive and special-status species.

With the implementation of the mitigation measures detailed in Section 5.2.4, any potentially significant impacts to biological resources resulting from construction of the 230-kV electrical transmission line will be reduced to less-than-significant levels.

5.2.2.2.4 Soil Stockpile Areas

Two of the soil stockpile areas will be located in non-native annual grassland, which has been determined to provide suitable nesting and/or foraging habitat for sensitive and special-status species listed in Table 5.2-2. Soil stockpiling on behalf of DuPont's future development of locations north of the CCGS site will result in temporary impacts to 3.65 acres of habitat for special-status species including Swainson's hawk, white-tailed kite, killdeer, western red bat, and others listed in Table 5.2-2. If soil stockpiling were to occur between February 1 and September 30, it would have the potential to impact nesting birds.

These impacts could be potentially significant if the mitigation measures discussed in Section 5.2.4 are not implemented. These activities would be preceded by a biologist conducting pre-construction and clearance surveys for plant and wildlife species. With the implementation of mitigation measures detailed in Section 5.2.4, any potentially significant impacts to biological resources resulting from soil stockpiling activities will be reduced to less-than-significant levels.

5.2.2.2.5 Construction Impacts to Special-status Plant Species

There are no sensitive or special-status plants with potential to occur within the CCGS site or along the linear appurtenances; therefore; the project is not expected to result in significant impacts to sensitive or special-status plant species.

5.2.2.2.6 Construction Impacts to Special-status Wildlife Species

Temporary and permanent impacts to special-status wildlife could occur from vegetation removal or crushing (resulting in a loss of nesting and foraging habitat), trenching, entombment of animals in dens or burrows, collisions with vehicles, disturbance from noise, and further fragmentation of habitat. These impacts have the potential to be significant in the absence of mitigation.

To avoid significant impacts the following measures will be implemented: awareness training; pre-construction and clearance surveys; avoidance, mitigation, and compensation

measures proposed by the Applicant, suggested by the natural resource agencies, and summarized in the California Energy Commission (CEC) Biological Resources Mitigation Implementation Monitoring Plan (BRMIMP), and other measures discussed in Section 5.2.4. No significant, unmitigated impacts to special-status wildlife are expected to result from the construction and operation of the CCGS facility. Effects on species from construction and operation of CCGS are discussed in the following sections.

Foraging Habitat for Raptors and Bats

The CCGS site provides potential suitable foraging habitat for sensitive and special-status species. Foraging birds are protected under various federal and state codes, including the MBTA and CDFG codes 3503, 3503.5, and 3513. Western burrowing owl is a state species of special concern with two CNDDB records within the survey area (Figures 5.2-2 and 5.2-3a-j). Golden eagles are afforded additional protection under the BGEPA and CDFG code 3511. Northern harrier, short-eared owl, loggerhead shrike, pallid bat and western red bat are state species of special concern, and white-tailed kite is a state fully protected species. Any potential impact to foraging habitat for these species resulting from the proposed project must be mitigated to reduce those impacts to less-than-significant levels.

The project will result in the permanent loss of 19.21 acres and an additional temporary disturbance to 18.65 acres of foraging habitat for western burrowing owl, raptors and bats. Potential impacts from construction activities on western burrowing owl and foraging raptors and bats could primarily occur from site clearance and grading. Additional construction-related impacts may occur due to noise and collisions with vehicles and equipment. Impacts of the aforementioned actions and the potential for loss of special-status species would be significant in the absence of mitigation. Mitigation measures established in the ECCC HCP/NCCP are expected to reduce potentially significant impacts to the western burrowing owl, and foraging raptors and bats. Additional mitigation could be required for the portion of the transmission line within the City of Antioch that is not covered by the HCP/NCCP. With the implementation of mitigation measures detailed in Section 5.2.4, any potentially significant impacts to western burrowing owl, and foraging raptors and bats will be reduced to less-than-significant levels.

Nesting Birds

The CCGS site provides potential nesting habitat for several bird species. Annual grasslands may provide nesting habitat for species such as northern harrier, western burrowing owl, and killdeer while the interior live oak and Tasmanian blue gum trees may provide suitable nesting habitat for species including Swainson's hawk and white-tailed kite.

Nearly all birds with potential to nest in the CCGS survey area are protected under the MBTA and CDFG codes. Additionally, species designated as California species of special concern, including northern harrier, western burrowing owl and western red bat are protected under California Code of Regulations (CCR), Title 14, Sections 670.2 and 670.5. Impacts to western burrowing owl nesting habitat could occur if western burrowing owls move into the CCGS site during the nesting season (February 1 through September 30), prior to the start of construction, or during construction. Any potential impact to nesting or roosting habitat for these species resulting from the proposed project must be mitigated to reduce those impacts to less-than-significant levels.

The project will result in the permanent and temporary loss of nesting habitat for some migratory and resident birds. Potential impacts from construction activities on nesting birds could primarily occur from site clearance and grading. These impacts would be significant in the absence of mitigation. Initial clearance and grading of the construction laydown and CCGS facility should be conducted prior to the February 1 start of the nesting season, and be preceded by surveys to locate potential active nests. Every attempt will be made to remove nesting substrate (tall grasses and shrubs) from the site before the nesting season begins. If construction begins during the nesting season, surveys by a qualified biologist will be required to locate, protect, and monitor active nests until nestlings fledge. Mitigation measures designed to minimize potential impacts to less-than-significant levels are detailed in Section 5.2.4.

Temporary impacts to nesting birds in areas where construction noise exceeds 60 dBA may also occur. Noise and activity associated with project construction could disturb nesting birds, causing them to avoid the construction area. Sensitive bird species could abandon nesting attempts if disturbed during the breeding season during construction. This could be a significant impact, without mitigation. Monitoring of nesting activities during construction activity may be necessary to determine if nests could be significantly disturbed. With the implementation of mitigation measures detailed in Section 5.2.4, any potentially significant impacts to nesting birds will be reduced to less-than-significant levels.

5.2.2.2.7 Impacts to Trees

Several trees exist within the project's construction footprint. A row of Tasmanian blue gum trees line the north end of the site and a cluster of four interior live oaks are located near the center of the site. The City of Oakley has tree preservation ordinances (Zoning Code 9.1.1112 Heritage Tree Preservation, 9.1.1114 Tree Preservation) that protect trees that are part of a stand of four or more trees, including groups of interior live oaks. Removal of trees during the nesting season could result in mortality to species protected under the MBTA, a potentially significant impact without mitigation. Removal of trees during the non-nesting season will avoid impacts to these species. With the implementation of mitigation measures detailed in Section 5.2.4, any potentially significant impacts to trees will be reduced to less-than-significant levels.

5.2.2.2.8 Impacts to Wildlife Corridors

The project is within the Pacific Flyway, a common route of bird migration that extends along the west coast of North America that spans an area from the pelagic regions of the Eastern Pacific to the Great Basin. While individual migrating birds may be adversely impacted by the CCGS, the CCGS will not significantly impede migration along the flyway.

Terrestrial wildlife habitat in the project area has been fragmented by previous development to the west, south, and east of the CCGS site; therefore, no terrestrial wildlife corridors are currently present in the project area. The San Joaquin River north of the site represents an aquatic wildlife corridor that will not be impacted by the project. Significant impacts to wildlife corridors are not expected to occur.

5.2.2.2.9 Wetlands and Waters of the United States

One jurisdictional wetland is present within 250 feet of the CCGS site and two additional wetlands are located within 250 feet of the soil stockpile areas (See Routine Wetland Delineation Data Sheets, Appendix 5.2F). Project construction would not cause loss or fill of

any wetlands. The CCGS site is adjacent to a 0.62-acre palustrine emergent wetland, called Wetland E; however, this wetland will not be impacted by the project. As discussed in Section 5.2.1.5.5, stormwater drainage from the CCGS will be designed, in consultation with the CDFG to avoid any changes in flow that could adversely affect Wetland E. Wetland E has been found by the USACE to be an isolated and non-jurisdictional wetland, but is under a conservation easement as mitigation for a nearby project. Two additional 0.38-acre and 0.37-acre palustrine emergent wetlands are located within 50 feet north and south, respectively, of soil stockpile areas. These wetlands were also found by USACE to be isolated and non-jurisdictional.

Water will be applied to the site and laydown area for dust control during construction, and erosion and sediment washed into surface waters could potentially impact Wetland E. The CCGS stormwater design will be governed by the stormwater management requirements of the Contra Costa Clean Water Program Stormwater C.3 Guidebook (CCCWP, 2008). The C.3 requirements address both flow control and treatment of stormwater. Per page 8 of the C.3 guidebook, using the Option 2 design process detailed in Chapter 4 will allow the CCGS project to meet both treatment and flow control requirements.

Following the design process outlined by Option 2, bioswales will be utilized to collect all stormwater runoff from the project site. Drop structures DS-1 and DS-5 are located at the end of bioswales and are adjacent to the easement area. The drop structures will discharge stormwater to the easement area if a rainfall event is larger than the design event noted in the C.3 guidebook. Rainfall less than the design event will be contained in the bioswales and will infiltrate through the sandy soils or evaporate. The soils, plantings, and irrigation for the bioswales will be in accordance with Appendix B of the Contra Costa Clean Water Program Stormwater C.3 Guidebook. To allow stormwater to reach the easement area during rainfall events less than a C.3 design event, a perforated underdrain is located under the northern bioswale. The stormwater will be filtered through the plant roots and a biologically active soil mix within the bioswale, removing suspended solids and other potential pollutants prior to the underdrain collecting the stormwater and discharging to the easement area.

As discussed further in Section 5.15, Water Resources, the Applicant will prepare an erosion and sediment control plan that specifies best management practices (BMPs) to be implemented during all project activities to avoid sediment runoff and erosion that would cause degradation to waters of the United States. With the implementation of these mitigation measures and BMPs, impacts to wetlands and waters of the United States will be less than significant.

5.2.2.3 Potential Impacts of Operation

During operation, the CCGS will produce combustion turbine emissions, water discharge, noise, and light. In addition, the air-cooled condenser and 230-kV transmission line could pose a collision and electrical hazard to birds. The potential for each of these products of CCGS operation to adversely impact sensitive biological resources at the CCGS site is discussed in the following sections.

5.2.2.3.1 Combustion Turbine Emissions

Air emissions from the two combustion turbine exhaust stacks include nitrogen oxides (NO_x), sulfur oxides (SO_x), and particulates (PM_{10}). Nitrogen oxide gases (NO, NO_2) convert to nitrate particulates in a form that is suitable for uptake by most plants. The effect of this nitrogen could be to promote plant growth that could potentially encourage nonnative plant species at the expense of native species. Sensitive habitats that may harbor sensitive plant species susceptible to the effects of nitrogen deposition area located 1.6 miles west of the CCGS site, at the Antioch Dunes National Wildlife Refuge. The CCGS's nitrogen deposition rates would be 0.0613 kilograms per hectare per year, depending on the location, on the basis of a permit to operate 8,449 hours per year.

A threshold at which harmful effects from nitrogen deposition on plant communities has not been firmly established. However, a value of 5 kilograms per hectare per year (kg/ha/yr) is often used for comparing nitrogen deposition among plant communities. Research conducted in the South San Francisco Bay Area indicates that intensified annual grass invasions can occur in areas with nitrogen deposition levels of 11–20 kg/ha/yr, with limited invasions at levels of 4–5 kg/ha/yr (Weiss 2006a and Weiss 2007, as cited in CEC 2007). The levels of nitrogen deposition from the CCGS in the Antioch Dunes area are estimated at 0.0613, far below levels necessary to cause adverse effects.

Furthermore, the level of nitrogen deposition from the CCGS on plant-available nitrogen would actually be less than the calculated amount because the deposition will be distributed in small amounts during the year and not all of the nitrogen added to the soil during each deposition event is available for plant use because of losses associated with soil processes. Therefore, it is unlikely that there would be significant impacts to biological resources from nitrogen deposition.

Particulate emissions will be controlled by inlet air filtration and use of natural gas. The deposition of airborne particulates (PM_{10}) can affect vegetation through either physical or chemical mechanisms. Physical mechanisms include the blocking of stomata so that normal gas exchange is impaired, as well as potential effects on leaf adsorption and reflectance of solar radiation. Information on physical effects is scarce, presumably in part because such effects are slight or not obvious except under extreme situations (Lodge et al., 1981). Studies performed by Lerman and Darley (1975) found that particulate deposition rates of 365 g/m^2/year caused damage to fir trees, but rates of 274 g/m^2/year and 400 to 600 g/m^2/year did not damage vegetation at other sites.

The maximum annual PM10 deposition rate for the CCGS of 0.181 g/m^2/year is significantly below levels which would be expected to result in mechanical injury to vegetation (i.e., 365 g/m2/year; Lerman and Darley, 1975).

The maximum annual predicted concentration for PM10 from the CCGS is 0.287 $\mu g/m^3$. Assuming a deposition velocity of 2 cm/sec (worst-case deposition velocity, as recommended by the California Air Resources Board [CARB]), this concentration converts to an annual deposition rate of 0.181 g/m^2/year, which is several orders of magnitude below that which is expected to result in injury to vegetation (i.e., 365 g/m^2/year). The addition of the maximum predicted annual particulate deposition rate for the CCGS to the maximum background concentration of 24 $\mu g/m^3$, measured at the nearest monitoring station yields a total estimated particulate deposition rate of 15.318 g/m^2/year, utilizing the

2 cm/sec factor. This total is still approximately one order of magnitude less than levels expected to result in plant injury.

The primary chemical mechanism for airborne particulates to cause injury to vegetation is by trace element toxicity. Many factors may influence the effects of trace elements on vegetation, including temperature, precipitation, soil type, and plant species (USFWS, 1978). Trace elements adsorbed to particulates emitted from power plant emissions reach the soil through direct deposition, the washing of plant surfaces by rainfall, and the decomposition of leaf litter. Ultimately, the potential toxicity of trace elements that reach the root zone through leaching will be dependent on whether the element is in a form readily available to plants. This availability is controlled in part by the soil cation exchange capacity, which is determined by soil texture, organic matter content, and the kind of clay present. Soil pH is also an important influence on cation exchange capacity; in acidic soils, the more mobile, lower valence forms of trace metals usually predominate over less mobile, higher valence forms. The silty clay and clay soils in the CCGS project area will have a lower potential for trace element toxicity from the comparatively high soil pH commonly found in local soils.

Perhaps the most important consideration in determining toxicity of trace elements to plants relates to existing concentrations in the soil. Several studies have been conducted relating endogenous trace element concentrations to the effects on biota of emissions from model power plants (Dvorak et al., 1977; Dvorak and Pentecost et al., 1977; Vaughan et al., 1975). These studies revealed that the predicted levels of particulate deposition for the area surrounding the model plant resulted in additions of trace elements to the soil over the operating life of the plant that were, in most cases, less than 10 percent of the total existing levels. Therefore, uptake by vegetation could not increase dramatically unless the forms of deposited trace elements were considerably more available than normal elements present in the soil.

5.2.2.3.2 Stormwater and Process Water Discharge

Stormwater will be routed through a system of bioswales designed to meet the Contra Costa County C.3 stormwater design requirements. The primary stormwater collection system will collect process stormwater from all of the plant equipment drains and route it to the oil/water separator and wastewater lift station for testing before discharge to the bioswale drainage system. As discussed in Section 5.2.1.5.5, the stormwater design is being developed in consultation with the CDFG to ensure that Wetland E, downstream of the CCGS, is not adversely affected by the project. As discussed further in Section 5.15, Water Resources, the Applicant will prepare a stormwater pollution prevention plan for operation that specifies BMPs to be implemented during all project activities to avoid stormwater discharges that would cause water quality degradation. Any stormwater that is discharged into surface waters would be potentially harmful to water quality downstream.

The primary wastewater collection system will collect process wastewater from all of the plant equipment and route it to the oil/water separator and wastewater lift station for testing before discharge to the sanitary wastewater system. The secondary wastewater collection system will collect sanitary wastewater from sinks, toilets, showers, and other sanitary facilities, and discharge it via the facility's sanitary sewer collector system to the sanitary sewer.

Because the CCGS will draw process water from an existing water supply system and then discharge a small amount of wastewater into the sanitary sewer system, there will be no mechanism for entrapment of aquatic species or discharging water to affect aquatic resources during operations.

5.2.2.3.3 Noise and Light from Plant Operations

The CCGS site is designated in the City of Oakley General Plan for Utility Energy land uses, and is adjacent to light industrial land uses, active transportation corridors including a BNSF railway, and is within the City of Oakley. These existing conditions result in several sources of lighting and noise emissions. Operation of the CCGS will produce some noise, as described in Section 5.7, Noise.

Noise from site preparation, construction, operations, and maintenance activities could temporarily discourage wildlife from foraging and nesting immediately adjacent to the project area. Many bird species rely on vocalization during the breeding season to attract a mate within their territory, and noise levels from certain construction, operations, and demolition activities could reduce the reproductive success of nesting birds. Construction and operation activity noise levels are provided in Section 5.7.

Noise impacts to wildlife are difficult to measure; however, results of several studies summarized by Golden, et al. (1980) indicate no impacts from aircraft noise at 75 dBA for several wildlife species. Western burrowing owls, for example, have been noted to reside within 100 to 200 feet of an active railway with measured noise levels of approximately 90 dBA at a distance of 50 feet from the railway (Golden, 1980). Dooling and Popper (2007) suggest that traffic noise levels above 60 dBA could interfere with avian acoustic communication.

The expected loudest composite noise levels are approximately 89 dBA at 50 feet from the activity, which results in noise levels of approximately 77 and 61 dBA at distances of 200 and 400 feet from the activity, respectively. Bird nesting habitat in the Tasmanian blue gum trees is immediately adjacent to the CCGS. Noise attributable to the CCGS in the vicinity of the trees will be likely to be sufficiently high that it may discourage birds from nesting in this area.

Bright night lighting could disturb wildlife that occurs adjacent to the project site (e.g., nesting birds, foraging mammals, and flying insects). Night lighting is also suspected to attract migratory birds to areas and, if the lights are on tall towers or structures, collisions could occur. Additionally, certain lighting may attract insects which in turn may attract birds such as nighthawks and bats to forage. The CCGS lighting will meet the requirements for security, operations and maintenance, and safety, and will be shielded and pointed downward and away from the habitat outside of the project area to minimize impacts to nesting birds and other nearby wildlife, and to reduce the potential for avian and bat attraction and collision. Also, night lighting will have switches to allow them to be turned off when not in use.

5.2.2.3.4 Potential for Collision and Electrocution Hazard to Wildlife

The CCGS site provides suitable habitat for sensitive and special-status insect, bird, and bat species with potential for significant impacts from collision and electrocution hazards to Swainson's hawk, golden eagle, white-tailed kite, western red bat, and other species. The

CCGS project would include the two 154-foot-high stacks and 120-foot-high air-cooled condenser at the CCGS facility and a 230-kV electrical transmission line to the substation with conductor support towers 125 feet high. These structures could potentially result in bird and/or bat collisions. The adjacent Wetland E may be an attractant to resident and migratory waterfowl.

Most bird collisions involve nocturnal migrants flying in inclement weather and low-visibility conditions, colliding with tall, guyed television or radio transmission towers (CEC, 1995; Kerlinger, 2000). Many birds generally migrate at night and at an altitude that would avoid ground structures, except when crossing over topographic features (e.g., ridgetops) or when inclement weather forces them down closer to the ground. Low-flying individual passerines can collide with wires during daylight operation. Raptor species expected to occur in the general area, such as the white-tailed kite, could potentially collide with the stacks and transmission lines during inclement weather, and there is potential for additional special-status species to collide with elevated structures associated with the project.

Large raptors can be electrocuted by transmission lines when a bird's wings simultaneously contact two conductors of different phases, or a conductor and a ground. This happens most frequently when a bird attempts to perch on a structure with insufficient clearance between these elements. The presence of distribution lines represents more of a danger to raptors than transmission lines, because the spacing between elements in distribution lines is much less than that of transmission lines. This increases the chance of phase-to-phase or phase-to-ground contact because the conductors are closer together than the wingspan of many raptor species, thus allowing the bird species to contact both elements at once causing electrocution (APLIC, 2005. The proposed transmission lines would be 230-kV with conductor spans greater than 15 feet, and would, therefore, have a reduced chance of phase-to-phase or phase-to-ground contact than the existing 60-kV transmission lines.

While increasing the potential for electrocution associated with the installation of transmission lines in the project area is a potential significant direct impact to raptors, the line will incorporate design measures, such as the installation of approved bird flight diverters to greatly reduce the chance of collision. The installation of transmission lines and poles will be constructed according to the most recent "raptor-friendly" guidelines (APLIC, 2005), ensuring that conductor wires are appropriately spaced to minimize the potential of raptor electrocution.

Therefore, the construction of the 230-kV electrical transmission line would not significantly increase avian electrocutions, and the "raptor-friendly" design would reduce potential impacts to less-than-significant. These mitigation measures are outlined in Section 5.2.4.

5.2.2.3.5 Effects of Operation on Special-status Species

Impacts to Special-status Plants

There are no sensitive or special-status plants located at the CCGS site or along the linear appurtenances; therefore, the project is not expected to result in significant impacts to sensitive or special-status plant species.

Impacts to Sensitive and Special-status Wildlife Species

Potential impacts to sensitive and special-status wildlife such as Swainson's hawk, northern harrier, and white-tailed kite could occur from collisions with vehicles, collision with power

line conductors or towers, and disturbance from noise. These impacts have the potential to be significant.

However, with the implementation of mitigation measures proposed in Section 5.2.4, required by natural resource agencies and summarized in the CEC BRMIMP, the project is not expected to result in significant impacts to sensitive and special-status wildlife species Species-specific impacts are discussed in the following sections.

Foraging Raptors and Bats. Potential impacts from operation activities on Swainson's hawk, other foraging raptors and foraging bats could primarily occur from collision and electrocution hazards. The air-cooled condenser and electrical transmission lines could result in collision and electrocution hazards to birds and bats. Additional operation-related impacts may occur due to collisions with vehicles and equipment. Mitigation measures to reduce potentially significant impacts to less-than-significant levels are discussed in Section 5.2.4.

Nesting Birds. The CCGS site provides suitable nesting habitat for bird species including white-tailed kite and killdeer. Potential impacts from operation activities on nesting birds could primarily occur from operational noise. Noise and activity associated with CCGS operation could disturb nesting birds, causing them to avoid the CCGS facility. Sensitive bird species could abandon nesting attempts if disturbed during the breeding season during operation. Measures to minimize potential operation related impacts to nesting birds and roosting bats to less-than-significant levels are discussed in Section 5.2.4.

5.2.2.3.6 Operation Phase Impacts to Wetlands and Waters of the United States

An isolated mitigation wetland called Wetland E is present within 250 feet of the CCGS site. The Applicant proposes to prepare a wetland enhancement plan for submittal to CDFG in advance of construction as part of the permitting process with the CEC. With approval from the CDFG, stormwater will be routed to the onsite mitigation wetland and will be used to enhance the wetland habitat quality. Enhancement of the wetland area, as well as the associated uplands within the 1.6-acre conservation easement area, would include but not be limited to the reduction in exotic non-native vegetative cover, increase in native vegetative cover, increase in native shrub and tree, introduction of aquatic food plants for waterfowl, installation of bird perches and nest boxes to increase wildlife use of the area, water quality improvement through the use of bioswales and underdrains, stormwater management improvement through better monitoring and control of water discharges, and aesthetic improvement through the removal of garbage that has collected in the area.

With approval from the CDFG, stormwater will be routed to the onsite mitigation wetland and will be used to enhance the wetland habitat quality, as described in Section 5.2.1.5.5. As discussed further in Section 5.15, Water Resources, the Applicant will prepare a stormwater pollution prevention plan for operation that specifies BMPs to be implemented during all project activities to avoid stormwater discharges that would cause water quality degradation. Any degraded stormwater that is discharged into surface waters would be potentially harmful to water quality in the wetland. Because the onsite wetlands will be enhanced, there will be no significant operation phase impacts to wetlands or waters of the United States.

The CCGS facility will connect to an existing onsite water supply; therefore, no surface or groundwater would be used for the operation of the facility.

5.2.3 Cumulative Effects

A cumulative impact refers to a proposed project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the proposed project (Public Resources Code Section 21083; 14 CCR 15064(h), 15065(c), 15130, and 15355).

Applications for several residential projects have been filed in the City of Oakley and Contra Costa County. As described, the CCGS is not expected to cause significant, unmitigated impacts to biological resources. There would be no net loss of Swainson's hawk, western burrowing owl, or San Joaquin kit fox habitat from CCGS as the project owners will provide habitat compensation for the permanent loss of habitat for these species through the ECCC HCP/NCCP or standard permitting process for the transmission line in the City of Antioch (not included in the HCP/NCCP). The restoration of the temporary laydown area and 230-kV transmission towers will offset the temporary CCGS impacts through the preservation and restoration of nesting and foraging habitat. Compensation for habitat loss with potential to impact these species would also provide forage and nesting habitat for other special-status wildlife that utilize these habitats.

As new projects are subjected to CEQA review, any potentially significant adverse impacts to biological resources are considered and mitigated, if necessary. The CCGS is not expected to cause any adverse cumulative impacts to biological resources.

5.2.4 Mitigation Measures

The following section describes the proposed measures that are intended to avoid, minimize, and otherwise mitigate potential adverse effects of the project to biological resources. Protection and mitigation measures for Swainson's hawk, western burrowing owl, and San Joaquin kit fox are outlined in the ECCC HCP/NCCP, which includes timing restrictions, buffer areas, worker training, habitat restoration, and habitat compensation for unavoidable loss of habitat. A BRMIMP will be prepared prior to construction that outlines how the Applicant would implement the mitigation and protection measures developed specifically for the project through consultation and discussions with the USFWS and CDFG as needed to consider potential effects of the transmission line in the City of Antioch, which is not a permit holder under the ECCC HCP/NCCP, and the City of Oakley, which is an HCP/NCCP permit holder and will monitor and document the effectiveness of the measures.

A site-specific Worker Environmental Awareness Program (WEAP), intended to educate construction workers and operators on the sensitive resources in the area and the measures that will be undertaken to avoid or minimize impacts to these resources, will be administered by the designated biologist as part of the mitigation plan. The WEAP will include an oral, video/powerpoint, and/or written materials presentation that discusses the types of construction activities that may impact biological resources and the measures developed to avoid such impacts. The WEAP will also include appropriate contact

information and procedures. The program will include information regarding encounters with wildlife and dealing with situations involving biological resources.

1. General construction measures to be implemented within the project area will be developed as part of the WEAP and will include the following:
2. Provide construction monitoring by a qualified biologist to ensure compliance with the protection measures.
3. Demarcate access routes and construction areas to minimize impacts to habitat and special-status species during construction and operations.
4. Conduct pre-construction and clearance surveys for special-status species within impact areas.
5. Prepare standardized construction monitoring and compliance reports that analyze the effectiveness of the measures.
6. Restoration of temporary disturbance areas following construction, including the transmission towers and laydown area, to pre-construction conditions as determined appropriate during coordination with CDFG for the Swainson's hawk and other raptors, including topography, hydrology, and vegetation.

5.2.4.1 Mitigation Measure 1 – Site Restoration Plan

5.2.4.1.1 Temporary Disturbance Areas

With the exception of temporarily disturbed areas (i.e., the construction laydown area and 230-kV transmission towers), the expected CCGS facility lifetime is 30 or more years. Construction will result in 18.65 acres of temporarily disturbed areas including the construction laydown area and vegetation clearance for the 230-kV electrical transmission line tower footings. These disturbed areas will be restored and revegetated after construction as described in the site restoration plan to be included in the BRMIMP. Elements of the restoration plan are described below. The main goal of restoration is to provide forage habitat for Swainson's hawk, other raptors, and bats with potential to occur in the area.

The CCGS Site Restoration Plan will include the following sections and details: (1) goals and objectives of the restoration; (2) a description of methods employed to achieve the restoration goals and objectives; (3) success criteria used to determine if the restoration is successful; (4) a monitoring and maintenance program, including details on remedial measures; (5) noxious weed control plan; (6) a description of annual reporting; and (7) a restoration implementation and monitoring timeline and schedule of planned activities. The scope of this plan will be proportionate to the magnitude of the expected impact. All practicable measures to avoid sensitive resources (e.g., mapped special-status plant species) will be taken during construction to reduce impacts to the maximum degree possible.

5.2.4.1.2 Facility Closure Plan

Over the long term, once the CCGS facilities are no longer needed, the structures will be removed and the project area will be restored to approximate preconstruction conditions. Because rehabilitation of the site is not to occur for more than 30 years, a draft conceptual

plan will be included as part of the BRMIMP. This draft plan can then be updated at a later date (but no later than 1 year prior to closure) that would reflect the current technology and regulatory requirements at the time of facility closure.

A formal rehabilitation plan for the CCGS facility closure will be developed by project owner and submitted to the CDFG and the CEC Compliance Project Manager (CPM) at least one year prior to facility closure.

The CCGS facility closure restoration plan will follow currently accepted site restoration practices in use by CDFG or other appropriate resource agencies, at the time of project closure, and it is expected to include the following sections and details: (1) goals and objectives of the restoration; (2) a description of methods employed to achieve the restoration goals and objectives; (3) success criteria used to determine if the restoration is successful; (4) a monitoring and maintenance program, including details on remedial measures; (5) a description of annual reporting; and (6) a restoration implementation and monitoring timeline and schedule of planned activities.

5.2.4.2 Special-status Species

The following paragraphs describe mitigation and protection measures that will be implemented during preconstruction, construction, operation, and closure activities, and will be incorporated into the BRMIMP and WEAP. These measures are expected to concurrently compensate for impacts to other sensitive species that do not have specific regulatory protections.

5.2.4.2.1 Mitigation Measure 2 – Swainson's Hawk

The following measures are proposed for Swainson's hawk, but will also provide protection/compensation for loss of tree nesting and grassland foraging habitat for other species that use these resources. The objective of the measures is to avoid, minimize, and compensate for impacts to Swainson's hawk, and to preserve habitat that will support viable populations. These measures will concurrently mitigate impacts to other raptors and bat species that may possess foraging habitat at the project site.

1. The Tasmanian blue gum trees north of the CCGS site have potential to provide nesting habitat for Swainson's hawk and other birds, and Swainson's hawks were observed over the site during field surveys (Figures 5.2-3a through 5.2-3j). Additionally, trees at the site may provide suitable roosting habitat for bats. Because construction activities will take place between March 1 and November 1 for several consecutive years, these areas will be surveyed for Swainson's hawk and other nesting birds prior to the start of construction. The surveys will occur within 0.5 mile of construction sites in areas providing suitable nesting habitat for Swainson's hawk, and will be conducted prior to each phase of construction that involves the use of heavy equipment. If an active nest is found, construction activity would be modified within 0.25 mile of these areas, per CDFG requirements. Construction activities and timing may be modified to avoid impacts to these species.

2. Compensatory mitigation for permanent impacts to Swainson's hawk foraging habitat will be provided in accordance with the ECCC HCP/NCCP, by paying the prescribed per acre fee to the East Contra Costa Habitat Conservancy, as determined through the City of Oakley's ECCC HCP/NCCP permitting process. Any potential impacts of the

transmission line in the City of Antioch, which is not included in the HCP/NCCP, will be determined through consultation with CDFG.

3. During both the construction and operation phases, a speed limit of 15 miles per hour will be established and enforced on all onsite routes. The speed limit will reduce the potential for loss of bird species due to collisions with vehicles.

4. To further minimize potential impacts to Swainson's hawk, design features will include the following:

   a. Overhead power lines appropriately spaced to minimize the potential of raptor electrocution using the latest APLIC (2005) recommended guidelines for line spacing.

   b. Approved bird flight diverters installed on the new power lines. The diverters will be installed per manufacturer's specifications; replaced when damaged or deemed defective; and maintained for the full length of the transmission line for the life of the facility.

   c. Shielded lighting consisting of sodium bulbs that are directed downward to reduce light pollution and potential for avian and bat attraction and collision.

5. A threshold of significance for raptor/migratory bird (species protected under the MBTA and the BGEPA) mortality will be established. Post-mortality surveys for such species will be conducted by a qualified biologist during the first three years of project operation. If this threshold of significance is met or exceeded, adaptive management practices will be implemented to reduce such impact. Based on the results of these monthly post-mortality surveys, it will be determined if these surveys are to continue after the initial year.

Mitigation Measure 3 – Nesting Birds and Roosting Bats

1. All sites to be disturbed during the nesting season between February 1 and September 30 will be surveyed for nesting birds prior to construction. A qualified biologist will perform a preconstruction survey for nesting birds in the project area, including areas within 0.5 mile of all project facilities, utility corridors, and access roads and other areas where project construction noise is projected to exceed 60 dBA. If an active nest of a species protected under the MBTA is found, construction activity will be limited within 250 feet of the nest, which will be monitored by a qualified biologist to avoid impacts to the nest. Nests may be relocated, or young birds rehabilitated and released under the guidance of CDFG, as necessary, to avoid project delays due to the presence of active bird nests; conversely, construction activities and timing may be modified to avoid impacts to nesting birds, such as Killdeer, which may nest in inactive laydown areas.

2. Frequent (every few days) disturbance of potential nesting habitat may be initiated in project areas just prior to the nesting season to remove nesting substrate and discourage nesting in construction areas.

Mitigation Measure 4 – Western Burrowing Owl

Although no western burrowing owls were observed during biological surveys, the following measures are proposed if they are found to have moved onto the site before

construction begins. These measures are outlined in the CDFG Memorandum entitled *Staff Report on Burrowing Owl Mitigation* (CDFG, 1995), and comply with ECCC HCP/NCCP western burrowing owl conservation measures. The objective of the measures is to avoid and minimize impacts to western burrowing owls at the project site and preserve habitat that will support viable populations.

1. A preconstruction survey of suitable habitat at the project site and a 150-meter (approximately 500-foot) buffer (where possible and appropriate based on habitat) will be surveyed within 30 days prior to construction to ensure no new western burrowing owls have established territories. If ground-disturbing activities are delayed or suspended for more than 30 days after the preconstruction survey, the site will be resurveyed.

2. Ground-disturbing actions should be carried out from September 1 to January 31, which is prior to the nesting season. Since the timing of nesting activity may vary with latitude and climatic conditions, this timeframe should be adjusted accordingly.

3. Occupied burrows will not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist verifies through non-invasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

4. If owls must be moved away from the disturbance area, passive relocation techniques (as described below) will be used rather than trapping. Owls will be excluded from burrows in the immediate impact zone and within a 50-meter (approximately 160-foot) buffer zone by installing one-way doors in burrow entrances. One-way doors (e.g., modified dryer vents) will be left in place 48 hours to ensure owls have left the burrow before excavation. Whenever possible, burrows will be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe will be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.

5. Mitigation for the permanent conversion (greater than one breeding season) of western burrowing owl habitat within vacant or fallow land shall be at a 1:1 ratio or in accordance with current CDFG policies and guidelines. Specified mitigation ratios identified under the conservation measures for Swainson's hawk may also be applied to western burrowing owl conservation.

5.2.4.2.2 Mitigation Measure 4 – San Joaquin Kit Fox

The following measures are proposed for San Joaquin kit fox, but will also provide protection/compensation for other foraging mammals, such as the San Joaquin pocket mouse. These measures are consistent with the ECCC HCP/NCCP San Joaquin kit fox conservation measures. The objective of the measures is to avoid, minimize, and compensate for impacts to San Joaquin kit fox, and to preserve habitat that will support viable populations. These measures will concurrently mitigate impacts to other mammal species that may possess foraging habitat at the project site.

1. Project-related vehicles should observe a 15-mph speed limit in all project areas, except on county roads and state and federal highways; this is particularly important at night

when kit foxes are most active. To the extent possible, night-time construction should be minimized. Off-road traffic outside of designated project areas will be prohibited.

2. To prevent inadvertent entrapment of kit foxes or other animals during the construction phase of a project, all excavated, steep-walled holes or trenches more than 2 feet deep will be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If a trapped or injured kit fox is discovered, the procedures under item 13 (below) must be followed.

3. Kit foxes are attracted to den-like structures such as pipes and may enter stored pipe becoming trapped or injured. All construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at a construction site for one or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe should not be moved until the USFWS has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved once to remove it from the path of construction activity, until the fox has escaped.

4. All food-related trash items such as wrappers, cans, bottles, and food scraps should be disposed of in closed containers and removed at least once a week from a construction or project site.

5. No firearms will be allowed on the project site.

6. To prevent harassment, mortality of kit foxes or destruction of dens by dogs or cats, no pets will be permitted on project sites.

7. Use of rodenticides and herbicides in project areas should be restricted. This is necessary to prevent primary or secondary poisoning of kit foxes and the depletion of prey populations on which they depend. All uses of such compounds should observe label and other restrictions mandated by the U.S. Environmental Protection Agency, California Department of Food and Agriculture, and other state and federal legislation, as well as additional project-related restrictions deemed necessary by the USFWS. If rodent control must be conducted, zinc phosphide should be used because of proven lower risk to kit fox.

8. A designated biologist will be appointed by the project proponent who will be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured, or entrapped individual. The representative will be identified during the employee education program. The representative's name and telephone number shall be provided to the USFWS.

9. The BRMIMP and WEAP will include an employee education program to address potential impacts to kit fox or other endangered species. The program should consist of a brief presentation by persons knowledgeable in kit fox biology and legislative protection to explain endangered species concerns to contractors, their employees, and other personnel involved in the project. The program should include the following: a

description of the San Joaquin kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the federal ESA; and a list of measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information should be prepared for distribution to the above-mentioned people and anyone else who may enter the project site.

10. Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. should be recontoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but that after project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas should be determined on a site-specific basis in consultation with USFWS, CDFG, and revegetation experts.

11. In the case of trapped animals, escape ramps or structures should be installed immediately to allow the animal(s) to escape, or USFWS should be contacted for advice.

12. Any personnel who inadvertently kills or injures a San Joaquin kit fox shall immediately report the incident to their representative. This representative shall contact CDFG immediately in the case of a dead, injured or entrapped kit fox. CDFG contact for immediate assistance is State Dispatch at (916) 445-0045. They will contact the local warden or biologist.

13. The Sacramento Fish and Wildlife Office and CDFG will be notified in writing within three working days of the accidental death or injury to a San Joaquin kit fox during project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information.

5.2.5 Laws, Ordinances, Regulations, and Standards

The following sections describe the LORS that apply to potential impacts on biological resources in the project area, and list the agencies responsible for enforcing the regulations. A summary of the LORS is provided in Table 5.2-4.

TABLE 5.2-4
Laws, Ordinances, Regulations, and Standards for Biological Resources

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
Federal			
Federal Endangered Species Act (Federal ESA, 16 USC 1531 et seq.)	Designates and protects federally threatened and endangered plants and animals and their critical habitat. Applicants for projects that could result in adverse impacts on any federally listed species are required to consult with and mitigate potential impacts in consultation with USFWS.	USFWS	The CCGS project is not likely to adversely affect the federally endangered San Joaquin kit fox. Informal discussions and coordination with USFWS will determine measures the CCGS project will undertake to avoid adverse effects to potential San Joaquin kit fox habitat (Section 5.2.1.6)
Migratory Bird Treaty Act (16 USC 703 to 711)	Protects all migratory birds, including nests and eggs.	USFWS	The CCGS project will include mitigation measures to reduce impacts to resident and migratory birds to a less-than-significant level. (Section 5.2.2.2)
Bald and Golden Eagle Protection Act (16 USC 668)	Specifically protects bald and golden eagles from harm or trade in parts of these species.	USFWS	The CCGS project will include mitigation measures to reduce impacts to eagles to a less-than-significant level. (Section 5.2.2.2)
State			
California Endangered Species Act (Fish and Game Code Section 2050 et seq.).	Species listed under this act cannot be “taken” or harmed, except under specific permit.	CEC	The CCGS project will include mitigation measures to reduce impacts to State listed species to a less-than-significant level. (Section 5.2.2.2)
Fish and Game Code Section 3511	Describes bird species, primarily raptors, that are “fully protected.” Fully protected birds may not be taken or possessed, except under specific permit requirements.	CDFG	The CCGS project will include mitigation measures to reduce impacts to fully protected species to a less-than-significant level. (Section 5.2.2.2)
Fish and Game Code Section 3503	States that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.	CDFG	The CCGS project will include mitigation measures to reduce impacts to bird nests and eggs to a less-than-significant level. (Section 5.2.2.2)

TABLE 5.2-4
Laws, Ordinances, Regulations, and Standards for Biological Resources

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
Fish and Game Code Section 3503.5	Protects all birds of prey and their eggs and nests.	CDFG	The CCGS project will include mitigation measures to reduce impacts to bird nests and eggs to a less-than-significant level. (Section 5.2.2.2)
Fish and Game Code Section 3513	Makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird.	CDFG	The CCGS project will include mitigation measures to reduce impacts to birds of prey to a less-than-significant level. (Section 5.2.2.2)
Fish and Game Code Sections 4700, 5050, and 5515	Lists mammal, amphibian, and reptile species that are fully protected in California.	CDFG	The CCGS project will include mitigation measures to reduce impacts to fully protected mammal, amphibian, or reptile species to a less-than-significant level. (Section 5.2.2.2)
Fish and Game Code Sections 1900 et seq.,	The Native Plant Protection Act lists threatened, endangered, and rare plants listed by the State.	CDFG	No state threatened, endangered or rare plants will be impacted by the CCGS project. (Section 5.2.1.7)
Title 14, California Code of Regulations, Sections 670.2 and 670.5	Lists animals designated as threatened or endangered in California.	CDFG	The CCGS project will include mitigation measures to reduce impacts to threatened and endangered animals to a less-than-significant level. (Section 5.2.2.2)
California Fish and Game Code (Sections 1601 through 1607)	Prohibits alteration of any stream, including intermittent and seasonal channels and many artificial channels, without a permit from CDFG.	CDFG	No streams, including intermittent and seasonal channels will be impacted by the CCGS project. (Section 5.2.2.2.5)
CEQA (Public Resources Code Section 15380)	CEQA requires that the effects of a project on environmental resources must be analyzed and assessed using criteria determined by the lead agency.	CEC	The AFC analysis and process is CEQA equivalent. All requirements under CEQA are met with the analysis in the CCGS project AFC. (Section 5.2)
Warren Alquist Act (Public Resources Code Section 25000, et seq.)	Warren-Alquist Act is a CEQA-equivalent process implemented by the CEC.	CEC	The AFC analysis and process is CEQA equivalent. All requirements under the Warren-Alquist Act are met with the analysis in the CCGS project AFC. (Section 5.2)

TABLE 5.2-4
Laws, Ordinances, Regulations, and Standards for Biological Resources

LORS	Requirements/Applicability	Administering Agency	AFC Section Explaining Conformance
Local			
East Contra Costa County Habitat Conservation Plan and Natural Communities Conservation Plan (ECCC HCP/NCCP)	Long-term conservation goals that address existing biological resources, proposed urban growth, habitat losses, and direct, indirect, and cumulative impacts on sensitive species throughout Contra Costa County.	Contra Costa County	The CCGS project is consistent with and will not affect the long-term conservation goals for the ECCC HCP/NCCP. (Section 5.2.5.3)
City of Oakley Tree Preservation Ordinance	Provides for the preservation of certain protected trees in the City of Oakley. Provides for the protection of trees on private property by controlling tree removal while allowing for reasonable enjoyment of private property rights and property development.	City of Oakley	The CCGS project is will obtain all necessary permits and will perform required mitigation for the loss of any trees covered by the tree preservation ordinance.

5.2.5.1 Federal LORS

5.2.5.1.1 Federal Endangered Species Act (16 United States Code [USC] 153 et seq.)

San Joaquin kit fox is listed as Endangered under the federal ESA. Applicants for projects that could result in adverse impacts on any federally listed species are required to consult with and mitigate potential impacts in consultation with USFWS. Adverse impacts are defined as "take," which is prohibited except through authorization of a Section 7 or Section 10 consultation and Incidental Take Authorization. "Take" under federal definition includes "such act as may include significant habitat modification or degradation" (50 Code of Federal Regulations [CFR] §17.3). Species that are not listed are not protected by federal ESA, even if they are candidates for listing; however, USFWS advises that a candidate species (as well as species of concern) could be elevated to listed status at any time, and therefore, applicants should regard these species with special consideration.

5.2.5.1.2 Migratory Bird Treaty Act (16 USC 703 to 711)

This statute protects all migratory birds, including nests and eggs.

5.2.5.1.3 Bald and Golden Eagle Protection Act (16 USC 668)

This law specifically protects bald and golden eagles from harm or trade in parts of these species.

5.2.5.2 State LORS

5.2.5.2.1 California Endangered Species Act

The California Endangered Species Act of 1984 (CESA; Fish and Game Code Sections 2050-2116), created the categories of "threatened" and "endangered" species to align with federal regulations. It converted all "rare" animals into the Act as threatened species, and requires mitigation for impacts to species and their habitat. CDFG requires a CESA Section 2081(a) permit for take of candidate or listed threatened and endangered animals for scientific, educational, or management purposes, and a CESA Section 2081 (b) permit for incidental take of listed threatened and endangered animals from all activities. The CCGS would affect foraging habitat for the Swainson's hawk, a California threatened species.

5.2.5.2.2 Fish and Game Code Section 3500, 3503.5 and 3800

All birds are provided protection under Sections 3500, 3503.5, and 3800 of the California Fish and Game Code. Section 3503.5 prohibits the take, possession, needless destruction of any bird of prey or nests or eggs of any species on the MBTA list except as otherwise provided in the codes and regulations. Disturbance of any active bird nest during the breeding season is prohibited. When nesting birds are present on a specific property, take must be avoided, and project proponents are required to reduce or eliminate disturbances within the active nesting territories or during the nesting season. The CCGS would affect foraging habitat and/or nesting habitat for several bird species protected under the MBTA.

5.2.5.2.3 Fish and Game Code Section 3511

This code identifies bird species, primarily raptors that are "fully protected." Fully protected birds, including the white-tailed kite, may not be taken or possessed, except under specific permit requirements. The CCGS would affect foraging habitat and/or nesting habitat for the white-tailed kite.

5.2.5.2.4 Fish and Game Code Section 3513

This code makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird.

5.2.5.2.5 Title 14, California Code of Regulations, Sections 670.2 and 670.5

This code lists animals designated as threatened or endangered in California. California species of special concern is a category conferred by CDFG on those species that are indicators of regional habitat changes or are considered potential future protected species. These species do not have any special legal status, but are intended by CDFG for use as a management tool to take these species into special consideration when decisions are made concerning the future of any land parcel. Nineteen California State species of special concern have potential to occur on the CCGS site.

5.2.5.2.6 California Environmental Quality Act (Public Resources Code Section 15380)

CEQA defines "rare" in a broader sense than the definitions of threatened, endangered, or species of special concern. Under this definition, CDFG can request additional consideration of species not otherwise protected. CEQA requires that the effects of a project on environmental resources must be analyzed and assessed using criteria determined by the lead agency.

5.2.5.2.7 Warren Alquist Act (Public Resources Code Section 25000, et seq.)

The Warren Alquist Act is a CEQA-certified and CEQA-equivalent process implemented by the CEC. Preparation of this AFC will result in an assessment prepared by the CEC staff to fulfill the requirements of CEQA

5.2.5.3 Local LORS

5.2.5.3.1 East Contra Costa County Habitat Conservation Plan/Natural Communities Conservation Plan

The ECCC HCP/NCCP establishes a coordinated approach to conservation and regulation of endangered species in eastern Contra Costa County. It replaces the usual process of project-by-project biological resources permitting and mitigation with a regional approach to conservation planning (East Contra Costa County Habitat Conservancy, 2009). As with other regionally focused HCPs/NCCPs, the ECCC HCP/NCCP establishes a unified process for permitting and mitigating the incidental take of endangered species. Rather than individually surveying, negotiating, and securing mitigation and permit coverage for individual projects, under the HCP/NCCP, project owners receive an endangered species permit by paying a fee or dedicating land and performing limited surveys and avoidance measures.

The fees are calculated, based on the project's location, or zone and collected by an implementation authority, in this case, the East Contra Costa County Habitat Conservancy, which is governed by representatives of local agencies (East Contra Costa County Habitat Conservancy, 2009). The implementation authority uses the fee money, as well as grants and any other funding sources established in the plan, to purchase habitat lands or easements from willing sellers. Collected funds are also used for monitoring and any habitat enhancement or management actions. The CCGS is located in fee zone #1, currently assessed at $10,731 per acre of permanent disturbance (East Contra Costa County Habitat Conservancy, 2009).

Under the ECCC HCP/NCCP, USFWS and CDFG have provided regional permits to the cities of Brentwood, Clayton, Oakley, and Pittsburg and Contra Costa County covering 28 listed species. These land use agencies may extend permit coverage to project applicants within their jurisdictions. Instead of seeking endangered species permits from the state and federal agencies, project proponents acquire their endangered species approvals from these local land use planning agencies; in the case of the CCGS, the City of Oakley. The cities of Brentwood, Clayton, Oakley, and Pittsburg and Contra Costa County approved ordinances to require future development projects to comply with the HCP/NCCP. The ordinances took effect in all four cities and the County between January 15 and January 18, 2008.

Under the ECCC HCP/NCCP, the process for applying for and utilizing permit coverage for the CCGS, (but for the CEC's jurisdiction over the state-level permitting) would be as follows:

- Project proponent applies for take coverage from the City of Oakley using the HCP/NCCP application form and planning survey report
- The City reviews application for completeness and verifies required fees. This will take place as part of the City's review of the AFC and as part of CEC's consultation with the City regarding the CCGS AFC
- The City conditions the project with applicable requirements of HCP/NCCP.
- Project proponent pays fees before or at grading permit (at first construction permit if no grading permit).
- Project proponent conducts any required pre-construction monitoring, construction monitoring, and avoidance measures. In this case, these activities would be conducted under the CEC certification and within the CEC's compliance process.

Because the City of Antioch is not a participant in the HCP/NCCP, the potential biological resources permitting needed for the CCGS transmission line would have to be conducted on the basis of consultation with the individual agencies for this project; in this case, CDFG and USFWS. Informal discussions and coordination with these agencies will determine whether more formal consultation leading to permits is needed for this portion of the project.

5.2.6 Agencies and Agency Contacts

Involved agencies and agency contacts are listed in Table 5.2-5. CDFG has been contacted to coordinate the avoidance of potential impacts to Wetland E, a wetland under conservation easement managed by CDFG, and also regarding the portions of the transmission line that are located in the City of Antioch, which does not participate in the HCP/NCCP. The City of Oakley has been contacted to begin the process of applying for a permit under the ECCC HCP/NCCP. USFWS has been contacted to coordinate the avoidance of impacts to federally listed species and also regarding the portions of the transmission line that are located in the City of Antioch. Appendix 5.2G provides records of conversation with these regulatory agencies.

TABLE 5.2-5
Agency Contacts for Biological Resources

Issue	Agency	Contact
State listed species	California Department of Fish and Game	Liam Davis Habitat Conservation Supervisor 7329 Silverado Trail Napa, CA 94558 (707) 944-5500
Federally listed species	United States Fish and Wildlife Service	Angela Picco Coast Bay Delta Fish and Wildlife Biologist 2800 Cottage Way, Suite W-2606 Sacramento, CA 95825 (916) 414-6464
Permits under the East Contra Costa County HCP/NCCP	City of Oakley	Joshua McMurray Senior Planner City of Oakley 3231 Main Street Oakley, CA 94561 (925) 625-7004

5.2.7 Permits and Permit Schedule

The CCGS project will apply for a project development permit under the ECCC HCP/NCCP. Informal consultation will begin with the City of Oakley soon after AFC filing regarding the HCP/NCCP requirements, and will continue through the Discovery and Analysis phases of CEC Certification. Other biological resources permits (such as federal and state incidental take consultation or permits) will not be required for the project site and the portion of the transmission line that is located in Oakley, because compliance under the state and federal ESAs is coordinated through the City of Oakley as permitting agency on behalf of the East Contra Costa County Habitat Conservancy, the joint powers authority implementing the ECCC HCP/NCCP. For the portion of the transmission line that is in the City of Antioch, it will be necessary to hold discussions with CDFG and USFWS because Antioch does not participate in the HCP/NCCP. Further discussions will determine whether CDFG and USFWS would require formal consultation for this portion of the project.

It is not expected that a Clean Water Act Section 404 permit will be required because the project will not affect waters of the United States. Similarly, a Streambed Alteration Agreement will not be needed because the project will not affect a streambed or alter waters of the state.

5.2.8 References

Avian Power Line Interaction Committee (APLIC) of the Edison Institute and United States Fish and Wildlife Service. 2005. Avian Protection Plan (APP) Guidelines.

Babcock, K. W. 1995. Home range and habitat use of breeding Swainson's Hawks in the Sacramento Valley of California. Journal of Raptor Research 29:193–197.

Banta, B. H., and D. J. Morafka. 1968. An annotated check list of the recent amphibians and reptiles of the Pinnacles National Monument and Bear Valley, San Benito and Monterey counties, California, with some ecological observations. The Wasmann Journal of Biology 26(2):161-183.

Bell, H. 1994. Analysis of habitat characteristics of San Joaquin kit fox in its northern range. Master's Thesis, California State University, Hayward.

Biogeographic Information and Observation System (BIOS). 2009. California Department of Fish and Game. Available online at: http://bios.dfg.ca.gov/.

Bryant, H. C. 1911. The horned lizards of California and Nevada of the genera Phrynosoma and Anota. University of California Publications in Zoology 9(1):1-84. Montanucci, R. R. 1968. Notes on the distribution and ecology of some lizards in the San Joaquin Valley, California. Herpetologica 24(4):316-320.

Bury, R. B. 1972. Status report on California's threatened amphibians and reptiles. California Department of Fish and Game, Inland Fisheries Administrative Report (72-1):1–31.

Bury, R. B. 1985. Status report: Anniella pulchra nigra Fischer, black legless lizard (Anniellidae: Sauria) in central California. Final report of the U.S. Fish and Wildlife Service, Office of Endangered Species, Portland, OR.

California Department of Fish and Game (CDFG). 1995. Staff report on burrowing owl mitigation. Unpublished report.

California Department of Fish and Game (CDFG). 2009a. California Natural Diversity Data Base. Search of the Mt. Vaca, Fairfield North, Fairfield South, Allendale, Elmira, Denverton, Dixon, Dozier, Birds Landing, Saxon, Liberty Island, and Rio Vista 7.5-minute USGS quadrangles. 2007.

California Department of Fish and Game (CDFG). 2009b. Fully Protected Animals. Non-game Wildlife Program. Available online: http://www.dfg.ca.gov/wildlife/species/t_e_spp/fully_pro.html

California Energy Commission (CEC). 1995. Avian Collision and Electrocution: An Annotated Bibliography. P. 114.

California Energy Commission (CEC). 2007. Final Staff Assessment, City of Hayward Eastshore Energy Center Application for Certification (06-AFC-6). November.

California Environmental Resources Evaluation System (CERES). 2008. Available online: http://ceres.ca.gov/

City of Oakley. 2006. 2020 General Plan. Adopted December 16. Available online: http://www.ci.oakley.ca.us/

Contra Costa Clean Water Program (CCCWP). 2008 Stormwater C.3 Guidebook, Stormwater Quality Requirements for Development Applications. 4th edition. September

Cunningham, J. D. 1959. *Notes on Anniella*. Herpetologica 15(1):19–20.

Dady, Kathleen/U.S. Army Corps of Engineers. 2008. Personal communication with Chuck Orwig/DuPont Engineering. December 23.

DuPont Engineering. 2007. Delineation Report for Potential Jurisdictional Waters of the United States Including Wetlands. Submitted to the US Army Corps of Engineers, Sacramento District. Prepared by URS Corporation on behalf of DuPont Engineering, Houston, Texas.

DuPont Engineering. 2008. Supplemental Information for request for verification of wetland boundaries, DuPont Oakley Site. Letter from Chuck Orwig, DuPont Engineering, to Mr. William Guthrie, US Army Corps of Engineers Project Manager, Sacramento District, July 18, 2008.

Dvorak, A. J. and E. D. Pentecost, et al. 1977. Assessment of the health and environmental Effects of Power Generation in the Midwest. Vol. II, Ecological Effects. Prepared by Argonne National Laboratory, Argonne, Ill. (Draft report).

Dvorak, A. J., et al. 1977. The Environmental Effects of Using Coal for Generating Electricity. NUREG-0252. Prepared by Argonne National Laboratory, Argonne, Ill., for the U.S. Nuclear Regulatory Commission. 221 pp.

East Contra Costa County Habitat Conservancy. 2009. Internet site. http://www.co.contra-costa.ca.us/depart/cd/water/HCP/overview.html

Egoscue, H. J. 1962. Ecology and life history of the kit fox in Tooele County, Utah. Ecology 43:481–497.

Estep, J. A. 1989. Biology, movements, and habitat relationships of the Swainson's hawk in the Central Valley of California: 1986-87. California Department of Fish and Game, Nongame Bird and Mammal Section Report, Sacramento, CA.

Golden, J., R.P. Onellete, S. Saari and P.N. Cheremisinoff. 1980. Environmental Impact Book, Ann Arbor Science Publishers, Ann Arbor, Michigan.

Gorman, J. 1957. *Recent collections of the California limbless lizard,* Anniella pulchra. Copeia 1957(2):148–150.

Grinnell, J. and C. L. Camp. 1917. A distributional list of the amphibians and reptiles of California. University of California Publications in Zoology 17(10):127–208.

Grinnell, J., J. S. Dixon, and J. M. Linsdale. 1937. *Fur-Bearing Mammals of California*. Univ. California Press, Berkeley. Vol. 2, xiv + 377-777. Hall, E. R. 1946. *Mammals of Nevada*. Univ. California Press, Berkeley. xi + 710 pp.

Hall, E. R. 1946. *Mammals of Nevada*. Univ. California Press, Berkeley. xi + 710 pp.

Hall, Jr., F. A. 1983. Status of the San Joaquin kit fox, *Vulpes macrotis mutica*, at the Bethany Wind Turbine Generating Project site, Alameda County, California. California Department of Fish and Game. 36pp.

Herr, Joel. 2002. Contra Costa County, CA Breeding Bird Atlas. Flying Emu Birding Pages. Web site: http://www.flyingemu.com/ccosta/

Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. State of California, The Resources Agency.

Holland, M. R. and M. P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. Department of Fish and Game, State of California, Sacramento.

Hunt, L. E. 1983. A nomenclatural rearrangement of the genus Anniella (Sauria: Anniellidae). *Copeia* 1983(1):79–89.

Jennings, M.R. and M.P. Hayes. 1994. Amphibian and reptile species of special concern in California. Final Report, Contract 8023. California Department of Fish and Game, Inland Fisheries Division, Sacramento, California.

Jones & Stokes. 2006. East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan. October.

Kerlinger, Paul. 2000. *Avian Mortality at Communication Towers: A Review of the Recent Literature, Research; and Methodology*. Prepared for U.S. Fish and Wildlife Service, Office of Migratory Bird Management. 38 pp.

Knapp, D. K. 1978. Effects of agricultural development in Kern County, California, on the San Joaquin kit fox in 1977. Final Report, Project E-1-1, Job V-1.21, Non-Game Wildlife Investigations, California Department of Fish and Game, Sacramento, California.

Lerman S, L. and E.F. Darley. 1975. Articulates, pp. 141-158. In:. Response of plants to air pollution, edited by J.B. Mudd and T.T. Kozlowski. Academic Press. New York.

LSA Associates, Inc. 2003. General Plan. City of Antioch, Contra Costa County, California. November 24.

LSA. 2007. Solano Multispecies Habitat Conservation Plan. Version 2.2 Final Administrative Draft. Available online: http://www.scwa2.com/hcp2.2.html

McCue, P., T. Kato, M. L. Sauls, T. P. O'Farrell. 1981. Inventory of San Joaquin kit fox on land proposed as Phase II, Kesterson Reservoir, Merced County, California. Topical Report EGG 1183-2426, EG&G, Santa Barbara Operations, U.S. Department of Energy, Goleta, California.

Miller, M. R. 1944. *Ecologic relations and adaptations of the limbless lizards of the genus Anniella.* Ecological Monographs 14(3):271–289.

Montanucci, R. R. 1968. Notes on the distribution and ecology of some lizards in the San Joaquin Valley, California. Herpetologica 24(4):316-320.

National Audubon Society, Inc. 2009. Historical Results: Data for a CBC Count Circle. Web site: http://audubon2.org/cbchist/count_table.html

O'Farrell, T. P. and L. Gilbertson 1979. Ecological life history of the desert kit fox in the Mojave desert of southern California. Final Report. U.S. Bureau of Land Management, Desert Plan Staff, Riverside, California.

O'Farrell, T. P., T. Kato, P. McCue, and M. S. Sauls. 1980. Inventory of the San Joaquin kit fox on BLM lands in southern and southwestern San Joaquin Valley. Final Report, ECC 1183-2400, EG&C, Santa Barbara Operations, U.S. Department of Energy, Goleta, California.

Orloff, S., F. Hall, and L. Spiegel. 1986. *Distribution and habitat requirements of the San Joaquin kit fox in the northern extreme of their range.* Trans. West. Sect. Wildl. Soc. 22: 60–70.

Roderick, P. J. and N. E. Mathews. 1999. *Characteristics of natal and non-natal kit fox dens in the northern Chihuahuan Desert.* Great Basin Naturalist 59(3):252–258.

Sawyer, J. O., and T. Keeler-Wolf. 1995. A manual of California vegetation. California Native Plant Society. Sacramento, California. Available online: http://www.cnps.org/cnps/vegetation/manual.php

Skinner, M.W. and B.M. Pavlik (eds). 1994. Inventory of Rare and Endangered Vascular Plants of California. California Native Plant Society Special Publication No. 1 (Fifth edition). Sacramento, California. 338 pp.

Smith, H. M. 1946. Handbood of Lizards: Lizards of the United States and of Canada. Comstock Publishing Company, Ithaca, NY.

Stebbins, R. C. 1954. Amphibians and reptiles of western North America. McGraw-Hill Book Company, New York, New York.

Stebbins, R. C. 1985. *A Field Guide to Western Reptiles and Amphibians*. Second edition, revised. Houghton Mifflin Company, Boston, MS.

Swick, C. D. 1973. Determination of San Joaquin kit fox in Contra Costa, Alameda, San Joaquin, and Tulare Counties. Special Wildlife Investigations Program Report W-54-R4, California Department of Fish and Game, Sacramento, California. 14 pp.

Tollestrup, K. 1981. The social behavior and displays of two species of horned lizards, Phrynosoma platyrhinos and Phrynosoma coronatum. Herpetologica 37(3):130-141.

United States Department of Agriculture (USDA), Forest Service. 1997. Ecological Subregions of California. Scott Miles and Charles Goudey (editors). Pacific Southwest Division. R5-EM-TP-005. San Francisco.

U.S. Fish and Wildlife Service (USFWS). 1970. Federal Register, Department of the Interior, Fish and Wildlife Service. United States List of Endangered Fish and Wildlife. 50 CFR Part 17. 35 FR 16047-16048. October 13.

U.S. Fish and Wildlife Service (USFWS). 1978. Impacts of coal-fired power plants on fish, wildlife, and their habitats. U.S. Department of the Interior, FWSI OBS-78D9,260 pp.

U.S. Fish and Wildlife Service (USFWS). 1996. Endangered and Threatened Wildlife and Plants; Review of Plant and Animal Taxa that are Candidates for Listing as Endangered or Threatened Species; Notice of Review; Proposed Rule. Federal Register 61(40): 7596-7613.

U.S. Fish and Wildlife Service. 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California, Region 1, Portland Oregon. 295 pp.

U.S. Fish and Wildlife Service (USFWS). 2009a. National Wetlands Inventory (NWI) website. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. http://www.fws.gov/nwi/

U.S. Fish and Wildlife Service (USFWS). 2009b). Official Species List for Birds Landing, Rio Vista, Isleton, Antioch North, Honker Bay, Jersey Island, Bouldin Island, Clayton, Antioch South, Brentwood, Woodward Island, Tassajara, and Byron Hot Springs USGS 7.5-minuteQuadrangles. Endangered Species Branch. Information obtained January 29, 2009. http://www.fws.gov/sacramento/es/spp_lists/auto_list.cfm

Van Denburgh, J. 1922. The reptiles of western North America; an account of the species known to inhabit California and Oregon, Washington, Idaho, Utah, Nevada, Arizona, British Columbia, Sonora, and Lower California. Volume I. Lizards. Occasional Papers of the California Academy of Sciences (10):1-611.

Vaughan, B.E., et al. 1975. Review of potential impacts to Health and Environmental Quality from Metals Entering the Environment as a Result of Coal Utilization. Battelle Energy Progress Report, Pacific Northwest Laboratories. Battelle Memorial Institute, Richland, WA. 75 pp.

Zeiner, D.C., W.F.Laudenslayer, Jr., K.E. Mayer, and M. White, eds. 1988. California's Wildlife. Vol. I-III. California Depart. of Fish and Game, Sacramento, California.

TABLE 5.2-1
Plant and Wildlife Species Observed during Field Surveys

Scientific Name	Common Name
Plants	
Aizoaceae	
Tetragonia tetragonioides	New Zealand spinach
Carpobrotus edulis	Iceplant
Amaranthaceae	
Amaranthus blitum	purple amaranth
Anacardiaceae	
Schinus molle	Peruvian peppertree
Apocynaceae	
Nerium oleander	oleander
Arecaceae	
Washingtonia filifera	California fan palm
Asteraceae	
Heterotheca grandiflora	telegraphweed
Carduus pycnocephalus	Italian thistle
Cotula coronopifolia	common brassbuttons
Senecio vulgaris	old-man-in-the-Spring
Sonchus asper	spiny sowthistle
Boraginaceae	
Amsinckia menziesii	common fiddleneck
Caryophyllaceae	
Stellaria media	common chickweed
Cerastium sp.	Chickweed
Spergula arvensis	corn spurry
Casuarinaceae	
Casuarina equisetifolia	beach sheoak
Chenopodiaceae	
Salsola tragus	prickly Russian thistle
Cucurbitaceae	
Marah fabaceus	California manroot
Cyperaceae	
Schoenoplectus acutus	hardstem bulrush
Fabaceae	
Lupinus bicolor	miniature lupine
Lotus scoparius	Common deerweed
Medicago polymorpha	burclover
Fagaceae	
Quercus agrifolia	California live oak
Quercus wislizeni	interior live oak
Geraniaceae	
Erodium cicutarium	redstem stork's bill

TABLE 5.2-1
Plant and Wildlife Species Observed during Field Surveys

Scientific Name	Common Name
Lamiaceae	
Lamium amplexicaule	henbit deadnettle
Lythraceae	
Lythrum hyssopifolia	hyssop loosestrife
Malvaceae	
Malva parviflora	cheeseweed mallow
Myrtaceae	
Eucalyptus globulus	Tasmanian blue gum
Onagraceae	
Epilobium brachycarpum	tall annual willowherb
Oxalidaceae	
Oxalis albicans	woodsorrel
Plantaginaceae	
Plantago major	common plantain
Poaceae	
Bromus diandrus	ripgut brome
Bromus rubens	red brome
Hordeum murinum	mouse barley
Vulpia myuros	rat-tail fescue
Distichlis spicata	saltgrass
Polypogon monspeliensis	annual rabbitsfoot grass
Cynodon dactylon	Bermudagrass
Lolium perenne ssp. multiflorum	Italian ryegrass
Polygonaceae	
Rumex crispus	curly dock
Portulacaceae	
Montia parvifolia	miner's lettuce
Calandrinia sp.	redmaids
Rosaceae	
Prunus dulcis	sweet almond
Rubus ursinus	California blackberry
Malus pumila	paradise apple
Salicaceae	
Salix gooddingii	Goodding's willow
Simaroubaceae	
Ailanthus altissima	tree of heaven
Typhaceae	
Typha latifolia	broadleaf cattail
Viscaceae	
Phoradendron sp.	*Mistletoe*
Vitaceae	
Vitus vinifera	*Wine grape*

TABLE 5.2-1
Plant and Wildlife Species Observed during Field Surveys

Scientific Name	Common Name
Birds	
Ciconiiformes	
Ardea herodias	Great blue heron
Falconiformes	
Buteo lineatus	Red-shouldered Hawk
Buteo jamaicensis	Red-tailed Hawk
Buteo swainsoni	Swainson's Hawk
Charadriiformes	
Charadrius vociferus	Killdeer
Columbiformes	
Columba livia	Rock Pigeon
Zenaida macroura	Mourning Dove
Apodiformes	
Calypte anna	Anna's Hummingbird
Passeriformes	
Sayornis nigricans	Black Phoebe
Tyrannus verticalis	Western Kingbird
Aphelocoma californica	Western Scrub-Jay
Corvus brachyrhynchos	American Crow
Petrochelidon pyrrhonota	Cliff Swallow
Hirundo rustica	Barn Swallow
Psaltriparus minimus	Bushtit
Sturnus vulgaris	European Starling
Dendroica coronata	Yellow-rumped Warbler
Zonotrichia atricapilla	Golden-crowned Sparrow
Zonotrichia leucophrys	White-crowned Sparrow
Junco hyemalis	Dark-eyed Junco
Agelaius phoeniceus	Red-winged Blackbird
Icterus bullockii	Bullock's Oriole
Carpodacus mexicanus	House Finch
Passer domesticus	House Sparrow
Mimus polyglottos	Northern Mockingbird
Colaptes auratus	Northern flicker
Sturnella neglecta	Meadowlark
Reptiles	
Squamata	
Sceloporus occidentalis	Western fence lizard
Mammals	
Rodentia	
Spermophilus beecheyi	California ground squirrel
Lagomorpha	
Lepus californicus	Black-tailed jackrabbit

TABLE 5.2-2
Sensitive Wildlife Species with Potential to Occur at the CCGS Site

Scientific Name	Common Name	Federal	State	CDFG	ECCC HCP/NCCP
Arthropoda					
Insecta					
Diptera					
Efferia antiochi	Antioch efferian robberfly			SSA	
Hymenoptera					
Myrmosula pacifica	Antioch multilid wasp			SSA	
Chordata					
Reptilia					
Squamata					
Anniella pulchra pulchra	silvery legless lizard			SC	Yes
Phrynosoma coronatum (frontale population)	coast (California) horned lizard			SC	
Birds					
Anseriformes					
Anser albifrons	greater white-fronted goose	MBTA			
Anser albifrons elgasi	"tule" greater white-fronted goose	MBTA		SC	
Chen caerulescens	snow goose	MBTA			
Chen rossii	Ross's goose	MBTA			
Branta hutchinsii	cackling goose	MBTA			
Branta canadensis	Canada goose	MBTA			
Cygnus columbianus	tundra swan	MBTA			
Aix sponsa	wood duck	MBTA			
Anas americana	American wigeon	MBTA			
Anas penelope	Eurasian wigeon	MBTA			
Anas strepera	gadwall	MBTA			
Anas platyrhynchos	mallard	MBTA			
Anas clypeata	northern shoveler	MBTA			

TABLE 5.2-2
Sensitive Wildlife Species with Potential to Occur at the CCGS Site

Scientific Name		Common Name	Federal	State	CDFG	ECCC HCP/NCCP
Birds (cont'd)	*Anas acuta*	northern pintail	MBTA			
	Anas crecca	green-winged teal	MBTA			
	Anas discors	blue-winged teal	MBTA			
	Anas cyanoptera	cinnamon teal	MBTA			
	Aythya valisineria	canvasback	MBTA			
	Aythya americana	redhead	MBTA		SC	
	Aythya collaris	ring-necked duck	MBTA			
	Aythya fuligula	tufted duck	MBTA			
	Aythya marila	greater scaup	MBTA			
	Aythya affinis	lesser scaup	MBTA			
	Bucephala albeola	bufflehead	MBTA			
	Bucephala clangula	common goldeneye	MBTA			
	Bucephala islandica	Barrow's goldeneye	MBTA			
	Lophodytes cucullatus	hooded merganser	MBTA			
	Mergus merganser	common merganser	MBTA			
	Mergus serrator	red-breasted merganser	MBTA			
	Oxyura jamaicensis	ruddy duck	MBTA			
	Gaviiformes					
	Gavia immer	common loon	MBTA			
	Pocipediformes					
	Podilymbus podiceps	pied-billed grebe	MBTA			
	Podiceps auritus	horned grebe	MBTA			
	Podiceps nigricollis	eared grebe	MBTA			
	Aechmophorus clarkii	Clark's grebe	MBTA			
	Aechmophorus occidentalis	western grebe	MBTA			
	Pelicaniformes					
	Pelecanus erythrorhynchos	American white pelican	MBTA			

TABLE 5.2-2
Sensitive Wildlife Species with Potential to Occur at the CCGS Site

Scientific Name		Common Name	Federal	State	CDFG	ECCC HCP/NCCP
Birds (cont'd)	*Pelecanus occidentails*	brown pelican	Endangered, MBTA	Endangered	FP	
	Phalacrocorax auritus	double-crested cormorant	MBTA			
	Ciconiiformes					
	Botaurus lentiginosus	American bittern	MBTA			
	Ardea alba	great egret	MBTA			
	Ardea herodias	great blue heron	MBTA			
	Butorides virescens	green heron	MBTA			
	Egretta thula	snowy egret	MBTA			
	Bubulcus ibis	cattle egret	MBTA			
	Nycticorax nycticorax	black-crowned night-heron	MBTA			
	Plegadis chihi	white-faced ibis	MBTA			
	Cathartes aura	turkey vulture	MBTA			
	Falconiformes					
	Pandion haliaetus	osprey	MBTA			
	Elanus leucurus	white-tailed kite	MBTA		FP	
	Aquila chrysaetos	golden eagle	MBTA, BGEPA	Endangered	FP	Yes
	Haliaeetus leucocephalus	bald eagle	MBTA, BGEPA		FP	
	Accipiter striatus	sharp-shinned hawk	MBTA			
	Accipiter cooperii	Cooper's hawk	MBTA			
	Circus cyaneus	northern harrier	MBTA		SC	
	Buteo lineatus	red-shouldered hawk	MBTA			
	Buteo jamaicensis	red-tailed hawk	MBTA			
	Buteo swainsoni	Swainson's hawk	MBTA	Threatened		Yes
	Buteo lagopus	rough-legged hawk	MBTA			
	Buteo regalis	ferruginous hawk	MBTA			

TABLE 5.2-2
Sensitive Wildlife Species with Potential to Occur at the CCGS Site

Scientific Name		Common Name	Federal	State	CDFG	ECCC HCP/NCCP
Birds (cont'd)	*Flaco sparverius*	american kestrel	MBTA			
	Falco columbarius	merlin	MBTA			
	Falco mexicanus	prairie falcon	MBTA			
	Falco peregrinus	peregrine falcon	MBTA	Endangered	FP	
	Gruiformes					
	Grus canadensis	sandhill crane	MBTA	Threatened	FP	
	Charadriiformes					
	Pluvialis squatarola	black-bellied plover	MBTA			
	Charadrius vociferus	killdeer	MBTA			
	Charadrius montanus	mountain plover	MBTA		SC	
	Recurvirostra americana	American avocet	MBTA			
	Himantopus mexicanus	black-necked stilt	MBTA			
	Actitis macularius	spotted sandpiper	MBTA			
	Tringa melanoleuca	greater yellowlegs	MBTA			
	Numenius americanus	long-billed curlew				
	Calidris mauri	western sandpiper	MBTA			
	Calidris minutilla	least sandpiper	MBTA			
	Calidris alpina	dunlin	MBTA			
	Gallinago delicata	wilson's snipe	MBTA			
	Limnodromus scolopaceus	long-billed dowitcher	MBTA			
	Phalaropus lobatus	red-necked Phalarope	MBTA			
	Chroicocephalus philadelphia	Bonaparte's gull	MBTA			
	Larus canus	mew gull	MBTA			
	Larus delawarensis	ring-billed gull	MBTA			
	Larus californicus	California gull	MBTA			
	Larus argentatus	herring gull	MBTA			
	Larus occidentalis	western gull	MBTA			

TABLE 5.2-2
Sensitive Wildlife Species with Potential to Occur at the CCGS Site

Scientific Name		Common Name	Federal	State	CDFG	ECCC HCP/NCCP
Birds (cont'd)	*Larus glaucescens*	glaucous-winged gull	MBTA			
	Hydroprogne caspia	Caspian tern	MBTA			
	Sternula antillarum browni	California least tern	Endangered, MBTA	Endangered	FP	
	Sterna forsteri	Forster's tern	MBTA			
	Columbiformes					
	Zenaida macroura	mourning dove	MBTA			
	Strigiformes					
	Tyto alba	barn owl	MBTA			
	Asio flammeus	short-eared owl	MBTA		SC	
	Bubo virginianus	great horned owl	MBTA			
	Megascops kenicottii	western screech-owl	MBTA			
	Athene cunicularia hypugaea	western burrowing owl	MBTA		SC	Yes
	Apodiformes					
	Aeronautes saxatalis	white-throated swift	MBTA			
	Archilochus alexandri	black-chinned hummingbird	MBTA			
	Calypte anna	Anna's hummingbird	MBTA			
	Coraciiformes					
	Ceryle alcyon	belted kingfisher	MBTA			
	Piciformes					
	Melanerpes formicivorus	acorn woodpecker	MBTA			
	Melanerpes lewis	Lewis's woodpecker	MBTA			
	Sphyrapicus ruber	red-breasted sapsucker	MBTA			
	Picoides nuttallii	Nuttall's woodpecker	MBTA			
	Picoides pubescens	downy woodpecker	MBTA			
	Picoides villosus	hairy woodpecker	MBTA			
	Colaptes auratus	northern flicker	MBTA			

TABLE 5.2-2
Sensitive Wildlife Species with Potential to Occur at the CCGS Site

Scientific Name		Common Name	Federal	State	CDFG	ECCC HCP/NCCP
Birds (cont'd)	Passeriformes					
	Contopus sordidulus	western wood-pewee	MBTA			
	Sayornis nigricans	black phoebe	MBTA			
	Sayornis saya	Say's phoebe	MBTA			
	Myiarchus cinerascens	ash-throated flycatcher	MBTA			
	Tyrannus verticalis	western kingbird	MBTA			
	Lanius ludovicianus	loggerhead shrike	MBTA		SC	
	Vireo huttoni	Hutton's vireo	MBTA			
	Cyanocitta stelleri	Steller's jay	MBTA			
	Aphelocoma californica	western scrub-jay	MBTA			
	Pica nuttalli	yellow-billed magpie	MBTA			
	Corvus brachyrhynchos	American crow	MBTA			
	Corvus corax	common raven	MBTA			
	Eremophila alpestris	horned lark	MBTA			
	Tachycineta thalassina	violet-green swallow	MBTA			
	Tachycineta bicolor	tree swallow	MBTA			
	Riparia riparia	bank swallow	MBTA	Threatened		
	Stelgidopterex serripennis	northern rough-winged swallow	MBTA			
	Petrochelidon pyrrhonota	cliff swallow	MBTA			
	Hirundo rustica	barn swallow	MBTA			
	Baeolophus inornatus	oak titmouse	MBTA			
	Poecile rufescens	chestnut-backed chickadee	MBTA			
	Psaltriparus minimus	bushtit	MBTA			
	Sitta carolinensis	white-breasted nuthatch	MBTA			
	Troglodytes aedon	house wren	MBTA			
	Thryomanes bewickii	Bewick's wren	MBTA			
	Salpintes obsoletus	Rock wren	MBTA			

TABLE 5.2-2
Sensitive Wildlife Species with Potential to Occur at the CCGS Site

Scientific Name		Common Name	Federal	State	CDFG	ECCC HCP/NCCP
Birds (cont'd)	*Catherpes mexicanus*	canyon wren	MBTA			
	Cistothorus palustris	marsh wren	MBTA			
	Regulus satrapa	golden-crowned kinglet	MBTA			
	Regulus calendula	ruby-crowned kinglet	MBTA			
	Polioptila caerula	blue-gray gnatcatcher	MBTA			
	Sialia mexicana	western bluebird	MBTA			
	Sialia currucoides	mountain bluebird	MBTA			
	Catharus guttatus	hermit thrush	MBTA			
	Turdus migratorius	american robin	MBTA			
	Ixoreus naevius	varied thrush	MBTA			
	Mimus polyglottos	northern mockingbird	MBTA			
	Toxostoma redivivum	California thrasher	MBTA			
	Anthus rubescens	American pipit	MBTA			
	Bombycilla cedrorum	cedar waxwing	MBTA			
	Phainopepla nitens	phainopepla	MBTA			
	Vermivora celata	orange-crowned warbler	MBTA			
	Dendroica petechia	yellow warbler	MBTA		SC	
	Dendroica coronata	yellow-rumped warbler	MBTA			
	Dendroica nigrescens	black-throated gray warbler	MBTA			
	Dendroica tonsendi	Townsend's warbler	MBTA			
	Setophaga ruticilla	American redstart	MBTA			
	Geothlypis trichas	common yellowthroat	MBTA			
	Icteria virens	yellow-breasted chat	MBTA		SC	
	Pipilo crissalis	California towhee	MBTA			
	Pipilo maculatus	spotted towhee	MBTA			
	Aimophila ruficeps	rufous-crowned sparrow	MBTA			
	Spizella passerina	chipping sparrow	MBTA			

TABLE 5.2-2
Sensitive Wildlife Species with Potential to Occur at the CCGS Site

Scientific Name		Common Name	Federal	State	CDFG	ECCC HCP/NCCP
Birds (cont'd)	*Pooecetes gramineus*	vesper sparrow	MBTA			
	Chondestes grammacus	lark sparrow	MBTA			
	Passerculus sandwichensis	savannah sparrow	MBTA			
	Ammodramus savannarum	grasshopper sparrow	MBTA		SC	
	Melospiza lincolnii	Lincoln's sparrow	MBTA			
	Melospiza melodia	song sparrow	MBTA			
	Melospiza melodia	song sparrow, "Modesto" population	MBTA		SC	
	Melospiza melodia maxillaris	Suisun song sparrow	MBTA		SC	
	Passerella iliaca	fox sparrow	MBTA			
	Zonotrichia atricapilla	golden-crowned sparrow	MBTA			
	Zonotrichia albicollis	white-throated sparrow	MBTA			
	Zonotrichia leucophrys	white-crowned sparrow	MBTA			
	Junco hyemalis	dark-eyed junco	MBTA			
	Pheucticus melanocephalus	black-headed grosbeak	MBTA			
	Passerina caerulea	blue grosbeak	MBTA			
	Passerina amoena	lazuli bunting	MBTA			
	Agelaius phoeniceus	red-winged blackbird	MBTA			
	Agelaius tricolor	tricolored blackbird	MBTA		SC	Yes
	Sturnella neglecta	western meadowlark	MBTA			
	Xanthocephalus xanthocephalus	yellow-headed blackbird	MBTA		SC	
	Euphagus cyanocephalus	Brewer's blackbird	MBTA			
	Quiscalus mexicanus	great-tailed grackle	MBTA			
	Molothrus ater	brown-headed cowbird	MBTA			
	Icterus cucullatus	hooded oriole	MBTA			
	Icterus bullockii	Bullock's oriole	MBTA			
	Carpodacus purpureus	purple finch	MBTA			

TABLE 5.2-2
Sensitive Wildlife Species with Potential to Occur at the CCGS Site

Scientific Name	Common Name	Federal	State	CDFG	ECCC HCP/NCCP
Carpodacus mexicanus	house finch	MBTA			
Carduelis tristis	American goldfinch	MBTA			
Carduelis psaltria	lesser goldfinch	MBTA			
Carduelis lawrencei	Lawrence's goldfinch	MBTA			
Mammalia					
Carnivora					
Taxidea taxus	American badger			SC	
Vulpes macrotis mutica	San Joaquin kit fox	Endangered	Threatened		Yes
Chiroptera					
Antrozous pallidus	pallid bat			SC	
Lasiurus blossevillii	western red bat			SC	
Lasiurus cinereus	hoary bat			SSA	
Rodentia					
Perognathus inornatus inornatus	San Joaquin pocket mouse			SSA	

Notes:

Federal Status

FE = federally listed as endangered
FT = federally listed as threatened
MBTA = Migratory Bird Treaty Act
BGEPA = Bald and Golden Eagle Protection Act

State Status

SE = State listed as endangered
ST = State listed as threatened
SC = State species of concern
FP = State fully protected species
SSA = State Special Animal

East Contra Costa HCP/NCCP (ECC HCP/NCCP)

Yes = covered species
No = not a covered species