



**McCormack-Williamson Tract Habitat Friendly
Levee Rehabilitation Project**

**Environmental Assessment and
Initial Study/Proposed Mitigated Negative Declaration
CA-180-07-48**

Prepared for
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and

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May 2007

PROPOSED MITIGATED NEGATIVE DECLARATION

Project: McCormack-Williamson Tract Habitat Friendly Levee Rehabilitation Project

Lead Agency: Reclamation District 2110

Availability of Documents: The initial study for this proposed mitigated negative declaration is available for review at the Galt Public Library, located at 1000 Caroline Ave, Galt, CA 95632 and at the Bureau of Land Management's website at www.blm.gov/ca.

Questions or comments about this proposed mitigated negative declaration and initial study can be addressed to:

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Project Location: The project area is located in the northeastern part of the Sacramento-San Joaquin Delta. The project area is 15 miles south of the city of Sacramento, downstream from the confluence of the Cosumnes and Mokelumne rivers and near the towns of Galt and Walnut Grove.

Project Description: The U.S. Bureau of Land Management and The Nature Conservancy (with permission granted from Reclamation District 2110) propose to: (1) improve the McCormack-Williamson Tract levee system by resloping 9,500 linear feet of the landside levee slope and (2) increase riparian habitat on-site by planting the resloped levee area with native vegetation. Levee improvements are necessary to achieve an acceptable level of flood protection for the McCormack-Williamson Tract and surrounding properties.

The specific levee design consists of three parts: (1) an upper levee slope, (2) a horizontal bench, and (3) a lower levee slope. The upper slope would be 4:1 (horizontal:vertical). Between the upper slope and the lower slope would be a 20-foot horizontal bench at 5 feet national geodetic vertical datum. The lower levee slope would be either 7:1 or 10:1, depending upon location.

Fill material (soil) for levee resloping would be obtained from existing interior roads that bisect the Tract. Excess soil is placed along the roads as part of routine agricultural maintenance activities (e.g., ditch clearing). Work would occur in the summer and fall of 2007 and potentially 2008.

Findings: An initial study has been prepared to assess the proposed project's potential effects on the environment and the significance of those effects. Based on the initial study, Reclamation District 2110 has determined that the proposed project would not have any significant effects on

the environment once mitigation measures are implemented. This conclusion is supported by the following findings:

- The project would result in no impacts to: hydrology and water quality, mineral resources, population and housing, land use and planning, public services, and utilities.
- The project would result in less-than-significant impacts to: aesthetics/visual resources, agricultural resources, noise, recreation, and traffic/transportation.
- Mitigation would be implemented to reduce potentially significant impacts to less-than-significant levels for air quality, biological resources, cultural resources, geology and soils, and hazards/hazardous materials.
- The Proposed Project would not substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory.
- The project would not have environmental effects that are individually limited, but cumulatively considerable.
- The project would not have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly.
- The project would not achieve short-term environmental goals to the disadvantage of long-term environmental goals.
- No substantial evidence exists that the project would have a negative or adverse effect on the environment.

Proposed Mitigation Measures: The following mitigation measures would be implemented to avoid or minimize potential environmental impacts. Implementation of these mitigation measures would reduce the potential environmental impacts of the proposed project to a less-than-significant level.

Mitigation Measure 4.3-1 - Standard best management practices (BMPs) would be employed on-site to reduce the extent of pollutant emissions.

Mitigation Measure 4.4-1 - To reduce the risk of spreading invasive weeds, construction equipment would be inspected and, if necessary, washed before being brought onto the project site; weed control would be implemented on the resloped levee during revegetation.

Mitigation Measure 4.4-2 - Elderberry shrubs would be transplanted and mitigation plantings would be installed to offset impacts to valley elderberry longhorn beetle habitat; buffer areas would also be established around elderberry shrubs outside of construction areas.

Mitigation Measure 4.4-3 – Preconstruction surveys for giant garter snakes would be conducted and appropriate work windows would be adhered to.

Mitigation Measure 4.4-4 – Preconstruction surveys would be conducted for western pond turtles and they would be relocated if necessary.

Mitigation Measure 4.4-5 –If construction occurs during the breeding season, preconstruction surveys would be conducted for nesting raptors and other special-status birds; nests would be avoided or buffer areas established to prevent impacts.

Mitigation Measure 4.5-1 - If buried or otherwise obscured cultural resources are encountered during construction, activities in the area of the find would be halted and a qualified archaeologist would be consulted immediately to evaluate the find.

Mitigation Measure 4.6-1 –BMPs (Mitigation Measure 4.3-1) would be implemented to reduce wind erosion.

Mitigation Measure 4.7-1 - Diesel fuel and any other hazardous materials would be handled and stored according to manufacturer specifications; in the event of a spill, crews would stop the spillage at its source, contain the spilled material, and notify project supervisors and appropriate agency representatives.

In accordance with Section 21082.1 of the California Environmental Quality Act, Reclamation District 2110 has independently reviewed and analyzed the initial study and proposed mitigated negative declaration for the Proposed Project and finds that the initial study and proposed negative declaration reflects the independent judgment of Reclamation District 2110. The lead agency further finds that the project mitigation measures will be implemented as stated in the mitigated negative declaration.

I hereby approve this project:

Keith Whitener, Secretary/Treasurer

Date

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1 INTRODUCTION

The U.S. Bureau of Land Management (BLM) and The Nature Conservancy (TNC) (with permission granted from Reclamation District 2110) propose to: (1) improve the McCormack-Williamson Tract levee system by resloping 9,500 linear feet of the landside levee slope and (2) increase riparian habitat on-site by planting the resloped levee area with native vegetation. The McCormack-Williamson Tract (the Tract) is a 1,600-acre island located in the northeast Sacramento-San Joaquin Delta (Delta) (Figure 1). The Tract is part of the Cosumnes River Preserve (the Preserve), whose mission is to restore and maintain native biological communities. The Preserve protects nearly 50,000 acres and has some of the best stands of valley oak riparian forest remaining in the Central Valley, and a history of innovative protection and ecosystem restoration. The Preserve is cooperatively managed by BLM, TNC, the California Department of Fish and Game (CDFG), the California Department of Water Resources (DWR), Sacramento County Department of Parks and Recreation, and Ducks Unlimited.

1.1 Project Location

The project area is located 15 miles south of the city of Sacramento, downstream from the confluence of the Cosumnes and Mokelumne rivers. The project area is located in Sacramento County within the Bruceville and Thornton U.S. Geological Survey (USGS) 7.5 minute quadrangles. The center of the Tract falls within Township 5 North, Range 4 East of the Bruceville quadrangle. The McCormack-Williamson Tract is owned by The Nature Conservancy (with levees maintained by Reclamation District 2110). Waterways completely surround the Tract: Lost Slough to the north, the Mokelumne River to the east and south, and Snodgrass Slough to the west.

1.2 Purpose and Need

The Tract's levee system needs significant improvements to achieve acceptable levels of flood protection. The Proposed Project would increase the strength and stability of the levee system to maintain flood protection for existing land use on the Tract. Currently the levee is extremely steep and made of highly erodible sand. The seepage potential of this sandy levee could lead to uncontrolled breaching which would threaten neighboring properties as well as existing riparian habitat on the waterside of the levee. The Proposed Project would also increase the acreage of riparian habitat on the Tract by planting native vegetation on the rehabilitated levee. Riparian forest has been reduced to less than ten percent of its historic extent in California.

In addition to achieving necessary levee rehabilitation, the Proposed Project would also facilitate long-term plans to restore tidal wetland habitat. This supports habitat restoration goals of CALFED's Ecosystem Restoration Program and the North Delta Improvements Group. Future restoration would be accomplished by breaching the levee to allow tidal inundation of a portion of the Tract. However, the landside levee slope must first be able to withstand erosion by wind-

driven waves in order to protect the integrity of neighboring private lands. The proposed levee design meets this requirement.

If tidal action is returned, the Tract would be restored to a mosaic of tidal freshwater wetlands and seasonally inundated floodplain surrounded by riparian vegetation. Tidal freshwater wetlands have significantly declined in the Delta as a result of historic levee construction, dredging of slough channels, alteration of hydrologic and sediment regimes in the Delta and Central Valley streams, and reclamation of islands for agriculture. One of the priorities for CALFED is restoration of habitat corridors, specifically shallow water tidal marsh, in the North and East Delta (CALFED 2001). Future tidal restoration of the Tract may be conducted as part of the North Delta Flood Control and Ecosystem Restoration Project (North Delta Project), led by DWR as described in Section 5.1.1.

1.3 Purpose of the EA/IS

This Environmental Assessment/Initial Study (EA/IS): (1) describes the existing environmental resources in the project area, (2) evaluates the environmental effects of the project alternatives on those resources, and (3) determines the need for an Environmental Impact Statement/Environmental Impact Report (EIS/EIR) if the effects are significant. If an EIS/EIR is not required, a Finding of No Significant Impact (FONSI) and Negative Declaration would fulfill the requirements of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA), respectively.

2 ALTERNATIVES

2.1 Actions Dismissed From Further Consideration

2.1.1 Levee design with 5:1 slope

The original levee rehabilitation design involved resloping 20,000 linear feet of the landside levee slope to a gradual 5:1 (horizontal:vertical) slope on three sides of the Tract: east (Mokelumne River), north (Lost Slough), and west (Snodgrass Slough). However, a technical review by stakeholders and experts in DWR's North Delta Project determined that the design would be insufficient to withstand expected wave energy if the Tract levee is eventually breached and tidal inundation restored. Consequently, a wind-wave analysis was conducted by Philip Williams & Associates (2005) to develop a compound, vegetated levee slope that could dissipate wave action, have better ecological values, and avoid traditional methods of shoreline armoring.

2.2 Alternative 1: Proposed Project

The Proposed Project would increase the strength and stability of the Tract's levee system while increasing riparian habitat by resloping and revegetating the landside levee slope. The proposed slope design (a three-part stepped design described below) is broader than the original 5:1 design, requires more fill to construct per linear foot, and consequently increases project costs. As a result, the overall length of levee resloping under this alternative was reduced from 20,000 to 9,500 feet (1.8 miles). Three levee sections were selected based on the need for repair, adjacent habitat values, presence of elderberry shrubs, and potential locations of future levee breaches (Table 1). Given these considerations, resloping the west side of the Tract levee was eliminated, thereby avoiding work in some areas with dense elderberry shrubs that have the potential to support the valley elderberry longhorn beetle (a federally threatened species). Figure 2 shows the locations of the proposed rehabilitation sites, and photographs of the sites are presented in Appendix A.

Table 1. Location and length of levee rehabilitation sites.

Site	Levee stationing	Length (feet)
A	363+00 to 380+00	1,700
B	51+00 to 65+00	1,400
C	76+00 to 140+00	6,400
Total		9,500

2.2.1 Levee resloping

The proposed levee design would reconfigure the levee so that the slope at these sites is more gradual or shallow as compared to the current levee configuration (2:1 or 3:1 along the upper levee slope). This would extend the existing levee footprint at the three sites by an average of 50 feet. A more gradual slope and extended footprint would increase the acreage of vegetation along the levee as well as minimize erosion and seepage which undermines levee stability. The proposed design would also effectively dissipate wave action if the Tract levee is eventually breached and tidal inundation restored (Philip Williams & Associates 2005).

The specific design consists of three parts: (1) an upper levee slope, (2) a horizontal bench, and (3) a lower levee slope (Appendix B). The upper slope would be 4:1. Between the upper slope and the lower slope would be a 20-foot horizontal bench at five feet national geodetic vertical datum (NGVD). The lower levee slope would be 7:1 along Site A and 10:1 along sites B and C.

Fill material (soil) for levee resloping would be obtained from existing interior roads that bisect the Tract. Excess soil is placed along the roads as part of routine agricultural maintenance activities (e.g., ditch clearing). Approximately 150,000 cubic yards of fill material would be needed to complete the levee reslope.

Construction activities include clearing and grubbing existing vegetation and placing and compacting fill material along the levee. The contractor would first place fill along the lower levee slope to create the new toe. Fill would then be placed to create the bench and finally the upper slope. The contractor may use excavators, loaders, bulldozers, hauling trucks, and other construction equipment as necessary.

All construction staging would be on agricultural land or established farm roads. Access to all construction and staging areas would be made via existing levee or farm roads. Pending permit approval, construction would begin in August 2007 and continue through November 2007. If necessary, construction would also be conducted between July and November 2008.

2.2.2 Revegetation

After a levee section has been resloped it would be planted and reseeded with grasses, as well as native trees, shrubs, and herbaceous plants. New plantings would be installed in the fall and winter, after the construction period is complete and when winter rains can facilitate plant establishment and reduce the amount of supplemental watering that could otherwise be needed. Elderberry shrubs currently within the construction footprint would be transplanted in conjunction with levee resloping along Sites B and C in the fall. The contractor would first reslope an area without elderberry shrubs so that elderberry shrubs from other levee areas can be transplanted along the resloped area. Elderberry shrubs would not be transplanted along Site A, since the site has a southern exposure which may induce too much thermal stress.

Vegetation would be planted on all sections of the levee slope to provide stabilization and habitat. For purposes of delineating vegetation areas, the levee slope was divided into three different rows as shown in Appendix B. Row A is approximately 30 feet wide and covers the

low levee slope between an elevation range of 0–2.5 feet NGVD. Row B is over 50 feet wide on the middle of the slope and between 2.5–8 feet NGVD. Row C is roughly 30 feet wide and covers the upper slope between 8–16 feet NGVD. The species mix that would be planted along each row is shown in Table 2; however, the final mix may be slightly adjusted depending on availability and performance. Types of vegetation for the levee slope were determined by what was planted along a section of the levee restored in 2001 (see Section 4.4.1) and from discussions with plant experts from Las Pilitas Nursery (Philip Williams & Associates 2005) and Hart Restoration, Inc.

Table 2. Proposed levee revegetation design.

Row	Approx. Area (acres)	Elevation Range (ft, NGVD)	Vegetation	
			Scientific name	Common name
A ¹	6.5	0.0–2.5	<i>Leymus triticoides</i>	Creeping wild rye
			<i>Hordeum brachyantherum</i>	Meadow barley
			<i>Salix laevigata</i>	Red willow
			<i>Salix lasiolepis</i>	Arroyo willow
			<i>Salix lucida</i>	Shining willow
B ²	10.9	2.5–8	<i>Leymus triticoides</i>	Creeping wild rye
			<i>Hordeum brachyantherum</i>	Meadow barley
			<i>Acer negundo californicum</i>	California box elder
			<i>Baccharis salicifolia</i>	Mulefat
			<i>Baccharis pilularis</i>	Coyote bush
			<i>Carex barbarae</i>	Santa Barbara sedge
C	6.5	8–16	<i>Juncus effusus</i> or <i>J. balticus</i>	Rush or Baltic rush
			<i>Leymus triticoides</i>	Creeping wild rye
			<i>Hordeum brachyantherum</i>	Meadow barley
			<i>Quercus lobata</i>	Valley oak
			<i>Sambucus mexicana</i>	Blue elderberry
			<i>Baccharis pilularis</i>	Coyote bush
			<i>Rosa californica</i>	Wild rose
<i>Carex barbarae</i>	Santa Barbara sedge			

¹ If tidal inundation is restored as part of a future restoration project, this area would be restored to tidal emergent freshwater marsh (e.g., California bulrush [*Scirpus californicus*] would be planted).

² If tidal inundation is restored, this area would be restored to occasionally flooded riparian habitat (e.g., willows [*Salix* spp.] would be planted)

Following the levee resloping, Row A would be planted with native grasses, and willow cuttings would be placed at the toe of the levee (cuttings of local species such as shining willow, red willow, and/or arroyo willow). Row B would be planted with native grass-like plants (e.g. Santa Barbara sedge), herbaceous plants (e.g., rush), and shrubs (e.g., coyote bush, mulefat, box elder). Along Row C, elderberry shrubs, valley oaks, wild rose, coyote bush, and Santa Barbara sedge would be planted.

Plant materials would come from local stock, either from the Tract or other sites on the Cosumnes River Preserve or grown in a local nursery. All sections of the levee would be seeded using a range drill, in order to stabilize the soils and to provide a cover crop that would minimize weeds. Other plants would be established by hand planting plugs (e.g., sedges), seedlings or young plants (e.g., wild rose, elderberry, coyote bush), cuttings (e.g., willows, possibly elderberry) or by seed (i.e., valley oak, if local trees produce an acorn crop). Bank stabilization materials such as jute net may be placed along the levee slope to prevent erosion before vegetation has become rooted and established. Elderberry shrubs transplanted during the fall would be irrigated as necessary. Weed control measures to prevent weed infestations and to facilitate establishment of native vegetation would be carried out as necessary during site preparation and following planting. A separate EA addressing weed spraying will be done as part of a Pesticide Use Proposal currently being prepared by BLM staff at the Cosumnes River Preserve.

2.3 Alternative 2: No Action

Under this alternative, no action would be taken to rehabilitate or revegetate the levee. As such, the levee would remain vulnerable to slope failure and may eventually require emergency repairs. Without rehabilitation, the levee would be unlikely to withstand future wind-wave erosion if the Tract levee is breached.

3 RESOURCES ELIMINATED FROM DETAILED ANALYSIS

The potential for significant effects was evaluated for each resource area (Appendix C). Based on this evaluation, the following resource areas were eliminated from detailed analysis and are not addressed in subsequent sections.

3.1 Land Use and Planning

The Tract is zoned as an agricultural cropland and resource conservation area (Sacramento County 1993). Because the alternatives do not conflict with these land use designations, no impacts would occur.

3.2 Public Services

Because the project area is located in a privately-owned and low population density area, no impacts to public services would occur with project implementation.

4 RESOURCES ANALYZED IN DETAIL FOR POTENTIAL EFFECTS

4.1 Aesthetics/Visual Resources

The term “aesthetics” typically refers to the perceived visual character of an area, such as of a scenic view, open space, or architectural facade. The aesthetic value of an area is a measure of its visual character and visual quality combined with viewer response (Federal Highway Administration 1983). This combination may be affected by the components of a project (e.g., buildings constructed at heights that obstruct views, hillsides cut and graded, open space changed to an urban setting), as well as variable elements such as light, weather, and the length and frequency of viewer exposure to the setting. Aesthetic impacts are changes in viewer response as a result of project construction and operation.

4.1.1 Existing conditions

The project area provides views of agricultural lands and mature riparian forest. Viewers of the project area would be those traveling the levee road surrounding the Tract. The levee road is private; therefore, only a small number of people that live on the Tract or are associated with agricultural operations are viewers of the property. People boating in waterways surrounding the Tract are not able to see the interior part of the Tract because of the surrounding levee.

4.1.2 Environmental effects

Significance criteria were developed based on the State CEQA Guidelines. Effects were considered significant if the project would:

- have a substantial adverse effect on a scenic vista,
- substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway,
- substantially degrade the existing visual character or quality of the site and its surroundings, or
- create a new source of light or glare which would adversely affect day or nighttime views in the area.

4.1.2.1 Alternative 1: Proposed Project

Motorists and pedestrians along the levee road would be able to see construction equipment. The equipment would be visible for less than four months during each year of construction, for a maximum of two years. Although the presence of construction equipment would degrade the visual quality of scenic vistas from the levee road, these effects are temporary (i.e., only for the duration of construction) and would affect a very small number of people. Therefore, they are considered to be less than significant and inconsequential.

In the long-term, the rehabilitated levee would be revegetated and would thus retain its existing character and quality. Therefore, there would no be long-term effect on visual resources as a result of implementation of the Proposed Project.

4.1.2.2 Alternative 2: No Action

The No Action alternative would result in no impact to aesthetic resources.

4.2 Agricultural Resources

The California Farmland Mapping and Monitoring Program (FMMP), administered by the State Division of Land Resource Protection, is responsible for producing agricultural resource maps based on soil quality and land use. The purpose of the FMMP is to provide information to be used in planning for current and future use of the State's agricultural lands. The FMMP designates land into the following categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban or Built-up Land, Other Land, and Water.

Loss of farmland has become an important concern prompting development of federal, state, and local policies aimed at protection of this resource. Under the federal Farmland Protection Policy Act (FPPA), projects are required to identify and take into account the adverse effects of their programs on the preservation of Prime, Unique, or Statewide Important Farmland. The FPPA provides criteria for identifying the importance of farmland but advises agencies to use state or local Land Evaluation and Site Assessment (LESA) programs where available.

Under the California LESA model, the Proposed Project falls within the definition of "protected resource lands." The model defines protected resource lands as those with long term use restrictions that are compatible with or supportive of agricultural uses of land, including: (1) publicly owned lands maintained as park, forest, or watershed resources, and (2) lands with agricultural, wildlife, habitat, open space or other natural resource easements that restrict the conversion of such land to urban or industrial uses. Because the Proposed Project involves protected resource lands, evaluation under the LESA Model was determined to be unnecessary. Such determination is consistent with CEQA Statutes Section 21095, which makes use of LESA optional.

4.2.1 Existing conditions

The project site is currently designated as Prime Farmland and is zoned for agriculture and resource conservation. Most of the area where the levee footprint would be extended is an agricultural access road.

4.2.2 Environmental effects

Significance criteria are based upon the State's CEQA guidelines. Effects were considered significant if they would:

- convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance,

- conflict with existing zoning for agricultural use, or a Williamson Act contract, or
- involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use.

4.2.2.1 Alternative 1: Proposed Project

The Proposed Project would improve flood protection of farmland and open space, which is consistent with State and federal policies. If the levee is not strengthened, farmland along the Tract would be at greater risk of flooding. The Proposed Project would extend the levee footprint by an average of 50 feet, therefore converting approximately 11 acres of Prime Farmland to levee. Because a relatively small amount of agricultural land would be converted to achieve flood protection for a large parcel of agricultural land, the net effect is considered to be beneficial.

The Proposed Project would not conflict with an existing Williamson Act contract or the existing zoning designation for the Tract; therefore, there would be no impact.

4.2.2.2 Alternative 2: No Action

There would be no loss of Prime Farmland under the No Action alternative; however, existing farmland would be at greater risk of flooding. Flood damage could leave the Tract temporarily unsuitable for farming, or could damage existing crops. The No Action alternative would have a slightly reduced impact to farmland as compared to the Proposed Project.

4.3 Air Quality

4.3.1 Existing conditions

The Sacramento Valley Air Basin includes all of Sacramento and Yolo counties and portions of Sutter, Placer, and El Dorado counties, and is bounded by the Coast Ranges to the west and the Sierra Nevada to the east. The Air Basin does not consistently meet several applicable State air quality standards (California Air Resources Board 1996). Depending on the pollutant, the boundaries of the attainment areas vary. Between 2003 and 2005, measures of ozone frequently exceeded both federal and State standards, whereas concentrations of suspended particulate matter (PM₁₀) rarely exceeded federal standards. PM₁₀ concentrations did, however, frequently exceed State standards. Concentrations of carbon monoxide (CO) did not exceed State or federal standards from 2003 to 2005. Air quality problems in Sacramento County are primarily caused by on-road motor vehicles (Sacramento County 1993).

Air quality in the air basin is regulated by federal, State, and regional agencies. At the federal level, the U.S. Environmental Protection Agency (EPA) is responsible for overseeing implementation of the 1990 Federal Clean Air Act (42 U.S.C. 7401 et seq.). The Air Resources Board is the State agency that regulates mobile sources and oversees implementation of State air quality laws, including the 1988 California Air Act (Health and Safety §§ 42300 et seq.). The

primary agency that regulates air quality on a regional level in the project area is the Sacramento Municipal Air Quality Management District.

4.3.2 Environmental effects

Significance criteria are based upon the State's CEQA guidelines. Effects were considered significant if they would:

- conflict with or obstruct implementation of the applicable air quality plan,
- violate applicable air quality standards,
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard,
- expose sensitive receptors to substantial pollutant concentrations, or
- create objectionable odors affecting a substantial number of people.

4.3.2.1 Alternative 1: Proposed Project

Emissions generated during construction would primarily come from: (1) fuel combustion from heavy-duty diesel and gasoline-powered equipment, (2) fuel combustion from worker commute trips, and 2) from fugitive dust from soil disturbance (Sacramento Metropolitan Air Quality Management District 2004). The release of these emissions may impact surrounding air quality and would likely have the greatest impact on PM₁₀ levels in the region.

The Proposed Project would obtain fill material onsite, thereby eliminating emissions that would otherwise be generated by trucks traveling to off-site locations to obtain fill. Given the scope of construction and with implementation of mitigation measures, the Proposed Project is not expected to exceed air quality standards, impact sensitive receptors, or contribute to existing air quality violations. Therefore, no measurable or significant impacts to air quality are expected as a result of project activities.

Mitigation Measure 4.3-1

The following standard best management practices (BMPs) would be employed on-site to reduce the extent of pollutant emissions:

- water would be applied periodically to disturbed areas in order to reduce the spread of dust,
- stockpiles of soil would be watered, and
- traffic speeds on unpaved roads would be limited to 15 miles per hour.

Construction of the Proposed Project would result in diesel exhaust emissions from on-site construction equipment. Diesel exhaust emission would be temporary and would dissipate rapidly from the source with an increase in distance. As a result, impacts due to odors are considered less than significant and inconsequential.

4.3.2.2 Alternative 2: No Action

No impacts to air quality would occur as a result of the No Action alternative.

4.4 Biological Resources

4.4.1 Existing conditions

The landside slope of the Tract levee is adjacent to agricultural fields. This landside slope is broadly characterized as containing riparian habitat with large sections dominated by more ruderal species (e.g., black mustard [*Brassica nigra*]) that lack riparian overstory. Dominant vegetation includes both non-native species common in agricultural and roadside settings [e.g. Himalayan blackberry (*Rubus discolor*), black mustard (*Brassica nigra*), poison hemlock (*Conium maculatum*), and bermuda grass (*Cynodon dactylon*)] and native riparian species [blue elderberry, narrow-leaved willow (*Salix exigua*), California wild rose (*Rosa californica*), arroyo willow (*Salix lasiolepis*), and wild grape (*Vitis californica*)].

A large levee section (approximately 5,000 linear feet) located directly east of Site A was resloped in 2001 following damages sustained during floods in 1997. Following levee resloping the area was used as a test site for various planting methods using native perennial grasses. The slope is currently dominated by native grasses including creeping wild rye, meadow barley, and purple needlegrass (*Nasella pulchra*). No riparian shrubs or trees are present on the slope.

A toe drain, approximately 5 feet in depth runs along the base of Site A and extends along much of the northern and western perimeter of the Tract. Along Site A, the toe drain is approximately 10 feet in width and surrounded by dense vegetation. Along the west side of the Tract, the toe drain connects to a broad area dominated by cottonwood (*Populus fremontii*), tule, and broadleaf cattail (*Typha latifolia*) that sometimes supports shallow water. Along the east side of the Tract is a large area of ponded water surrounded by a dense growth of tule (*Scirpus* sp.). Small drainages that support agricultural operations also bisect the Tract.

The waterside, exterior portions of the levee are adjacent to the Mokelumne River to the east and Lost Slough to the north. The waterside levee is covered with dense, mature riparian forest which in most areas is 40 to 60 feet in width. The riparian understory is dominated by willow, wild grape, elderberry, and wild rose. The overstory is dominated by cottonwood, willow, and valley oak.

The Tract is expected to provide nesting, foraging, and roosting habitat for a variety of wildlife species. Birds observed on the Tract include barn swallow (*Hirundo rustica*), California quail (*Callipepla californica*), downy woodpecker (*Picoides pubescens*), red-shouldered hawk (*Buteo lineatus*), spotted towhee (*Pipilo maculatus*), and great blue heron (*Ardea herodias*). Several mammals were also observed including California ground squirrel (*spermophilus beecheii*), coyote (*Canis latrans*), and American mink (*Mustela vison*).

A list of plants and wildlife observed in the project area is presented in Appendix D.

4.4.1.1 Special-status species and natural communities

Special-status species include plants and animals that are listed as threatened or endangered under the federal or State Endangered Species Act (ESA), proposed or candidates for listing under the federal and State ESAs, California species of concern, or federal species of local concern. Sensitive natural community types are those that have limited distribution or are particularly valuable to wildlife. To identify special-status species with potential to be affected by the alternatives, a search was made of CDFG's California Natural Diversity Database (CNDDDB), the California Native Plant Society (CNPS) online *Inventory of Rare and Endangered Vascular Plants of California*, and the USFWS' online database of federally protected species. The searches included the Thornton, Bruceville, Courtland, Isleton, Bouldin Island, Terminous, Lodi South, Lodi North, Galt, Elk Grove, Florin, and Clarksburg USGS 7.5 minute quadrangles. A review was also made of CDFG's Special Animals List (CDFG 2006a) to identify other species with potential to occur. Based on the results of the database searches (Appendix E) and a reconnaissance survey of the project area, the following special-status species and natural community types have the potential to occur or be impacted by project activities.

Plants and natural communities

Two riparian community types are present in the project area: (1) Great Valley Mixed Riparian Forest, and (2) Great Valley Oak Riparian Forest. Although the overall area of levee to be rehabilitated is approximately 9 acres, riparian vegetation occurs mainly as scattered patches or stringers near the top of the levee. The community structure is composed primarily of shrubs and herbaceous vegetation and a few mature trees (some of which are nonnative). Riparian vegetation is more dense along the waterside of the levee (where no work would occur) than along the top or landside slope.

One area at the levee toe of Site A is seasonally flooded and supports plants that are characteristic of a freshwater marsh (Appendix A, photograph A-2). However, this area does not support special status wetland or marsh species and it does not meet the specific criteria detailed in Holland (1986) for Coastal and Valley Freshwater Marsh classification.

Rare plant surveys were conducted where the levee would be resloped, according to established pre-construction botanical survey protocols (CDFG 2000). The survey for early-blooming species was conducted on 18 and 21 April 2005. A second survey for late-blooming species was conducted on 21 and 22 June 2005. Rare plant surveys focused on the following special-status plant species which have recorded occurrences in the vicinity of the project area and for which potentially supporting habitat was identified in the project area during reconnaissance surveys.

Bristly sedge (*Carex comosa*)

Bristly sedge occurs in coastal prairie, marshes and swamps of lake margins, and valley and foothill grasslands. It is threatened primarily by marsh drainage. The blooming period for this

species is May through September (CNPS 2005). This species was not found during rare plant surveys.

Rose-mallow (*Hibiscus lasiocarpus*)

Rose-mallow occurs in freshwater marsh areas, moist riverbanks, and on low peat islands of the Delta (CNDDDB 2005). It is not known to occur along river channels that are characterized by strong currents, intense flood forces, or steep banks. Although it occurs in areas of the Delta which are influenced by tidal fluctuations, it appears to be restricted to freshwater habitats. This species is threatened by riverbank alteration (Hickman 1996). The blooming period for rose mallow is June through September (CNPS 2005). This species was not found during rare plant surveys.

Northern California black walnut (*Juglans hindsii*)

Northern California black walnut occurs in riparian forest and woodlands, in deep alluvial soils associated with a creek or stream. This species is threatened by continued hybridization with orchard trees, urbanization, and conversion to agriculture. The blooming period for this species is April through May (CNPS 2005).

Seventeen (17) locations containing mature walnut trees were noted in the project area. Although suitable habitat exists, genetically pure stands of the Northern California black walnut are not known to exist in Sacramento County (Jepson Flora Project 2005). The morphology of these trees suggests hybridization between the Northern California black walnut and the agricultural English walnut (*Juglans regia*). Hybridization between these species occurs readily (Hickman 1996). The age range of these trees also suggests that they were planted following the construction of the levee.

Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*)

Delta tule pea grows in tidally influenced brackish and freshwater wetlands. It is commonly associated with tules (*Scirpus* spp.), willows (*Salix* spp.), rush (*Juncus* spp.), and California wildrose (*Rosa californica*) (CNDDDB 2005). Populations of this species have been found throughout much of the Delta region at the water's edge along river banks or on the higher grounds of marshlands. It is occasionally found along older rip-rapped banks. Delta tule pea is threatened by agriculture, water diversions, and erosion (CNPS 2005). The blooming period for the Delta tule pea is May through September (CNPS 2005). This species was not found during rare plant surveys.

Marsh skullcap (*Scutellaria galericulata*)

Marsh skullcap is found in lower montane coniferous forest, mesic meadows and seeps, and marshes and swamps. The species is threatened by development and bank erosion (CNDDDB 2005). The blooming period for this species is June through September (CNPS 2005). This species was not found during rare plant surveys.

Blue skullcap (*Scutellaria lateriflora*)

Blue skullcap is present in mesic meadows and seeps, marshes and swamps. The species is threatened by development and bank erosion. The blooming period for this species is July through September (CNPS 2005). This species was not found during rare plant surveys.

Dwarf downingia (*Downingia pusilla*)

Dwarf downingia occurs in valley and foothill grasslands and vernal pools. The blooming period is March through May. This species is threatened by urbanization, agriculture, and grazing (CNPS 2005). This species was not found during rare plant surveys.

Invertebrates

Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)

The valley elderberry longhorn beetle was historically distributed throughout the Central Valley from Redding (Shasta County) to Bakersfield (Kern County). Surveys conducted from 1984 to 1991 identified only twelve patches of natural riparian forests along the Sacramento, American, and San Joaquin rivers where beetles were documented or emergence holes in host plants indicated their presence (Arnold et al. 1994).

Adult beetles feed on elderberry (*Sambucus* sp.) shrubs and lay eggs within elderberry bark crevices in riparian communities of the Central Valley. After approximately ten days, the eggs hatch and the larvae bore into elderberry shrub stems to feed and mature. This is the longest life stage of the beetle, and larvae are fairly well sheltered while living in the stem.

The U.S. Fish and Wildlife Service (1996, 1999a) considers elderberry stems ≥ 1 inch in diameter to be potential habitat for the valley elderberry longhorn beetle. Surveys for elderberry shrubs were conducted in May 2005 and again in January 2007 according to the USFWS (1999a) protocol. Several elderberry shrubs were identified within 100 feet of sites B and C. No elderberry shrubs were observed within 100 feet of Site A. Approximately 200 elderberry stems ≥ 1 inch are within the footprint of the levee rehabilitation sites.

Reptiles

Western pond turtle (*Clemmys marmorata*)

The western pond turtle inhabits a wide range of fresh or brackish water habitats throughout California. Aquatic habitat for this species includes ponds, lakes, backwater and low-flow regions of streams and rivers, as well as ditches (Jennings and Hayes 1994). Basking sites are an important component of suitable habitat by providing areas for thermoregulation. Basking sites include rocks, logs, banks, emergent vegetation, root masses, open banks, and tree limbs (Reese 1992, Zeiner et al. 1988). Although primarily aquatic, western pond turtles also use terrestrial habitat for basking, overwintering, nesting, and moving between ephemeral sources of water (Reese 1992). Breeding activity peaks from June to July, but may occur year-round, when females begin to search for suitable nesting sites upslope from water. Egg-laying sites vary from sandy shoreline to forest soil types.

One sighting of a western pond turtle was made in early spring 2005. The turtle was observed basking on a log in Snodgrass Slough, 60 feet north of the Tract's north levee road. No sightings

of western pond turtles were made within the boundaries of the Tract. Pond turtles may occur in waterways surrounding the Tract and may also occur within the toe drain that runs along the base of Site A.

Giant garter snake (*Thamnophis gigas*)

The giant garter snake inhabits agricultural wetlands and associated waterways, including irrigation and drainage canals, rice fields, marshes, sloughs, ponds, low-gradient streams, and adjacent uplands (USFWS 1999b). Giant garter snakes are typically absent from the larger rivers, wetlands with sand, gravel, or rock substrates, and riparian areas lacking suitable basking sites or suitable prey populations (Hansen and Brode 1980, Brode 1988, USFWS 1999b). Giant garter snakes hibernate from October to March in abandoned burrows of small mammals located above prevailing flood elevations (Fisher et al. 1994), and breeds between March and April. Habitat loss, introduced predators, pesticide use, and livestock grazing are considered to be the main causes of decline for the giant garter snake (Fisher et al. 1994).

No records for giant garter snakes were found for the Tract. The closest sighting was made in 1986 along Snodgrass Slough, one mile north of the Lambert Road crossing (CNDDDB 2007). This location is approximately five miles north of the project area. The closest known populations of giant garter snakes are found in the Stone Lakes area, approximately six miles north of the Tract and along Badger Creek, approximately eight miles east of the project area. Mark-recapture surveys at Badger Creek by USGS in 1996 (Wylie et al. 1997) and Eric Hansen in 2001 and 2002 (Hansen 2001 and 2003) have documented a population of approximately 200 giant garter snakes in Snake Marsh, on the Cosumnes River Preserve, just west of Highway 99.

Other surveys elsewhere on the Preserve have failed to find giant garter snakes in the Cosumnes River watershed between the project site and Badger Creek. The USGS surveyed the Preserve's wetland ponds in 1996 but did not find giant garter snakes (Wylie et al. 1997). In 2004, Hansen (2004) surveyed Lost Slough approximately 1.5 miles northeast of the McCormack-Williamson Tract, but no giant garter snakes or other snakes were trapped during the effort. Hansen (2004) concluded that a general lack of high water refugia may preclude giant garter snakes from using the area. A 2002 survey of Laguna Creek (approximately five miles east of the Tract) also failed to find giant garter snakes (Hansen 2003).

Potentially suitable aquatic habitat for giant garter snakes occurring within the action area for the Proposed Project includes the toe drain that runs along the base of Site A (Appendix A, photograph A-2). The large ponded area with tules along the east side of the Tract may also provide supporting habitat.

Lost Slough and the Mokelumne River are within 200 feet of the project area although they are separated from the project area by the waterside levee slope and the road that runs along the levee crest. In the action area, these waterways provide limited habitat for giant garter snakes because they are large and bordered by steep slopes that support dense riparian forest; therefore, they likely harbor predatory fishes and contain little basking habitat. Due to the lack of records of nearby giant garter snake sightings, and lack of preferred habitat, giant garter snakes are not expected to occur in these waterways around the Tract.

Birds

Swainson's hawk (*Buteo swainsoni*)

The Swainson's hawk is a spring and summer resident in California's Central Valley where it breeds. Nesting occurs in juniper-sage flats, riparian areas, and oak savannahs that are adjacent to grasslands or agricultural fields which support small vertebrate prey. In the Central Valley, Swainson's hawks often nest within or in close proximity to riparian habitat. Nesting activities begin as early as March, and fledging of the chicks can occur as late as mid-August. Swainson's hawks winter in areas of Mexico, Central America, and South America.

Surveys for nesting Swainson's hawks were conducted in March, April, and July of 2005 according to Swainson's Hawk Technical Advisory Council (2000) guidelines. Surveys were conducted by driving slowly along the levee road surrounding the Tract to locate any potential nest sites within 0.5 miles of the levee rehabilitation sites. When potential nests were identified, the car was stopped and examination of the nest made with binoculars to determine if it was occupied. The location of soaring and perched birds, as well as any potential nest trees was noted using a handheld Global Positioning System unit.

No Swainson's hawks were found nesting on the Tract, but two pairs were observed across the Mokelumne River on New Hope Tract, across from Sites B and C (Figure 3). The New Hope property is actively farmed and has a strip of riparian vegetation and large trees along the Mokelumne River bank. A pair of adult Swainson's hawks was observed on several occasions in March, April, and July of 2005 along the western border of New Hope Tract, perched in the riparian strip on the east bank of the Mokelumne River within approximately 200 feet of Site B South (Figure 3). Upon visualizing the surveyor, the pair was often observed vocalizing and soaring in circles low to the ground. An active nest site was not identified in association with this pair; however, in 2003 a single Swainson's hawk nest was confirmed in this same area by Tetra Tech (2004). It is expected that the pair observed in 2005 was the same nesting pair confirmed in 2003.

A second pair of Swainson's hawks was also observed on several occasions in March, April, and July. This second pair was observed approximately one mile south of the first pair described above. Both birds were perched in large trees on the east bank of the Mokelumne River close to Site C. During the last two surveys in July, two juvenile Swainson's hawks were observed perched in the same tree where the two adults had previously been observed. Attempts to locate the nest associated with this pair and their young were unsuccessful. However, it was assumed that they were nesting close to the area where the juvenile and adult birds had been seen perched.

Based on the results of surveys, it is expected that two pairs of Swainson's hawks were nesting in areas along the Mokelumne River within a few hundred feet of project activities planned at sites B and C. Swainson's hawks were not found nesting within 0.5 miles of site A. Other raptors found nesting within this radius included a great-horned owl (*Bubo virginianus*) nest which was observed on the New Hope Tract, and a red-tailed hawk (*Buteo jamaicensis*) nest which was observed on the west side of Snodgrass Slough.

Cooper's hawk (*Accipiter cooperii*)

Cooper's hawk occurs throughout the Central Valley. Cooper's hawks are found in a variety of wooded habitats and are common in riparian areas. They breed March through August, with peak activity occurring May through June.

No Cooper's hawks were observed on the Tract during wildlife surveys. This species has the potential to nest and forage within riparian areas along the Tract levee.

White-tailed kite (*Elanus caeruleus*)

White-tailed kite is a state fully protected species. White-tailed kites nest in dense tree stands, often within oaks, willows, and cottonwoods (Zeiner et al.1990).

This species has been observed on the Tract although it was not found to be nesting within the area (PRBO Conservation Science 2004). Riparian habitat along the levee provides suitable nesting habitat for white-tailed kites and they are likely to forage in agricultural areas of the Tract.

Tricolored blackbird (*Agelaius tricolor*)

Tricolored blackbirds nest in colonies that range in size from 50 to 20,000 nests. This species usually nests in dense cattails or tules although they may also nest in thickets of willow, blackberry, and wild rose (Zeiner et al. 1990).

No tricolored blackbirds were observed on the Tract. The toe drain along Site A and riparian habitat along the levee provide only marginal nesting habitat because they are linear and narrow and therefore less likely to support large colonies of nesting birds. The ponded area with tules along the east side of the Tract has greater potential to supporting nesting colonies.

Nuttall's woodpecker (*Picoides nuttallii*)

The Nuttall's woodpecker nests primarily in riparian habitat within the dead trunks or limbs of willow, sycamore, cottonwood, or alders (Zeiner et al. 1990).

Nuttall's woodpecker was detected within riparian areas on the Tract; however, the individuals identified were determined not to be breeding on-site (PRBO Conservation Science 2004). Riparian habitat along the project levee provides suitable nesting habitat for Nuttall's woodpecker.

Bald eagle (*Haliaeetus leucocephalus*)

The bald eagle forages in areas with large bodies of water, or free-flowing rivers where there are abundant fish and adjacent snags or other perches. Primary prey for bald eagles is live fish although they will also prey on injured water birds, and scavenge carrion of mammals, turtles, water birds, and dead fish. In winter, bald eagles roost communally in dense, sheltered, remote stands of conifers. This species will not nest where human disturbance such as logging or recreation is evident. These conditions have mostly restricted breeding to northern California counties.

The project area is out of the typical breeding range for this species. Individual bald eagles may pass through the area during winter when they are in search of food. However, the project area does not provide suitable communal roosting habitat.

Mountain plover (*Charadrius montanus*)

The mountain plover spends the winter in the Central Valley and is generally present September through March. It returns to high-elevation Montana and North Dakota grasslands as well as the Great Plains to nest and breed. It has been known to roost in small depressions on open grassland or agricultural fields with low-lying vegetation (CDFG 2006b).

Agricultural fields on the Tract that are left fallow have the potential to provide resting and foraging habitat for the mountain plover during the winter.

Greater sandhill crane (*Grus canadensis tabida*)

The greater sandhill crane winters in the Sacramento and San Joaquin Valleys, frequenting moist agricultural fields, open emergent wetlands, and grassland habitats with few trees. This species requires a source of freshwater for drinking and bathing. It travels to feeding grounds and roosts at night in flocks.

Greater sandhill cranes have been observed several times within fallow agricultural areas of the Tract during the winter months.

4.4.2 Environmental effects

Significance criteria are based upon the State's CEQA guidelines. Effects were considered significant if they would:

- have a substantial adverse effect on any species identified as a candidate, sensitive, or special-status species 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 federally protected wetlands as defined by Section 404 of the Clean Water Act,
- interfere with the movement of any resident or migratory wildlife species,
- conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinances, or
- conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

4.4.2.1 Alternative 1: Proposed Project

Plants and natural communities

No special-status plant species were observed during focused surveys; therefore, impacts to this resource are not anticipated.

The Proposed Project would result in the temporary loss of patches of riparian vegetation (primarily herbaceous vegetation, shrubs, and isolated native and exotic trees scattered throughout approximately 9 acres of levee). Following levee rehabilitation, the expanded levee slope would be planted with native grasses, herbaceous plants, shrubs, and tree species that would reestablish these natural community types in the project area. The amount of riparian and associated habitat would be increased to approximately 23 acres (Table 2). Following restoration, it is expected that within a few years, plantings along the restored levee would mature and provide the same or enhanced level of habitat quality as exists currently; therefore, impacts due to temporary loss of these habitats would be less than significant and inconsequential.

Use of off-site construction equipment could unintentionally bring weeds onto the Tract. Weeds may compete with native vegetation, therefore reducing habitat quality. The Tract, however, has long been managed in agriculture for years and many common weed species are already present. Weed control measures would be implemented to prevent weed infestations and to facilitate establishment of native vegetation as part of the revegetation plan. Use of herbicides would be addressed in a separate EA as part of a Pesticide Use Proposal. This potential effect is considered to be inconsequential or less than significant with incorporation of mitigation.

Mitigation Measure 4.4-1

To reduce the risk of spreading invasive weeds, the following measures would be implemented:

- Construction equipment would be inspected and those with appreciable amounts of debris or dirt would be washed prior to being brought onto the project site.
- The resloped levee would be planted with native vegetation, particularly native grasses and sedges.
- Weed control would be implemented on the resloped levee during revegetation.
- Weed monitoring would be conducted during the course of mitigation monitoring for elderberry plantings (as described below), and if additional weed invasions are found, appropriate weed control measures would be implemented as necessary.

The Proposed Project would not affect aquatic habitat that is considered to be a jurisdictional wetland regulated under Section 404 of the Clean Water Act. Aquatic areas at the toe of the levee are either artificially-created drainages or have formed due to levee seepage. Aquatic habitat that has formed under these conditions are not regulated under Section 404 of the Act (USACE 2004); therefore, there would be no impacts to jurisdictional wetlands.

Valley elderberry longhorn beetle

The proposed action may affect valley elderberry longhorn beetles, which typically inhabit elderberry stems ≥ 1 inch or greater at ground level. Elderberry shrubs would need to be transplanted in order to reslope the levee which may effect the valley elderberry longhorn beetle. Effects may also occur if elderberry shrubs are incidentally damaged by construction personnel or equipment. Potential effects due to damage or transplantation include direct mortality of beetles or disruption of their lifecycle.

Effects of the Proposed Project may also include reduced viability of elderberry shrubs due to transplantation. Although mitigation measures discussed below include restoration and creation of habitat, mitigation plantings would likely require five or more years to become large enough to provide supporting habitat. Furthermore, associated riparian habitats may take 25 years or longer to reach maturity; however, levee repairs would also be beneficial since rehabilitation would likely protect shrubs from slope failure and reduce the need for future levee maintenance and repair. Expansion of the levee would also increase the acreage of riparian habitat on the Tract.

Mitigation Measure 4.4-2

Mitigation for impacts to the valley elderberry longhorn beetle is being developed in consultation with the USFWS through Section 7 of the federal ESA (Stillwater Sciences 2007). Proposed mitigation measures include transplantation of existing elderberry shrubs and planting of additional elderberry cuttings on the Tract and potentially at off-site locations in accordance with USFWS (1999a) guidelines. After the levee has been resloped, it would provide approximately 5.5 acres of habitat along the upper slope that is suitable for elderberry transplants and mitigation cuttings. This acreage would accommodate the maximum amount of required elderberry mitigation plantings.

Although all mitigation is expected to occur on-site, if off-site mitigation becomes necessary because of unforeseen project complications, two suitable locations have been identified. The two sites, the Shaw and Castello properties, are located upstream from the Tract and are adjacent to existing mature valley oak forest (Appendix F). The Shaw property currently supports elderberry shrubs, and potential valley elderberry longhorn beetle exit holes were found in 2000 (May Consulting 2000 and 2001) and March 2007 (Appendix E). The Castello site also supports elderberry shrubs (May Consulting 2000 and 2001). Either of these properties can support up to seven acres of elderberry shrub and associated riparian plantings. Installation of elderberry shrubs along these properties would expand the amount of elderberry/riparian habitat along the Cosumnes River and thus improve conditions further for the local valley elderberry longhorn beetle population.

To minimize impacts to valley elderberry longhorn beetles, the following measures are also proposed:

- Buffer areas would be established around elderberry shrubs that are outside of the project footprint. Buffer areas would generally be created 20 feet around the dripline of those shrubs to protect them from being incidentally damaged.

- Contractors would be briefed on the need to avoid damaging elderberry plants and the penalties associated with non-compliance.
- Signs alerting people to presence of elderberry shrubs and the need to avoid them would be erected every 50 feet along the edge of avoidance areas.
- Worker awareness training would be conducted to inform the crew about the status of the beetle and the need to protect its elderberry host plant.
- Where necessary, erosion control would occur within buffer areas.
- Fencing and flagging would be maintained around buffer areas.
- No insecticides or other chemicals that may harm the beetle would be used in the buffer areas.
- The applicant would provide a written description of how the buffer areas are to be restored, protected, and maintained after construction is completed.
- Mowing of grass or ground cover would occur only from July to April and would not occur within five feet of elderberry plant stems.

Giant garter snake

The Proposed Project would affect supporting aquatic habitat associated with the toe drain at Site A. The toe drain has an average width of 10 feet and the length of Site A is 1,700 feet.

Therefore, the area of impact to aquatic habitat is calculated to be 0.4 acres. The area of upland habitat that would be impacted has a width of approximately 100 feet (the landside levee slope of Site A) and a length of 2,100 feet (the length of Site A plus 200 feet on each end). Therefore, the area of impact to suitable upland habitat is calculated to be 4.8 acres.

Temporary impacts are defined as “project activities which temporarily remove essential habitat components, but can be restored to pre-project conditions of equal or greater habitat values” (USFWS 1997). The effects of levee rehabilitation on aquatic and upland habitat would be ameliorated within one year of rehabilitation activities (i.e., aquatic and upland habitat would be restored with habitat of equal or greater quality); therefore, habitat impacts are considered temporary.

Temporary habitat loss may result in the removal of basking sites and foraging areas, as well as the destruction of burrows or crevices that provide hibernacula. Additionally, work within suitable habitat may directly cause individual snakes to be killed or hurt by construction equipment and personnel. Temporary habitat disturbance may also disrupt feeding activities and giant garter snake movement. As a result, impacts are considered potentially significant. However, mitigation measures described below would reduce short-term construction related disturbance and temporary habitat loss to a less than significant or inconsequential level.

Mitigation Measure 4.4-3

Mitigation for impacts to potential giant snake habitat are being developed in consultation with USFWS through Section 7 of the federal ESA (Stillwater Sciences 2007). The following measures based on USFWS (1997) guidelines are proposed to minimize effects on giant garter snake habitat and mitigation for temporary loss of habitat:

- Levee construction within 200 feet of giant garter snake aquatic habitat would be conducted between May 1 and October 1.
- Plastic monofilament netting would not be used for erosion control or any other purposes within 200 feet of open water habitat.
- Movement of heavy equipment to and from the construction site would be restricted to established roadways. Stockpiling of construction materials, including portable equipment and supplies would be restricted to designated staging areas away from aquatic habitat.
- Giant garter snake habitat adjacent to the project area would be designated as an environmentally sensitive area and delineated with bright orange fencing. This area would be avoided by all construction personnel. Construction personnel would participate in an environmental awareness program in which they would be informed about the presence of giant garter snakes and habitat associated with the species, and that unlawful take of the animal or destruction of its habitat is a violation of the federal ESA.
- A qualified biologist, approved by the Sacramento USFWS office, would conduct a preconstruction survey within 24 hours of commencing ground disturbing activity within 200 feet of aquatic habitat. A report documenting these monitoring efforts would be provided to the USFWS. The area would be re-inspected whenever a lapse in construction activity of two weeks or greater has occurred.
- A qualified biologist would be available for monitoring throughout all phases of the project. If a snake is encountered during construction activities, the monitoring biologist would have the authority to stop construction activities until appropriate corrective measures have been completed or it is determined that the snake would not be harmed. Giant garter snakes would be allowed to move away from the area on their own. Any incidental take would be immediately reported to the USFWS.

Northwestern pond turtle

The Proposed Project could result in a temporary loss of habitat for western pond turtles. Construction would also create noise and visual disturbance which could displace basking or foraging turtles. Individuals disturbed by construction should be able to move easily into adjacent areas unaffected by construction noise and other disturbing activities. Therefore, with mitigation, project impacts would be inconsequential or less than significant.

Mitigation Measure 4.4-4

A survey would be conducted for western pond turtles within 48 hours of commencing construction within suitable aquatic habitat along the toe drain. If turtles are found in

areas where they may be harmed by construction, they would be relocated to other areas where they will not be impacted.

Birds

Construction activities would create noise and visual disturbance that could disrupt raptors or other special-status birds nesting within or adjacent to the project area. Nest disturbance has the potential to cause nest abandonment or the loss of eggs or chicks due to reduced parental care. However, discussions with CDFG and Swainson's hawk experts suggest a low potential for impacts to nesting birds, given the timing of construction and the existing surrounding land use (D. Gifford, CDFG, pers. comm., 2007 and J. Estep, Jones and Stokes Associates, pers. comm., 2007). The Proposed Project would commence at the earliest in August when most birds have completed nesting activities and young are capable of independent survival. Even if Swainson's hawks are still with young when construction starts, adults are reluctant to abandon an active nest late in the season and thus are less vulnerable to disturbance in August compared to early summer. If Swainson's hawks nest in the same area as before, on New Hope Tract, they would be somewhat buffered from impacts because the work would occur across the river and on the landside of the levee. Also, the area is already disturbed by agricultural activities as well as periodic levee and radio tower maintenance, and thus the project would not represent a large increase in the existing level of disturbance currently affecting birds using the area. Therefore, with incorporation of mitigation, potential nesting disturbance is considered to be inconsequential or less than significant.

Mitigation Measure 4.4-5

If project construction occurs between 1 March and 31 August, focused surveys for raptors and other special-status birds would be conducted by a qualified biologist two to three weeks prior to beginning construction. Surveys for Swainson's hawk nests would include all areas of suitable habitat within 0.25 miles of project construction. Surveys for Swainson's hawk nests would include all areas of suitable habitat within 0.25 miles of project construction, following guidelines provided in the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in the Central Valley* (SHTAC 2000). Surveys for other raptors and special-status birds would be conducted within suitable nesting habitat that is within 500 feet of project construction. If active nests are found within areas where ground disturbance would occur, construction would be delayed until after chicks have fledged. If nests are found in areas adjacent to project construction where they may be disturbed, nests would be monitored by a qualified biologist and/or buffer areas around the nest would be established to ensure that disturbance does not occur.

Clearing vegetation on the interior levee would temporarily remove nesting and foraging riparian habitat. The Proposed project would not remove any trees known to support nesting Swainson's hawks or other raptors. Once the levee has been replanted, vegetation would need to grow for several years before it provides suitable nesting, foraging, or resting habitat. Therefore, the project represents a temporary loss of riparian habitat for special-status birds and other wildlife. However, because the loss would be temporary and habitat of the same or greater quality is present in adjacent areas, the impact is considered to be inconsequential or less than significant.

Project implementation would also result in some loss of agricultural land that is used as foraging and resting habitat by wintering and nesting birds; however, this loss of habitat would be minimal and is therefore considered to be inconsequential or not significant.

Wildlife corridors

A variety of wildlife likely use the vegetated levee slopes as movement corridors. The project would represent some temporary loss of this habitat until planted vegetation has become established. However, adjacent riparian habitat along the waterside levee slope would continue to support wildlife movement during construction and while planted vegetation is becoming established; therefore, impacts would be inconsequential or less than significant.

Local policies

The project area does not fall within the jurisdiction of Sacramento County's tree ordinance. Therefore, the project does not conflict with a tree ordinance or other local policies.

4.4.2.2 Alternative 2: No Action

Under the No Action alternative, biological resources would be at greater risk of being impacted due to breaching the levee and flooding of the Tract. Flooding could temporarily displace animals and inundate vegetation. Similarly, the Proposed Project would temporarily impact biological resources due to removal of habitat in order to reslope the levee. Therefore, potential impacts of the No Action alternative would be similar to those of the proposed action. However, the No Action alternative would not result in a long term benefit since it will not increase the acreage of riparian habitat along the Tract.

4.5 Cultural Resources

4.5.1 Existing conditions

The project area lies in the northern half of the Central Valley, which has been studied extensively archaeologically and has a well defined chronological sequence. From these investigative efforts, three distinct patterns (the Windmill, Berkeley, and Augustine) have been established to describe the Central Valley's prehistory (Moratto 2004).

4.5.1.1 Prehistory

The Windmill Pattern predominated the region from approximately 5,000 to 2,500 years ago. Relative to subsequent periods, Windmill subsistence appears to have focused largely on hunting, as evidenced by large quantities of faunal remains and projectile points in the archaeological record. However, fishing and seed procurement were also evident. With regard to tool technology, both flaked stone and ground stone industries are well represented. The Windmill Pattern is also characterized by distinctive burial patterns, with bodies typically buried fully extended, face down, with the head oriented toward the west, and the placement of funerary objects (Moratto 2004).

The Berkeley Pattern was present in the Central Valley from approximately 3,600 to 1,000 years ago. This pattern is represented by an apparent increase in the use of pestles and mortars, which is thought to be indicative of an intensified reliance on acorns as a principal dietary staple. In contrast to the Windmill Pattern, Berkeley burials are found in a flexed position with variable orientation and fewer funerary artifacts (Moratto 2004).

The Augustine Pattern occurred in the Central Valley from approximately 2,000 to 250 years ago. This pattern is distinguished by a large population with complex social systems that depended heavily upon fishing, hunting, and gathering. Tool technology is represented by shaped pestles and mortars, bone awls, the bow and arrow, and in some cases pottery. There was considerable variation in mortuary practices including flexed burials, cremations and funerary object differentiation (Moratto 2004).

4.5.1.2 Ethnography

The Plains Miwok occupied the southeastern portion of the Sacramento Valley, typically locating their villages along watercourses. Their food economy was primarily based on the collection of plant foods, the acorn being a staple component, with fishing and hunting playing a more subsidiary role. There is evidence of the emergence of professional specialization and extensive external trade systems among a socio-political organization that was focused on large, multi-lineage, patrilineal villages. Land was held communally between villages, while individuals could inherit the rights to certain seed tracts and fishing stations. Religion was centered in the Kuksu cult, with frequent ceremonial dances occurring in the assembly house, and while daily clothing was minimal, ceremonial attire was quite extravagant (Bennyhoff 1977).

4.5.1.3 History

Euro-American settlement in the project vicinity began with the establishment of Mokelumne City in 1850. Mokelumne City, originally located three miles north of the present city of Thornton, was replaced by the community of New Hope after a disastrous flood in 1862. Arthur Thornton purchased a ranch in New Hope in 1863, where he built a two-story home and opened a store. New Hope was off to a slow start; however, by 1880 the town was flourishing and had a blacksmith shop, stable, saloon, post office, and several homes. In 1904, the Western Pacific Railroad wanted to put a line through New Hope. Thornton, who owned 1,000 acres of land, offered the right-of-way through his land, with the thought that the railroad would bring business to New Hope. To honor Thornton, the Western Pacific Railroad named their new station and large freight depot after him. Five years later, in 1909, the town of New Hope was officially renamed Thornton (Galt Area Historical Society 2006).

In the late 1860s, construction of Delta levees began in an effort to prevent flooding on some of the most fertile farmland in the nation and to remedy rising riverbeds resulting from increasing silt deposits due to hydraulic mining (DWR 2006). Unfortunately, the peat soils that were excellent for agriculture proved insufficient for levee walls and the reclamation and preservation costs to maintain the levees soon became exorbitant (DWR 2006). In the late 1870s, in an

effort to combat these rising costs, hand and horse-powered labor were replaced with steam-powered dredges, which produced larger levees at half the cost (SacDelta 2006).

4.5.1.4 Record search and field review

In February 2007, DWR archaeologists completed a cultural resources study for the project area (Schmid and Offerman 2007). The study was prepared to help meet the requirements of CEQA, NEPA, and Section 106 of the National Historic Preservation Act. As part of the study, DWR archaeologists conducted record searches, Native American consultations, and field inventories. A small supplemental study was later conducted by a BLM archaeologist after the borrow site was relocated (Barnes 2007).

As a result of the DWR and BLM studies, two cultural resources were identified within the project area. These resources include the levees surrounding the McCormack-Williamson Tract (initially raised during the 1910s), and a cement ditch built during the 1970s for farmland irrigation (still in use). The levees and cement ditch are evaluated in the DWR study. They do not appear to be eligible for inclusion on the National Register of Historic Places or the California Register of Historical Resources. The levees lack integrity because they have been extensively repaired over the years, and the cement ditch does not meet the 50 year age requirement.

The Native American Heritage Commission and various Native American tribes/individuals were contacted by the DWR archaeologists to determine if traditional cultural places and sacred sites would be affected by the project. To date, Native Americans have not responded and it seems clear that these kinds of cultural resources do not occur in the project area.

4.5.2 Environmental effects

Significance criteria are based upon the State's CEQA guidelines. Effects were considered significant if they would:

- cause a substantial adverse change in the significance of an historical resource,
- cause a substantial adverse change in the significance of an archaeological resource,
- directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, or
- disturb any human remains, including those interred outside of formal cemeteries.

4.5.2.1 Alternative 1: Proposed Project

Given the lack of archaeological records within the project area and because the Tract levee does not appear to qualify as a historical resource, impacts should not be expected. However, the possibility does exist that significant archaeological remains not previously identified could be encountered during project construction. With incorporation of the following mitigation measure, impacts would be inconsequential or less than significant.

Mitigation Measure 4.5-1

If buried or otherwise obscured cultural resources are encountered during construction, activities in the area of the find would be halted and a qualified archaeologist would be consulted immediately to evaluate the find.

Should any potentially significant cultural resources be discovered, compliance with 36 CFR 800.13(b), “Discoveries without prior planning,” would be implemented. Data recovery or other mitigation measures might be necessary to mitigate adverse effects on significant properties.

4.5.2.2 Alternative 2: No Action

The No Action alternative would increase the flooding potential of the Tract. Flooding could reveal or rearrange cultural resources. This potential effect would be similar to the proposed action which may reveal cultural resources as a result of construction.

4.6 Geology and Soils

4.6.1 Existing conditions

The topography of the Tract is typical of the Delta region, consisting primarily of flat (0–2% slope), slightly undulating terrain. The Tract has primarily mineral soils (clay and silt) with a thin layer of peat (Jones and Stokes 2006). This stands in contrast to most other Delta islands, which have deeply subsided peat soils. Peat soils are made up of decomposed plant matter that has accumulated in a water-saturated environment and in the absence of oxygen. The historic diking and draining of the Delta’s peat soils for agriculture caused subsidence (elevation loss) due to compaction, oxidation and wind erosion. The elevations on the Tract range from approximately 5 feet above sea level at the eastern end to approximately 3 feet below sea level at the southern end.

4.6.2 Environmental effects

Significance criteria are based upon State CEQA guidelines. Effects were considered significant if they would:

- expose people or structures to potentially substantial adverse effects (including the risk of loss, injury or death involving rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides),
- result in substantial soil erosion or the loss of topsoil,
- be located on a geologic unit or soil that is unstable or that would become unstable,
- be located on expansive soil, or
- have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems.

4.6.2.1 Alternative 1: Proposed Project

Topsoil from agricultural areas of the Tract would be used to rehabilitate the levee. Therefore, the Proposed Project may lead to wind and water erosion due to the removal of topsoil. Rehabilitation of the levee would occur before the rainy season; therefore, water erosion is not anticipated. Construction during the dry season may result in wind erosion; however, impacts would be inconsequential or less than significant by incorporating mitigation as discussed in Section 4.3.2.1.

The project does not involve the placement of structures for human occupancy; therefore; rehabilitation of the levee would not increase risk to people or structures associated with seismic activity or landslides. Furthermore, the project would increase the stability of the levee; thereby increasing protection of people traveling along the levee road.

4.6.2.2 Alternative 2: No Action

Under the No Action alternative, the levee would continue to be susceptible to significant erosion and loss of topsoil if the Tract levee is breached.

4.7 Hazards and Hazardous Materials

Hazardous materials and wastes are those substances that, because of their physical, chemical, or other characteristics, may pose a risk of endangering human health or safety or of endangering the environment (California Health and Safety Code Section 25260). Types of hazardous materials include petroleum hydrocarbons, pesticides, and volatile organic compounds. In the Central Valley, most hazardous waste sites are associated with agricultural production activities and may include storage facilities and agricultural pits or ponds contaminated with fertilizers, pesticides, or herbicides.

4.7.1 Existing conditions

The primary hazard in the project area is flooding. High inflows, storm events, and tidal conditions can threaten levee integrity at the project site and in surrounding areas. Levees are maintained by the Corps of Engineers and/or local reclamation districts in order to protect agricultural land, prevent flooding of residential or commercial areas, and maintain other beneficial uses of the surrounding area.

Hazardous materials in the vicinity of the project area are restricted to chemicals such as fuels, fertilizers, or pesticides used in conjunction with agricultural activities. These chemicals are used in compliance with local County codes and other restrictions.

4.7.2 Environmental effects

Significance criteria were developed based on the State CEQA Guidelines as well as professional standards and practices. Effects were considered significant if they would:

- create a hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials,
- create a hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials to the environment,
- emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school,
- be located on a site that is on a list of hazardous materials sites compiled pursuant to California Government Code 65962.5, and as a result would create a significant hazard to the public or the environment,
- impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan, or
- expose people to a significant risk of contracting a disease.

4.7.2.1 Alternative 1: Proposed Project

The Proposed Project would decrease potential flooding of the Tract, thereby reducing the potential flood hazards of the site.

During levee construction, hazardous materials such as fuels and lubricants would be used to operate construction equipment. These materials would have the potential to be released into the environment thus exposing humans and the environment to potentially harmful materials. With implementation of mitigation measures, these potential impacts would be inconsequential or less than significant.

Mitigation Measure 4.7-1

Diesel fuel and any other hazardous materials would be handled and stored according to manufacturer specifications. In the event of a spill, crews would stop the spillage at its source, contain the spilled material, and notify project supervisors and appropriate agency representatives.

4.7.2.2 Alternative 2: No Action

The No Action alternative would result in an increased risk of flood hazard as compared to the proposed action. This hazard could affect a small number of people that live and work on the Tract. Therefore, potential impacts due to hazards would be greater under the No Action alternative as compared to the Proposed Project.

4.8 Hydrology and Water Quality

4.8.1 Existing conditions

The surface water system in the project area consists of natural and altered Delta slough channels around the island, and drainage canals within the islands' interior. In the Delta, ground water

levels are maintained at high levels due to tidal backwater. Seepage from the surrounding channels into the islands, especially subsided areas, is a problem for levee maintenance.

Flows in the north Delta originate from four drainage basins: (1) the Mokelumne River, (2) the Cosumnes River, (3) Dry Creek, and (4) Morrison Creek. Discharge from the Cosumnes River watershed and to a lesser degree the Dry Creek watershed dominate inflow to the project area in the winter and early spring, while the Mokelumne River and Morrison Creek discharge play a larger role in the late spring and summer months (Hammersmark et al. 2005). The winter and early spring flows from the Cosumnes River and Dry Creek are largely uncontrolled and have contributed to flood damage in the area numerous times, including in 1955, 1958, 1964, 1986 and 1997.

North Delta area hydraulics is further driven by a combination of tidal processes and water control structures. The varied timing and magnitude of flows from contributing watersheds, along with a complex network of channels, complicate flow patterns, which may change over the course of a single high flow event.

The Tract is not served by a water purveyor (R. Caikoski, Sacramento County Water Management, pers. comm., 22 August 2005). Water for domestic or agricultural use on the tract is secured via riparian rights from the Mokelumne River. The Sacramento County Department of Water Resources provides drainage, flood control and water supply services for nearby areas, which fall under county management Zone 41. The County's ground water resources are less abundant than its surface waters, yet ground water accounts for approximately 60% of the County's water use. In general, Sacramento County's surface and groundwater supplies are considered good quality for agricultural and domestic use (SCWA 2005).

4.8.2 Environmental effects

Significance criteria are based upon the State's CEQA guidelines. Effects were considered significant if they would cause:

- alteration in the quantity and quality of surface runoff,
- degradation of water quality,
- violation of any water quality standards or waste discharge requirements,
- substantial alteration of the existing drainage pattern of the site or area, such that flood risk and/or erosion and siltation potential would increase,
- placement of structures that would impede or redirect flood flows within a 100-year flood plain,
- exposure of people, structures, or facilities to significant risk from flooding, including flooding as a result of the failure of a levee or dam,
- creation of or contribution to runoff that would exceed the capacity of an existing or planned stormwater management system, or
- reduction in groundwater quantity or quality.

4.8.2.1 Alternative 1: Proposed Project

Construction of the Proposed Project would take place on the landside of the existing levee and would not create any hydrologic connections between the Tract and surrounding waterways. The Proposed Project would not change the existing drainage patterns of the site. Excavation would occur as soils are collected to be used as fill and the toe drain at Site A is recreated after resloping. However, these activities would not excavate to any depths that would create impacts to ground water.

4.8.2.2 Alternative 2: No Action

Alternative 2 would have no effect on water quality or hydrology.

4.9 Mineral Resources

4.9.1 Existing conditions

Mineral resources in Sacramento County include natural gas, petroleum, sand, gravel, clay, gold, silver, peat, topsoil, and lignite. The principal resources that are in production are aggregate (sand and gravel) and natural gas. The natural gas production areas are located mostly in the Delta's Rio Vista Field, one of California's largest producing areas. There are three major and several smaller producers of sand and gravel in Sacramento County, the larger producers are located in the Fair Oaks and Perkins-Kiefer areas. Clay is surface mined in at least two locations within Sacramento County; topsoil from one location on the Cosumnes River. At present, peat and lignite deposits in the Delta are not commercially mined (Sacramento County 1993). Natural gas wells are located on the Tract, although there are currently no active drilling efforts underway.

4.9.2 Environmental effects

4.9.2.1 Alternative 1: Proposed Project

Resloping activities would have no impact on mineral resources that may exist on the Tract.

4.9.2.2 Alternative 2: No Action

No impact to mineral resources would occur as part of the No Action alternative.

4.10 Noise

4.10.1 Existing conditions

Noise-sensitive land uses are defined as uses that can be adversely affected by high levels of noise (e.g., sleep disturbance, annoyance). Residences, schools, hospitals, and nursing homes, and other areas of similar use are often considered to be sensitive to noise. The only noise-

sensitive land uses in the area are a small number of residences on the Tract. The primary sources of noise in the project area are farm machinery and water pumping stations. An additional source of noise in the vicinity is vehicle traffic associated with Interstate 5. Only occasional intermittent and minor noise may occur from outdoor residential activities. No industrial type activities occur within the project area vicinity.

4.10.2 Environmental effects

According to the applicable State's CEQA Guidelines, a noise impact is considered significant if it:

- exposes persons to or generates noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies,
- exposes persons to or generate excessive ground-borne vibration or ground-borne noise levels, or
- creates a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

4.10.2.1 Alternative 1: Proposed Project

The Proposed Project would create noise due to use of construction equipment (e.g., graders and backhoes) and from vehicle travel to the site. Noise levels created by construction equipment would likely be similar to levels currently created by agricultural machinery on the Tract. However, the duration and concentration of noise from construction would be greater than what currently exists due to agricultural operations. The nearest residences are approximately 0.25-miles from construction activities. This distance should be sufficient to attenuate noise to inconsequential or less than significant levels to nearby residents.

4.10.2.2 Alternative 2: No Action

Under the No Action alternative there would be no effects due to noise.

4.11 Population and Housing

4.11.1 Existing conditions

Housing in the project area consists of scattered residences associated with local farming operations. Nearby towns are Walnut Grove (population 669 in the 2000 census), about 2 miles to the west, and Galt (population 19,472 in the 2000 census), about 10 miles to the east.

4.11.2 Environmental effects

Effects on population and housing as a result of implementing the Proposed Project were analyzed based on the significance criteria set forth in the State CEQA guidelines. Effects were found to be significant if the project would:

- induce substantial population growth in an area, either directly or indirectly,
- displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere,

- disrupt or divide an established low-income or minority community, or
- displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

4.11.2.1 Alternative 1: Proposed Project

Levee rehabilitation under the Proposed Project would not remove or disturb any housing or communities. Because the project would occur along a private levee road there would be no potential for growth inducing effects.

4.11.2.2 Alternative 2: No Action

The No Action alternative would result in increased flood risk which could result in loss of housing along the Tract. Therefore, potential impacts to population and housing would be greater under the No Action alternative as compared to the Proposed Project.

4.12 Recreation

4.12.1 Existing conditions

Sacramento County offers a wide variety of recreational areas and facilities to its residents. Recreational opportunities are provided through local, State and federal public facilities as well as private facilities. Recreational opportunities in the North Delta include boating, fishing, camping, sailing, hunting, windsurfing, bird watching and water-skiing. Waterways surrounding the Tract are commonly used by boaters.

4.12.2 Environmental effects

According the State's CEQA Guidelines, effects were considered to be significant and to require mitigation if they would result in one or both of the following:

- increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated, and/or
- include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

In addition, effects were determined to be significant if they would:

- substantially reduce recreational opportunities or substantially degrade recreational experiences.

4.12.2.1 Alternative 1: Proposed Project

The Proposed Project does not include plans for providing recreational opportunities. The protection of wildlife habitat and the increase in riparian habitat on the Tract, may, however increase potential hunting opportunities within the area. No impacts to fishing opportunities are expected, as the project is limited to the landside of the Tract levee. The use of heavy equipment may cause some noise disturbance to boaters in the project area. However, noise levels would be

similar to existing agricultural operations; therefore, noise impacts are considered to be inconsequential or less than significant.

4.12.2.2 Alternative 2: No Action

Under the No Action alternative there would be no effect on recreation.

4.13 Traffic and Transportation

4.13.1 Existing conditions

Interstate 5 is the major transportation corridor in the vicinity of the Proposed Project, and is located to the east of the project area. Access to the project area is gained by the Thornton Road exit off of Interstate 5. Small unpaved roads bisect the Tract, and a levee road encircles the Tract.

4.13.2 Environmental effects

Effects on traffic and transportation as a result of implementing the Proposed Project were analyzed based on the significance criteria set forth in the State CEQA guidelines. Effects were found to be significant if the project would:

- cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system,
- exceed either individually or cumulatively, a level of service standard established by the by the county congestion management agency for designated roads and highways,
- result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks,
- substantially increase hazards due to a design feature or incompatible uses,
- result in inadequate emergency access,
- result in inadequate parking capacity, or
- conflict with adopted policies, plans, or programs supporting alternative transportation.

4.13.2.1 Alternative 1: Proposed Project

Levee reinforcement would improve on existing levee roads, making them more stable and thus improving transportation in the immediate project area. A minor increase in traffic is expected to occur along Thornton Road as trucks are entering and leaving the site. This road is lightly traveled and construction vehicle access is not expected to significantly impact the flow of traffic through the area. Fill for the Proposed Project would be obtained onsite thus minimizing travel on surrounding roads. Therefore, movement of fill material from borrow areas to the levee rehabilitation sites would not occur on public roads and there would be no impact on traffic associated with this aspect of the Proposed Project.

4.13.2.2 Alternative 2: No Action

Alternative 2 would have no effect on traffic or transportation.

4.14 Utilities and Service Systems

4.14.1 Existing conditions

Existing public liquid waste facilities in Sacramento County include the regional sewage system for the urbanized area; localized sewer systems in Galt, Rancho Murieta, Hood, Courtland, Locke, Walnut Grove, and Isleton; and dedicated single-facility systems at Boy's Ranch, Rio Cosumnes Correctional Center, and Metro Airport. The remainder of the County is served by private septic systems.

Utilities available in the Project area include electricity and a television transmitter (local station KCRA-3) which is located in the northwest section of the Tract.

4.14.2 Environmental effects

Effects on utilities and service systems were analyzed based on the State CEQA guidelines. Effects were considered significant if the project would:

- exceed wastewater treatment requirements of the Regional Water Quality Control Board,
- require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities,
- require or result in the construction of new storm water drainage facilities,
- have insufficient water supplies available to serve the project from existing or permitted entitlements and resources or require new or expanded entitlements,
- result in a determination by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments, or
- be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs
- comply with federal, state, and local statutes and regulations related to solid waste.

4.14.2.1 Alternative 1: Proposed Project

The Proposed Project would not necessitate the development of any electricity, natural gas, or communication services. The only facility along the Tract is the radio tower located in the northwest section of the Tract. The transmitter is placed on the flat, agricultural land on the Tract, and would not be disturbed by project activities. Thus, no impacts to utilities or service systems would occur due to implementation of the Proposed Project.

4.14.2.2 Alternative 2: No Action

Under the No Action alternative, the radio tower on the Tract would be at greater risk of damage due to flooding. Therefore, impacts under the No Action alternative would be greater as compared to the proposed action.

5 CUMULATIVE AND GROWTH-INDUCING EFFECTS

Cumulative impacts are those that result from the incremental impacts of a proposed action when added to other past, present, and reasonably foreseeable future actions (15355[b], 40 CFR 1508.24[a][2]). Other relevant projects that could be cumulatively considerable in combination with the effects of the Proposed Project are discussed below.

5.1 Other Local Projects

5.1.1 North Delta Project

The goal of the North Delta Project is to implement flood control improvements in a manner that benefits aquatic and terrestrial habitats, species, and ecological processes (Jones and Stokes 2006). The McCormack-Williamson Tract Levee Rehabilitation Project fits into the larger North Delta Project, particularly the ecological restoration component. DWR is considering a broad range of alternatives designed to meet the equal goals of flood control and ecosystem restoration. These alternatives have been developed and reviewed by the North Delta Improvements Group, and the North Delta Agency Team, which includes DWR, public and agency stakeholders, expert technical consultants, and an ad hoc scientific review panel. The Administrative Draft Environmental Impact Report was released in June 2006 (Jones and Stokes 2006).

The North Delta Project is evaluating two groups of alternatives. Group I actions under consideration focus on the McCormack-Williamson Tract and the Grizzly Slough property, located on the Cosumnes River Preserve approximately one mile upstream of the Tract. To achieve flood control objectives, the primary strategy is to degrade portions of the levee system to allow controlled flow across the Tract. Outreach would also be conducted at local marinas to address boat hazards during floods. Secondly, downstream levee modifications may be necessary to mitigate hydraulic impacts, and channel dredging may be implemented to increase flood conveyance capacity.

Ecosystem restoration objectives would be met by recreating floodplain forests and marshes. At the Tract, natural hydrologic processes would be restored through one of three pilot program strategies to meet different ecological objectives:

- maximizing fluvial and tidal processes to create a diverse network of riverine, floodplain, and tidal habitats based on natural sedimentation and channel formation, by breaching levees;
- maximizing floodplain habitat to benefit fish that spawn and rear on the floodplain by allowing flooding (with some tidal action to maintain water quality) during the wet season, by breaching levees; or

- creating floodplain habitat as described above, combined with a demonstration project to reverse subsidence and increase elevations on the Tract (which would involve breaching levees to flood the northern end of the Tract.

Additional benefits to wildlife, fish, and healthy ecosystem functions would be achieved by recreating floodplain forests and seasonal wetlands at the Grizzly Slough property.

Group II actions under consideration focus on Staten Island modifications and dredging along the Mokelumne River. To achieve flood control objectives, the North Delta Project is evaluating: (1) an off channel detention basin on Staten Island, and/or (2) dredging in combination with levee modifications. Ecosystem benefits of the Group II actions consist of expanded floodplain area within the leveed channel through the construction of a setback levee.

5.1.2 Cosumnes River Preserve Management Plan

The Tract is part of the Cosumnes River Preserve, which protects nearly 50,000 acres from Staten Island in the Delta up to riparian forest wetlands and vernal pool grasslands in the lower Cosumnes River watershed. The Preserve partners are developing a comprehensive management plan, with funding from the CALFED Watershed Program. Since 1987, the Preserve has restored several hundred acres of floodplain and riparian habitat through planting and levee breaching, and plans to restore additional habitat as suitable land is acquired.

5.1.3 Cosumnes & Mokelumne Rivers Floodplain Resources Management Plan

The lead agency is the Southeast Sacramento County Agricultural Water Authority, with funding by California Bay Delta Authority, East Bay Municipal Utility District, Sacramento Area Flood Control Agency, and the Sacramento County Water Agency. The study was initiated in March 2005. Additional study partners include TNC, the University of California at Davis, San Joaquin County Resource Conservation District, and Reclamation District 800. The lead consultant is Robertson-Bryan, Inc. of Elk Grove. The study is designed to develop a management strategy that facilitates effective enhancement of floodplain conditions and functions of the lower Cosumnes and Mokelumne rivers.

5.2 Cumulative Effects of the Proposed Project

5.2.1 Aesthetics and visual resources

The Proposed Project would have a very minor and temporary impact on aesthetic/visual resources due to the presence of construction equipment. The Proposed Project would occur in a private area with very low population density; therefore, only a very small number of people could be affected. No other projects are known that would occur simultaneously with the Proposed Project. If other construction projects do occur in the vicinity, they are also likely to affect only a small number of people. Therefore, effects would not be cumulatively considerable.

5.2.2 Agricultural resources

Extension of the levee footprint would result in the loss of approximately 11 acres of prime farmland. In combination with the North Delta Project, which may breach levees and inundate much of the Tract, potential loss of prime farmland could total approximately 1,901 acres within the region. In 2002, Sacramento and San Joaquin counties had a combined total of approximately 628,300 acres of prime farmland. Thus, the two projects combined would represent less than 1% of the prime farmland in both counties. Between 1998 and 2002, the combined average annual loss of prime farmland for both counties was approximately 4,700 acres per year (Jones and Stokes 2006). If this conversion rate continues, the loss of 1,901 acres of prime farmland would represent a significant proportion of this annual loss and would be cumulatively considerable.

The North Delta Project originally proposed conservation easements for the loss agricultural land associated with the project at 1:1 (Jones and Stokes 2006). However, this proposal is currently being re-evaluated. Because the current agricultural mitigation plan for the North Delta Project is under development, an assessment of cumulative impacts to agricultural resources from this project in conjunction with the Proposed Project cannot be made. Without any other projects to consider, the Proposed Project would be too small on its own to result in cumulative effects.

5.2.3 Air quality

The Proposed Project would result in construction-related effects on air quality. These effects are cumulative with those of other projects in the air basin. Because the air basin is in non-attainment for some pollutants, additional contributions are potentially significant. However, with incorporation of mitigation measures and use of on-site fill material, the project's incremental contribution is not measurable or cumulatively considerable.

5.2.4 Biological resources

The Proposed Project would not result in any long-term loss of habitat for special-status species and would increase the acreage of existing riparian habitat on the Tract. In combination with other local projects (e.g., the North Delta Project) cumulative impacts are expected to be beneficial for biological resources.

5.2.5 Cultural resources

Records of historical or archaeological resources were not found for the project area where construction would occur and no culturally significant resources were identified during a field review of the project area. Therefore, the project is not expected to contribute to cumulative effects on cultural resources.

5.2.6 Geology and soils

The Proposed Project would not have a cumulatively considerable effect on geology and soils when considered with other past, present, and reasonably foreseeable projects because no impacts are expected at the site specific scale.

5.2.7 Hazards and hazardous materials

The Proposed Project in combination with North Delta Project activities would reduce potential flooding hazard in the region; therefore, cumulative impacts would be beneficial. Potential impacts due to the release of hazardous materials would be minimal with incorporation of mitigation measures and would not be measurable or cumulatively considerable.

5.2.8 Hydrology and water quality

The Proposed Project would not affect hydrology or water quality. Therefore, it would not contribute to any cumulative effects on these resources.

5.2.9 Mineral resources

The Proposed Project would not have any effect on mineral resources and therefore would not contribute to any cumulative effect on these resources.

5.2.10 Noise

The Proposed Project would not have a cumulatively considerable effect on noise-sensitive land uses when considered with other past, present, and reasonably foreseeable projects.

5.2.11 Population and housing

The Proposed Project would not have any effect on population and housing and therefore would not contribute to any cumulative effect on these resources.

5.2.12 Recreation

The Proposed Project could have a minor and temporary impact on recreation due to noise generated by construction. The project would not occur in a major recreation area and would have the potential only to affect a very small number of people boating in the area. No other projects are known that would occur simultaneously with the Proposed Project. If other construction projects do occur in the vicinity, they are also likely to affect only a small number of people. Therefore, effects would not be cumulatively considerable.

5.2.13 Traffic and transportation

The Proposed Project would occur in an area serviced by a private levee road and would have little to no effect on local traffic. No other projects are known that would occur in the vicinity of the Proposed Project or within the proposed timeframe. Therefore, the Proposed Project would not have a cumulatively considerable impact on traffic or transportation when considered with other actions.

5.2.14 Utilities and services

The project would not affect any utilities or services in the area and therefore would not contribute to any cumulative effect on these resources.

5.3 Cumulative Effects of Alternative 2, the No Action Alternative

The No Action alternative, when considered with other past, present, and reasonably foreseeable projects, would not contribute to a significant cumulative effect on any resources within the project site. However, the No Action alternative would have an adverse incremental effect on flood control within the project site. Other projects that may occur within the vicinity would improve flood control within the region. Therefore, the incremental contribution of the No Action alternative is not cumulatively considerable.

5.4 Growth-Inducing Effects

The Proposed Project would not directly remove obstacles to growth or result in population increases. The temporary and small increase in employment associated with construction activities would not result in a growth-inducing effect.

6 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

6.1 Federal Requirements

6.1.1 The Clean Air Act

The Clean Air Act of 1972 (as amended in 1990; 42 U.S.C 7401, et seq. Section 176[c]) prohibits federal action or support of activities that do not conform to a state implementation plan. The Proposed Project is not expected to violate any standard, increase violations in the project area, exceed the Environmental Protection Agency's general conformity *de minimis* threshold, or hinder the attainment of air quality objectives in the local air basin. The Proposed Project would have no adverse effect on the future air quality of the project area and is in compliance with this act.

6.1.2 The Endangered Species Act

Under Section 7 of the Endangered Species Act of 1973 (as amended in 1995; 16 U.S.C. 1531, et seq.), BLM has initiated consultation with USFWS to determine whether federally listed or proposed species, or their critical habitat are likely to be adversely affected by this project, and to develop appropriate mitigation measures to ensure compliance with the federal ESA.

6.1.3 National Environmental Policy Act

The National Environmental Policy Act (42 U.S.C. 4321 et seq.) requires federal agencies to consider the environmental impacts of their proposed actions and alternatives to those actions. This draft EA/IS serves as public notification of the Proposed Project. The public comment period is 30 days following the issuance of this document.

6.1.4 National Historic Preservation Act

The National Historic Preservation Act of 1966 (amended through 2000; 16 U.S.C. et seq.) requires agencies to take into account the effects of their actions on properties listed in or eligible for listed in the National Register of Historic Places. The Advisory Council on Historic Preservation has developed implementation regulations (36 CFR 800), which allow agencies to develop agreements for consideration of these historic properties. The proposed project was reviewed in compliance with a Protocol Agreement between BLM and the State Historic Preservation Officer and is currently in compliance with Section 106 of the Act.

6.1.5 Executive Order 12898, Environmental Justice

Environmental justice refers to "non-discrimination in federal programs substantially affecting human health and the environment" and "providing minority communities and low-income communities access to public information on, and an opportunity for public participation in, matters relating to human health or the environment." In particular, it involves preventing

minority and low-income communities from being subjected to disproportionately high and adverse environmental effects of federal actions.

The proposed action is in compliance with this Executive Order. Project construction would not affect any minority or low-income communities.

6.1.6 Farmland Protection Policy Act

The Farmland Protection Policy Act (7 U.S.C. 4201 et seq.) requires a federal agency to consider the effects of its actions and programs on the Nation's farmlands.

6.2 State of California

6.2.1 California Environmental Quality Act

This document has been prepared pursuant to CEQA regulations. Adoption of a Mitigated Negative Declaration following public review of the Draft IS would provide full compliance under CEQA.

6.2.2 California Endangered Species Act

Generally, CDFG administers the State laws providing protection of fish and wildlife resources, including the California Endangered Species Act of 1984. This Act and Sections 2050 and 2097 of the Fish and Game Code prohibit "take" of plants and animals designated by the California Fish and Game Commission as either endangered or threatened. Stillwater Sciences, on behalf of BLM and TNC, has conducted surveys for threatened and endangered species and has determined that the Proposed Project would not likely affect State listed species. Therefore, a take permit is not needed for the Proposed Project.

6.2.3 Delta Protection Act

The Act was established in recognition of the increasing threats to the resources of the Primary Zone of the Delta from urban and suburban encroachment which have the potential to impact agriculture, wildlife habitat, and recreational uses. Pursuant to the Act, the Land Use and Resource Management Plan for the Primary Zone of the Delta was completed and adopted by the Delta Protection Commission in 1995 (updated in 2002).

The McCormack-Williamson Tract falls within the Delta Primary Zone. The Proposed Project is consistent with Plan policies related to levees, land use, and agriculture.

7 COORDINATION AND REVIEW OF THE DRAFT EA/IS

The Draft EA/IS will be circulated for 30 days to agencies, organizations, and individuals known to have a special interest in the Proposed Project. The document will also be available on BLM's website (www.blm.gov/ca). Comments will be received and addressed or incorporated into the project as appropriate.

Individual respondents may request confidentiality. Those choosing to withhold their name or address from public review or from disclosure under the Freedom of Information Act, must state this prominently at the beginning of a written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations and businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be available for public inspection in their entirety.

8 LIST OF PREPARERS

Table 3. List of preparers for this EA/IS and their affiliations.

Name	Title	Affiliation
Keith Whitener	Project Manager	TNC/RD 2110
Ramona Swenson	Project Ecologist	TNC
Gilbert Cosio	Engineer	MBK Engineers
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Sandra McGinnis	Planning Coordinator	BLM
Harry McQuillen	Preserve Manager	BLM
James Barnes	Archaeologist	BLM
Albert Franklin	Botanist	BLM
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Laura Cholodenko	Wildlife Ecologist	Stillwater Sciences
Krista Orr	Aquatic Ecologist	Stillwater Sciences
Nicole Jurjavcic	Botanist	Stillwater Sciences
Darren Trawick	Wildlife Biologist	Stillwater Sciences
Brent Matsuda	Wildlife Biologist	Stillwater Sciences
Maya Hayden	Biologist	Stillwater Sciences
Bruce Orr	Senior Ecologist	Stillwater Sciences
Scott Wilcox	Senior Scientist	Stillwater Sciences

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Figures

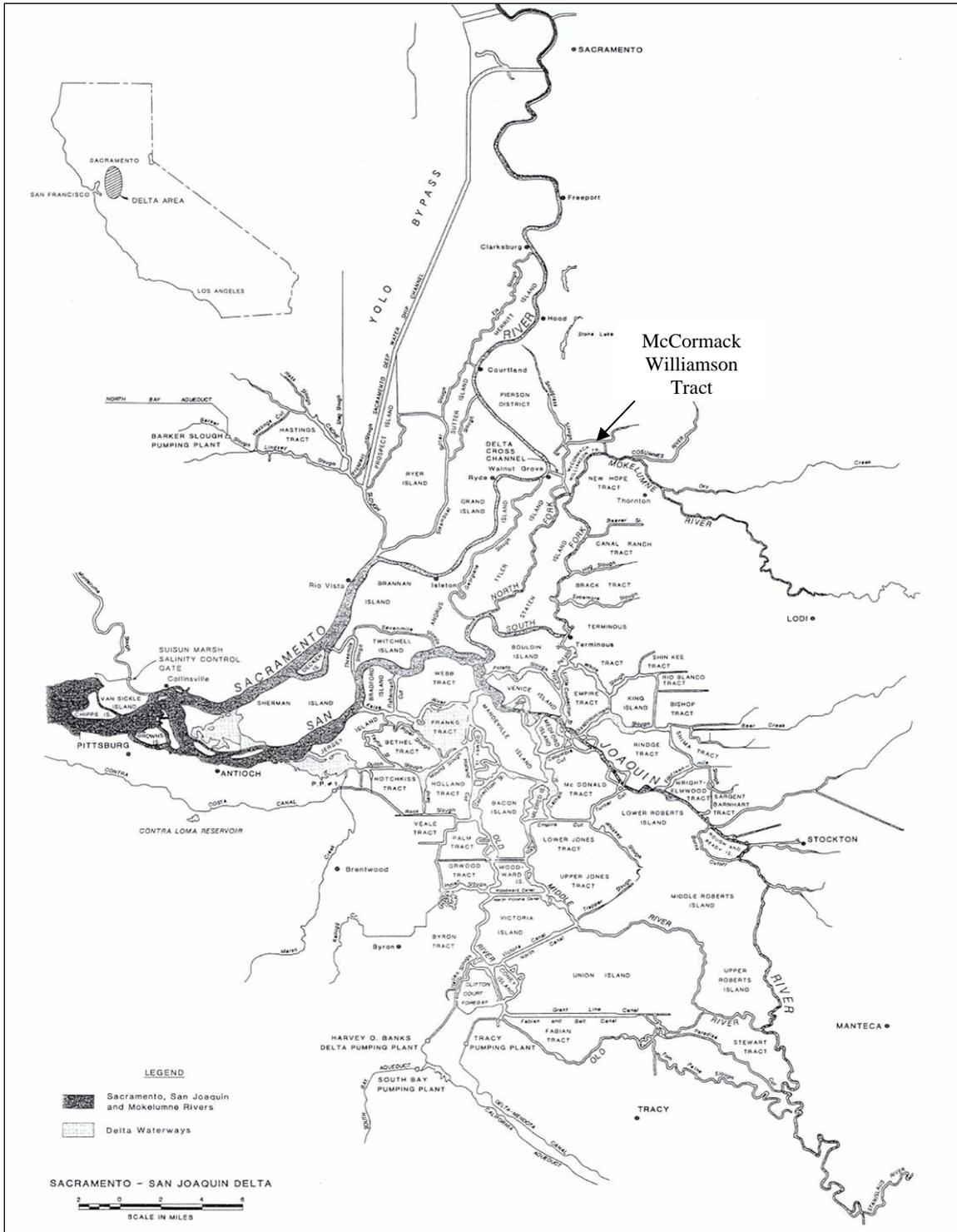


Figure 1. Project location within the Sacramento-San Joaquin Delta.

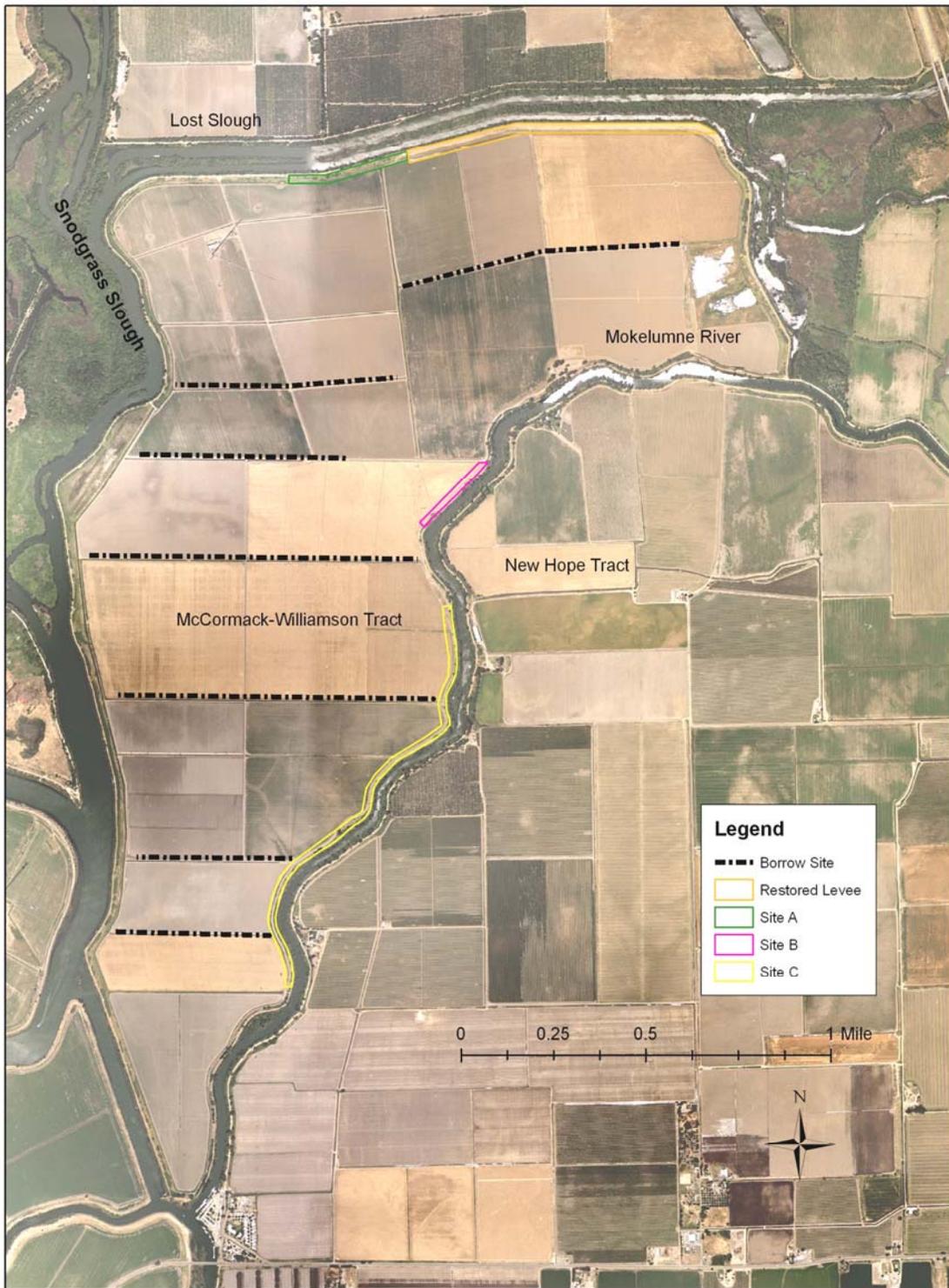


Figure 2. Project area along the McCormack-Williamson Tract.

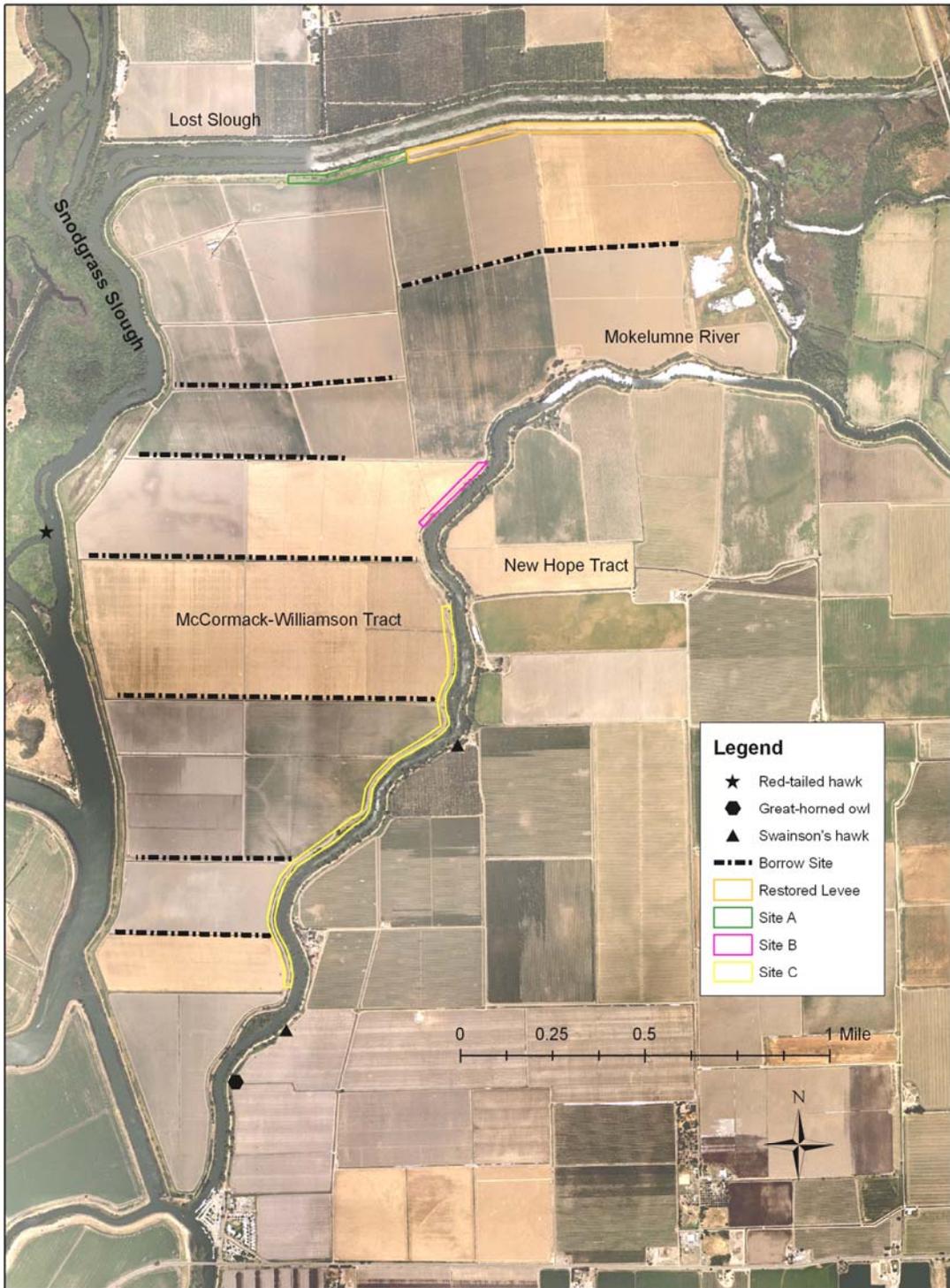


Figure 3. Raptor nest locations in 2005.

Appendices

Appendix A
Photographs of the McCormack-Williamson Tract



Photograph A-1. Site A, looking west. July 2005.



Photograph A-2. Toe drain at base of Site A, looking east. December 2003.



Photograph A-3. Site B, looking northeast. April 2005.



Photograph A-4. Site C, looking northwest. July 2005.



Photograph A-5. Site C, looking north. December 2003.



Photograph A-6. Restored levee area showing native grasses. Toe drain is on the right side of the picture. November 2003.

Appendix B
Proposed Levee Cross Section and Vegetation Rows

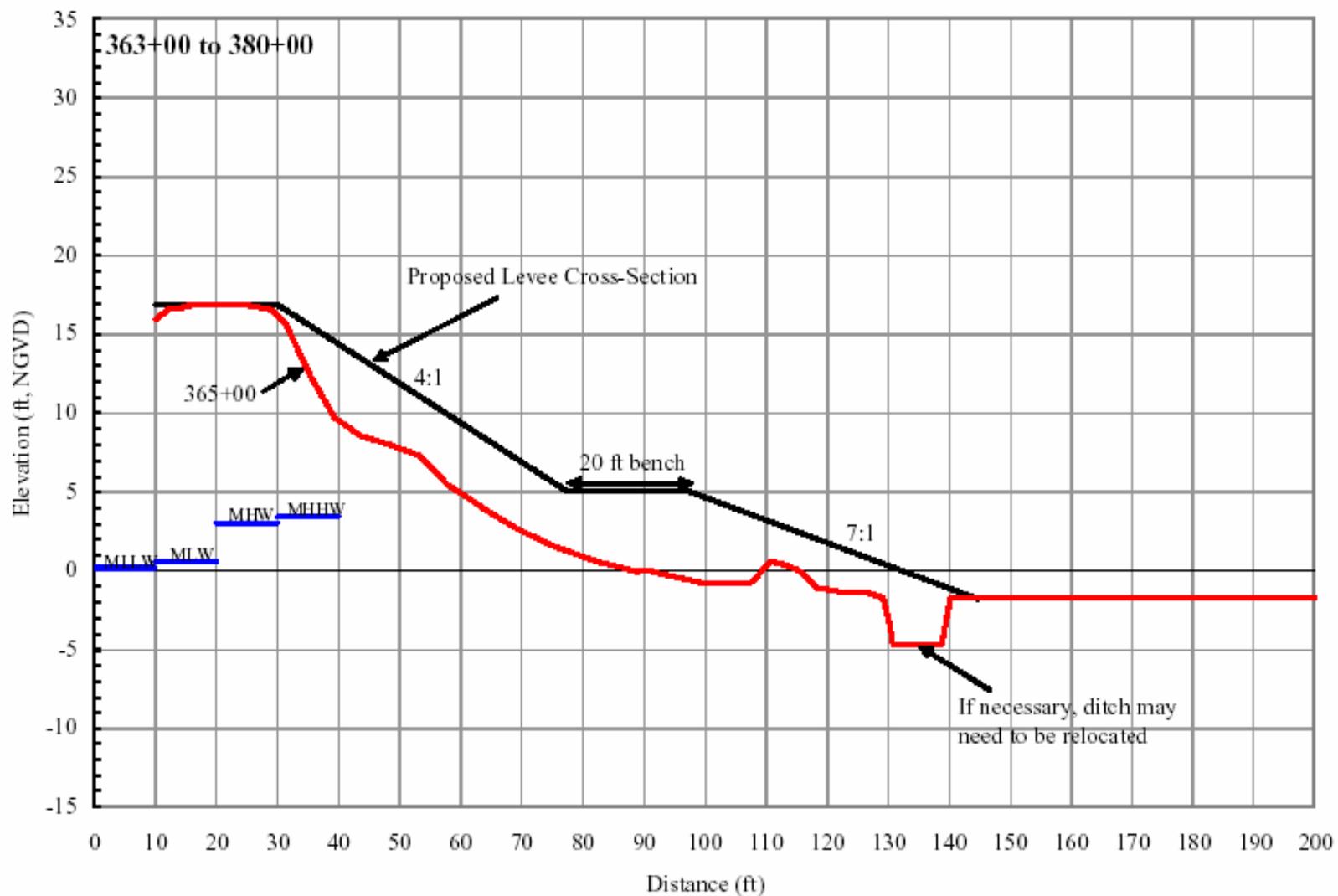


Figure B-1. Proposed levee cross-section at Site A.

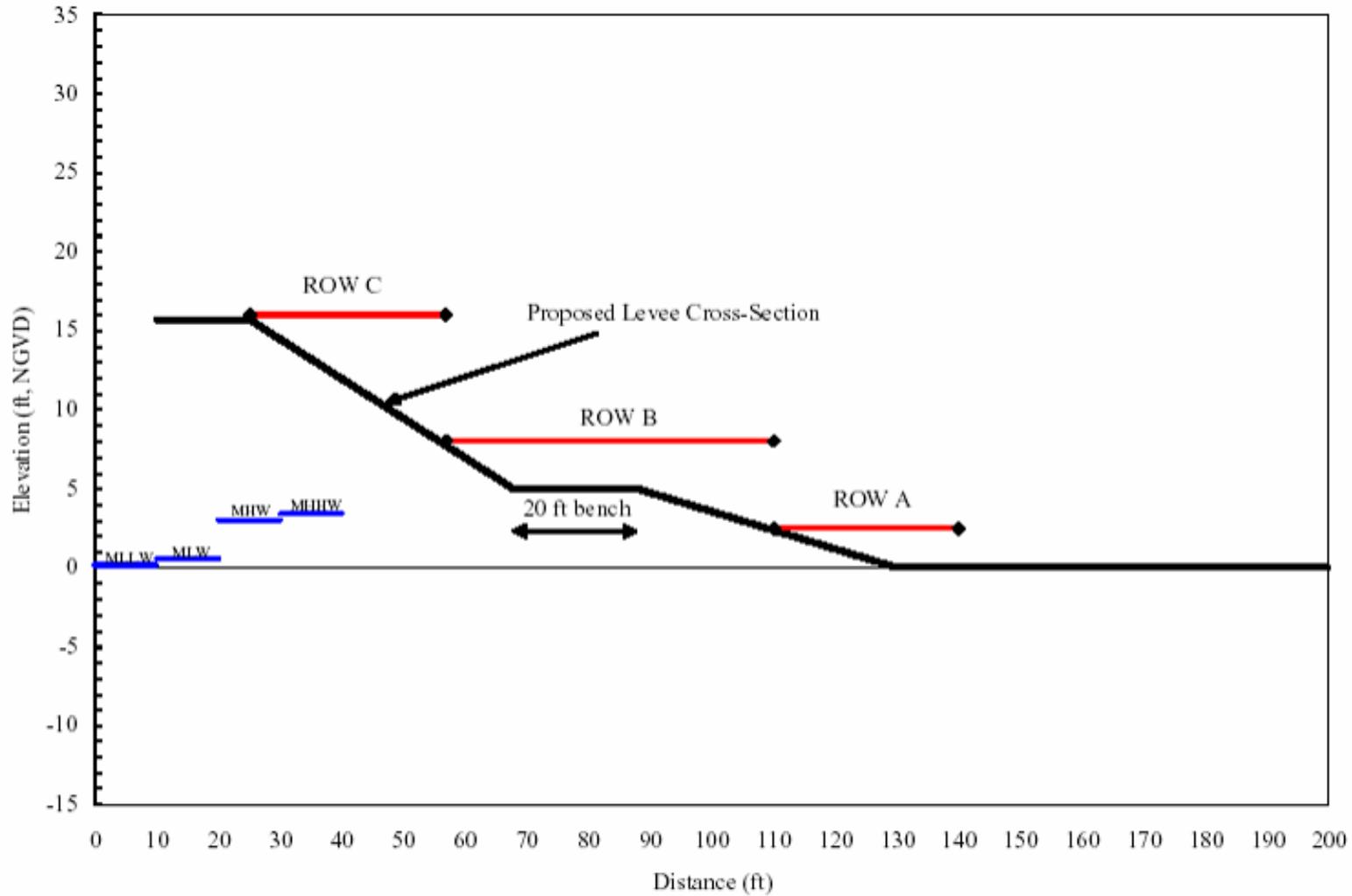


Figure B-2. Proposed vegetation rows.

Appendix C

Initial study environmental checklist

ENVIRONMENTAL CHECKLIST FORM

1. Project title:
McCormack-Williamson Tract Habitat Friendly Levee Rehabilitation Project
2. Lead agency name and address:
Reclamation District 2110
13502 Franklin Blvd.
Galt, CA 95632
3. Contact person and phone number:
Keith Whitener
(916) 683-1767
4. Project location:
The McCormack-Williamson Tract Habitat Friendly Levee Rehabilitation Project is located in Sacramento County, California. The project is located west of Interstate Highway 5 near the towns of Walnut Grove and Galt.
5. Project sponsor's name and address:
6. General plan designation:
Agricultural cropland, resource conservation
7. Zoning:
Agricultural cropland, resource conservation
8. Description of project:
Levee rehabilitations and revegetation efforts
9. Surrounding land uses and setting: Agriculture and resource conservation
10. Other public agencies whose approval is required:
U.S. Fish and Wildlife Service

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

- | | | | | | |
|-------------------------------------|----------------------------------|-------------------------------------|------------------------------------|-------------------------------------|------------------------|
| <input checked="" type="checkbox"/> | Aesthetics | <input checked="" type="checkbox"/> | Agriculture Resources | <input checked="" type="checkbox"/> | Air Quality |
| <input checked="" type="checkbox"/> | Biological Resources | <input checked="" type="checkbox"/> | Cultural Resources | <input checked="" type="checkbox"/> | Geology /Soils |
| <input checked="" type="checkbox"/> | Hazards & Hazardous
Materials | <input type="checkbox"/> | Hydrology / Water
Quality | <input type="checkbox"/> | Land Use / Planning |
| <input type="checkbox"/> | Mineral Resources | <input checked="" type="checkbox"/> | Noise | <input type="checkbox"/> | Population / Housing |
| <input type="checkbox"/> | Public Services | <input checked="" type="checkbox"/> | Recreation | <input checked="" type="checkbox"/> | Transportation/Traffic |
| <input type="checkbox"/> | Utilities / Service Systems | <input type="checkbox"/> | Mandatory Findings of Significance | | |

DETERMINATION

(To be completed by the Lead Agency)
On the basis of this initial evaluation:

- I find that the proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared.
- I find that the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.
- I find that the proposed project **MAY** have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

Date

Signature

Date

**EVALUATION OF ENVIRONMENTAL IMPACTS
(SEE ATTACHED DOCUMENT FOR GREATER DETAIL)**

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista?			<input checked="" type="checkbox"/>	
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				<input checked="" type="checkbox"/>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			<input checked="" type="checkbox"/>	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				<input checked="" type="checkbox"/>
II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?			<input checked="" type="checkbox"/>	
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				<input checked="" type="checkbox"/>
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				<input checked="" type="checkbox"/>
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?				<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		☒		
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?		☒		
d) Expose sensitive receptors to substantial pollutant concentrations?				☒
e) Create objectionable odors affecting a substantial number of people?				☒

IV. BIOLOGICAL RESOURCES: Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		☒		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?			☒	
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				☒

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			<input checked="" type="checkbox"/>	
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				<input checked="" type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				<input checked="" type="checkbox"/>

V. CULTURAL RESOURCES: Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?		<input checked="" type="checkbox"/>		
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?		<input checked="" type="checkbox"/>		
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				<input checked="" type="checkbox"/>
d) Disturb any human remains, including those interred outside of formal cemeteries?		<input checked="" type="checkbox"/>		

VI. GEOLOGY AND SOILS: Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				<input checked="" type="checkbox"/>
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
ii) Strong seismic ground shaking?				<input checked="" type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?				<input checked="" type="checkbox"/>
iv) Landslides?				<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?		<input checked="" type="checkbox"/>		
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				<input checked="" type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				<input checked="" type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				<input checked="" type="checkbox"/>
VII. HAZARDS AND HAZARDOUS MATERIALS B: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?		<input checked="" type="checkbox"/>		
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				<input checked="" type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				<input checked="" type="checkbox"/>
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				<input checked="" type="checkbox"/>
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				<input checked="" type="checkbox"/>
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				<input checked="" type="checkbox"/>
VIII. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements?				<input checked="" type="checkbox"/>
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				<input checked="" type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?				<input checked="" type="checkbox"/>
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				<input checked="" type="checkbox"/>
f) Otherwise substantially degrade water quality?				<input checked="" type="checkbox"/>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				<input checked="" type="checkbox"/>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				<input checked="" type="checkbox"/>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				<input checked="" type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow?				<input checked="" type="checkbox"/>
IX. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?				<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				<input checked="" type="checkbox"/>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				<input checked="" type="checkbox"/>
X. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				<input checked="" type="checkbox"/>
XI. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				<input checked="" type="checkbox"/>
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?				<input checked="" type="checkbox"/>
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				<input checked="" type="checkbox"/>
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			<input checked="" type="checkbox"/>	

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				<input checked="" type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				<input checked="" type="checkbox"/>

XII. POPULATION AND HOUSING: Would the project:

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				<input checked="" type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				<input checked="" type="checkbox"/>

XIII. PUBLIC SERVICES:

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				<input checked="" type="checkbox"/>
Fire protection?				<input checked="" type="checkbox"/>
Police protection?				<input checked="" type="checkbox"/>
Schools?				<input checked="" type="checkbox"/>
Parks?				<input checked="" type="checkbox"/>
Other public facilities?				<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XIV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				<input checked="" type="checkbox"/>
XV. TRANSPORTATION/TRAFFIC: Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?			<input checked="" type="checkbox"/>	
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?				<input checked="" type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				<input checked="" type="checkbox"/>
e) Result in inadequate emergency access?				<input checked="" type="checkbox"/>
f) Result in inadequate parking capacity?				<input checked="" type="checkbox"/>
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?				<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XVI. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				<input checked="" type="checkbox"/>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				<input checked="" type="checkbox"/>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				<input checked="" type="checkbox"/>
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				<input checked="" type="checkbox"/>
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				<input checked="" type="checkbox"/>
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				<input checked="" type="checkbox"/>
g) Comply with federal, state, and local statutes and regulations related to solid waste?				<input checked="" type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporation	Less Than Significant Impact	No Impact
XVII. MANDATORY FINDINGS OF SIGNIFICANCE:				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		☒		
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?				☒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				☒

Appendix D
**Vegetation and wildlife observed on the McCormack-
Williamson Tract**

Table D-1. Wildlife species observed on the McCormack-Williamson Tract.

Common name	Scientific name
BIRDS	
American coot	<i>Fulica americana</i>
American crow	<i>Corvus brachyrhynchos</i>
American kestrel	<i>Falco sparverius</i>
American robin	<i>Turdus migratorius</i>
Barn owl	<i>Tyto alba</i>
Barn swallow	<i>Hirundo rustica</i>
Belted kingfisher	<i>Ceryle alcyon</i>
Black phoebe	<i>Sayornis nigricans</i>
Brewer's blackbird	<i>Euphagus cyanocephalus</i>
Brown-headed cowbird	<i>Molothrus ater</i>
California quail	<i>Callipepla californica</i>
California towhee	<i>Pipilo crissalis</i>
Cedar waxwing	<i>Bombycilla cedrorum</i>
Common moorhen	<i>Gallinula chloropus</i>
Common yellowthroat	<i>Geothlypis trichas</i>
Dark-eyed junco	<i>Junco hyemalis</i>
Double-crested cormorant	<i>Phalacrocorax auritus</i>
Downy woodpecker	<i>Picoides pubescens</i>
European starling	<i>Sturnus vulgaris</i>
Gadwall	<i>Anas strepera</i>
Golden-crowned sparrow	<i>Zonotrichia atricapilla</i>
Great blue heron	<i>Ardea herodias</i> ²
Great egret	<i>Ardea alba</i> ²
Great horned owl	<i>Bubo virginianus</i>
House finch	<i>Carpodacus mexicanus</i>
Killdeer	<i>Charadrius vociferus</i>
Mallard	<i>Anas platyrhynchos</i> ²
Marsh wren	<i>Cistothorus palustris</i>
Merlin	<i>Falco columbarius</i>
Mourning dove	<i>Zenaida macroura</i>
Northern flicker	<i>Colaptes auratus</i>
Northern harrier	<i>Circus cyaneus</i>
Northern mockingbird	<i>Mimus polyglottos</i>
Pied-billed grebe	<i>Podilymbus podiceps</i> ¹
Red-shouldered hawk	<i>Buteo lineatus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Ring-necked pheasant	<i>Phasianus colchicus</i>
Rock dove	<i>Columba livia</i>
Song sparrow	<i>Melospiza melodia</i>
Spotted towhee	<i>Pipilo maculates</i>
Swainson's hawk	<i>Buteo swainsoni</i> ³
Tree swallow	<i>Tachycineta bicolor</i>
Turkey vulture	<i>Cathartes aura</i>
Vireo sp.	<i>Vireo sp.</i>
Western scrub-jay	<i>Aphelocoma californica</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>
Wood duck	<i>Aix sponsa</i>
Wrentit	<i>Chamaea fasciata</i>

Common name	Scientific name
MAMMALS	
Desert cottontail	<i>Sylvilagus audubonii</i>
California ground squirrel	<i>Spermophilus beecheyi</i>
Grey squirrel	<i>Sciurus griesus</i>
Raccoon	<i>Procyon lotor</i>
Coyote	<i>Canis latrans</i>
California sea lion	<i>Zalophus californianus</i> ⁴
American mink	<i>Mustela vison</i> ⁵
Red squirrel	<i>Tamiasciurus hudsonicus</i>
AMPHIBIANS and REPTILES	
Bullfrog	<i>Rana catesbeiana</i>
Western pond turtle	<i>Clemmys marmorata</i> ²

¹ Nesting observed.

² Observed on Lost Slough, water-side (northern border of the Tract).

³ Observed on an island in the Mokelumne, water side (eastern border of the Tract).

⁴ Observed in Snodgrass Slough, water-side (western border of the Tract).

⁵ Specimen found shot on levee access road.

Table D-2. Plant species observed on the McCormack-Williamson Tract.

Common name	Species name	Family	South-east levee	North levee	West levee
FERNS					
mosquito fern	<i>Azolla spp.</i>	Azollaceae			X
MONOCOTS					
dandelion spp.	<i>Agoseris spp.</i>	Poaceae		X	
giant reed	<i>Arundo donax</i>	Poaceae	X		X
oats	<i>Avena barbata</i>	Poaceae	X	X	X
California brome	<i>Bromus carinatus</i>	Poaceae			X
ripgut grass	<i>Bromus diandrus</i>	Poaceae	X		X
soft brome	<i>Bromus hordeaceus</i>	Poaceae	X	X	X
poverty brome	<i>Bromus sterilis</i>	Poaceae		X	
Santa Barbara sedge	<i>Carex barbarae</i>	Cyperaceae	X		
bermuda grass	<i>Cynodon dactyon</i>	Poaceae	X	X	X
nutsedge	<i>Cyperus spp.</i>	Cyperaceae	X	X	X
Gulf cockspur grass	<i>Echinochloa crus-pavonis</i>	Poaceae			X
creeping spike rush	<i>Eleocharis macrostachya</i>	Cyperaceae		X	
blue wildrye	<i>Elymus glaucus</i>	Poaceae	X		
meadow barley	<i>Hordeum brachyantherum</i>	Asteraceae			
barley	<i>Hordeum marinum ssp. gussoneanum</i>	Poaceae		X	X

Common name	Species name	Family	South-east levee	North levee	West levee
barley	<i>Hordeum murinum ssp. leporinum</i>	Poaceae			X
barley	<i>Hordeum spp.</i>	Poaceae	X		
common toad rush	<i>Juncus bufonius</i>	Juncaceae	X		X
rush	<i>Juncus effusus</i>	Juncaceae			X
bearded strangletop	<i>Leptochloa fascicularis</i>	Poaceae		X	
Italian rye-grass	<i>Lolium multiflorum</i>	Poaceae	X	X	X
dallisgrass	<i>Paspalum dilatatum</i>	Poaceae		X	
littleseed	<i>Phalaris minor</i>	Poaceae		X	X
common reed	<i>Phragmites australis</i>	Poaceae			X
rabbit's foot grass	<i>Polypogon monspeliensis</i>	Poaceae	X	X	X
hardstem bulrush	<i>Scirpus acutus</i>	Cyperaceae		X	X
California tule	<i>Scirpus californicus</i>	Cyperaceae			
broadleaf cattail	<i>Typha latifolia</i>	Typhaceae		X	X
foxtail fescue	<i>Vulpia myuros</i>	Poaceae	X	X	X
corn	<i>Zea mays</i>	Poaceae			
DICOTS					
scarlet pimpernel	<i>Anagallis arvensis</i>	Primulaceae	X	X	X
bur-chervil	<i>Anthriscus caucalis</i>	Apiaceae	X		
velvet-leaf	<i>Abutilon theophrasti</i>	Malvaceae		X	
mugwort	<i>Artemisia douglasiana</i>	Asteraceae	X	X	X
mayweed	<i>Anthemis cotula</i>	Asteraceae		X	
asparagus	<i>Asparagus spp.</i>	Liliaceae	X		
water parsnip	<i>Berula erecta</i>	Apiaceae	X	X	X
black mustard	<i>Brassica nigra</i>	Brassicaceae	X	X	X
field mustard	<i>Brassica rapa</i>	Brassicaceae	X	X	X
shepherd's purse	<i>Capsella bursa-pastoris</i>	Brassicaceae	X		
Muhlenberg's centauray	<i>Centaurium muehlenbergii</i>	Gentianaceae		X	X

Common name	Species name	Family	South-east levee	North levee	West levee
Mexican tea	<i>Chenopodium ambrosioides</i>	Chenopodiaceae			
pitseed goosefoot	<i>Chenopodium berlanderi</i>	Chenopodiaceae		X	
miner's lettuce	<i>Claytonia perfoliata</i>	Portulacaceae	X		
poison hemlock	<i>Conium maculatum</i>	Apiaceae	X	X	X
bindweed	<i>Convolvulus arvensis</i>	Convolvulaceae	X	X	X
popcorn flower	<i>Cryptantha spp.</i>	Boraginaceae			X
dodder	<i>Cuscuta spp.</i>	Cuscutaceae	X		
willowherb	<i>Epilobium sp.</i>	Onagraceae		X	X
shortfruit stork's bill	<i>Erodium brachycarpum</i>	Geraniaceae	X	X	X
fennel	<i>Foeniculum vulgare</i>	Apiaceae	X		X
geranium	<i>Geranium dissectum</i>	Geraniaceae	X	X	
cudweed	<i>Gnaphalium canescens</i>	Asteraceae	X	X	
gumplant	<i>Grindelia spp.</i>	Asteraceae			
cow parsnip	<i>Heracleum lanatum</i>	Apiaceae	X		
dead nettle	<i>Lamium amplexicaule</i>	Lamiaceae	X		
peppergrass	<i>Lepidium latifolium</i>	Brassicaceae	X	X	X
floating primrose willow	<i>Ludwiga peploides</i>	Onagraceae			
common mallow	<i>Malva neglecta</i>	Malvaceae		X	X
bull mallow	<i>Malva nicaceensis</i>	Malvaceae	X		
wild cucumber	<i>Marah spp.</i>	Cucurbitaceae			X
California burclover	<i>Medicago polymorpha</i>	Fabaceae		X	X
white sweetclover	<i>Melilotus alba</i>	Fabaceae		X	
mistletoe	<i>Phoradendron spp.</i>	Viscaceae	X		
bristly oxtongue	<i>Picris echioides</i>	Asteraceae	X	X	X
Turkey tangle fogfruit	<i>Phyla nodiflora var. nodiflora</i>	Verbenaceae	X	X	X
English plantain	<i>Plantago lanceolata</i>	Plantaginaceae			X

Common name	Species name	Family	South-east levee	North levee	West levee
water pepper	<i>Polygonum hydropiperoides</i>	Polygonaceae		X	
willow weed	<i>Polygonum lapathifolium</i>	Polygonaceae		X	
knotweed	<i>Polygonum spp.</i>	Polygonaceae	X		
radish	<i>Raphanus sativus</i>	Brassicaceae	X	X	X
California blackberry	<i>Rubus ursinus</i>	Rosaceae	X	X	
curly dock	<i>Rumex crispus</i>	Polygonaceae	X	X	X
milk thistle	<i>Silybum marianum</i>	Asteraceae	X	X	X
tumble mustard	<i>Sisymbrium altissimum</i>	Brassicaceae			
sowthistle	<i>Sonchus oleraceus</i>	Asteraceae	X	X	
common dandelion	<i>Taraxacum officinale</i>	Asteraceae	X		
poison oak	<i>Toxicodendron diversilobum</i>	Anacardaceae			X
rose clover, red clover	<i>Trifolium hirtum</i>	Fabaceae	X		
stinging nettle	<i>Urtica dioica</i>	Urticaceae			
seashore vervain	<i>Verbena litoralis</i>	Verbenaceae		X	X
hairy vetch	<i>Vicia villosa</i>	Fabaceae	X		X
vetch	<i>Vicia sativa</i>	Fabaceae			X
wild grape	<i>Vitis californica</i>	Vitaceae	X	X	X
SHRUBS					
coyote brush	<i>Baccharis pilularis</i>	Asteraceae	X		X
buttonbush	<i>Cephalanthus occidentalis</i>	Rubiaceae			X
fire thorn	<i>Pyracantha angustifolia</i>	Rosaceae			X
California wild rose	<i>Rosa californica</i>	Rosaceae	X	X	X
Himalaya blackberry	<i>Rubus discolor</i>	Rosaceae	X	X	X
narrow-leaved willow	<i>Salix exigua</i>	Salicaceae	X	X	X
red willow	<i>Salix laevigata</i>	Salicaceae			X
arroyo willow	<i>Salix lasiolepis</i>	Salicaceae	X	X	X
dusky willow	<i>Salix melanopsis</i>	Salicaceae	X		X

Common name	Species name	Family	South-east levee	North levee	West levee
TREES					
box elder	<i>Acer negundo</i>	Aceraceae	X	X	X
tree-of-heaven	<i>Ailanthus altissima</i>	Simaroubaceae	X		X
mountain alder	<i>Alnus rhombifolia</i>	Betulaceae	X		X
dogwood	<i>Cornus sericea</i>	Cornaceae		X	X
ash	<i>Fraxinus latifolia</i>	Oleaceae	X		X
Northern California black walnut	<i>Juglans hindsii</i>	Juglandaceae	X		X
English walnut	<i>Juglans regia</i>	Juglandaceae	X		
Western sycamore	<i>Platanus racemosa</i>	Platanaceae	X		
Freemont's cottonwood	<i>Populus fremontii</i>	Salicaceae	X	X	X
California live oak	<i>Quercus agrifolia</i>	Fagaceae	X		
valley oak	<i>Quercus lobata</i>	Fagaceae	X	X	X
black locust	<i>Robinia pseudoacacia</i>	Fabaceae	X		
San Joaquin willow	<i>Salix goodingii</i>	Salicaceae		X	X
blue elderberry	<i>Sambucus mexicana</i>	Caprifoliaceae	X		X

Appendix E
**Special-status species with the potential to occur in the
project vicinity**

The following table summarizes information gathered from the California Natural Diversity Database (CNDDDB 2005), United States Fish and Wildlife Service (USFWS 2007), and Special Animals List (CDFG 2006a) regarding sensitive wildlife species occurrences within and in the vicinity of the project area.

Table E-1: Special-status wildlife species.

Common name	Scientific name	Status ^a	Range	Habitat requirements	Potential for Occurrence
INVERTEBRATES					
Valley elderberry longhorn beetle	<i>Desmocerus californicus dimorphus</i>	FT	Streamside habitats below 3,000 feet throughout the Central Valley.	Associated with elderberry shrubs in riparian areas in the Central Valley.	May occur; suitable habitat occurs in the project area.
Vernal pool fairy shrimp	<i>Branchinecta lynchi</i>	FT	Central Valley, central and south Coast Ranges from Tehama County to Santa Barbara County. Isolated populations also in Riverside County.	Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	Not expected to occur; no suitable habitat in or adjacent to the project area.
Vernal pool tadpole shrimp	<i>Lepidurus packardii</i>	FE	Shasta County south to Merced County.	Inhabits vernal pools and swales, commonly in grass-bottomed swales of unplowed grasslands.	Not expected to occur; no suitable habitat in or adjacent to the project area.
FISH					
Delta smelt ^b	<i>Hypomesus transpacificus</i>	FT	Lower reaches of Sacramento and Napa rivers; the Delta including Suisun Bay, Goodyear, Suisun, Cutoff, First Mallard, and Motezuma sloughs.	Estuarine or brackish waters up to 18 parts per thousand (ppt); spawn in shallow brackish water upstream of the mixing zone (zone of saltwater-freshwater interface) where salinity is around 2 ppt.	May occur adjacent to the project area; suitable habitat is present along the waterside of the levee which will not be affected.

Common name	Scientific name	Status ^a	Range	Habitat requirements	Potential for Occurrence
Central Valley steelhead ^b	<i>Oncorhynchus mykiss</i>	FT	Sacramento River and its tributaries, San Joaquin River and its tributaries	Rivers and streams with cold water, clean gravel of appropriate size for spawning, and suitable rearing habitat; typically rear in fresh water for one or more years before migrating to the ocean.	May occur adjacent to the project area; potential rearing and migratory habitat present along the waterside of the levee, which will not be affected.
Central Valley spring run Chinook salmon ^b	<i>Oncorhynchus tshawytscha</i>	FT	Sacramento River and its tributaries and the Feather and Yuba rivers.	Low- to mid-elevation rivers and streams with cold water, clean gravel of appropriate size for spawning and adequate rearing habitat; typically rear in fresh water for one or more years before migrating to the ocean.	May occur adjacent to the project area; potential rearing and migratory habitat present along the waterside of the levee, which will not be affected.
Central Valley winter run Chinook salmon ^b	<i>Oncorhynchus tshawytscha</i>	FE	Sacramento River and San Joaquin Estuary	Mainstem river reaches with cool water and available spawning gravel; rear 5 to 10 months in the river and estuary; migrate to the ocean to feed and grow until sexually mature.	May occur adjacent to the project area; potential rearing and migratory habitat present along the waterside of the levee, which will not be affected.
AMPHIBIANS					
California red-legged frog	<i>Rana aurora draytonii</i>	FT	Found along the coast and coastal mountain ranges of California from Marin County to San Diego County and in the Sierra Nevada from Tehama County to Fresno County.	Permanent and semi-permanent aquatic habitats, such as creeks and cold-water ponds, with emergent and submergent vegetation. May aestivate in rodent burrows or cracks during dry periods. Largely restricted to coastal areas.	Not expected to occur; not observed in the Delta in over 40 years (J. Hogan, pers. comm., 2007).

Common name	Scientific name	Status ^a	Range	Habitat requirements	Potential for Occurrence
California tiger salamander	<i>Ambystoma californiense</i>	T	Central Valley, including Sierra Nevada foothills, up to approximately 1,000 feet, and coastal region from Butte County south to northeastern San Luis Obispo County.	Annual grassland, valley-foothill hardwood forests, and permanent or temporary ponds.	Not expected to occur; no suitable habitat in or adjacent to the project area.
Foothill yellow-legged frog	<i>Rana boylei</i>	CSC	Coast ranges from the Oregon border south to the Transverse mountains in Los Angeles County and in most of Northern California west of Cascade crest and along the western flank of the Sierra.	Partly-shaded, shallow streams and riffles with a rocky (cobble-sized) substrate in a variety of habitats.	Not expected to occur; no suitable habitat in or adjacent to the project area.
REPTILES					
Northwestern pond turtle	<i>Clemmys marmorata marmorata</i>	CSC	Northwestern subspecies occurs from the Oregon border of Del Norte and Siskiyou Counties south along the coast to San Francisco Bay, inland through the Sacramento Valley, and on the western slope of Sierra Nevada.	Occurs in ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Requires sandy upland areas for nesting.	May occur; suitable habitat is present in and adjacent to the project area.
Giant garter snake	<i>Thamnophis gigas</i>	FT, ST	Central Valley from the vicinity of Burrel in Fresno County north to near Chico in Butte County; has been extirpated from areas south of Fresno.	Occurs in freshwater marsh and low gradient streams, as well as drainage canals and irrigation ditches.	May occur; suitable habitat is present in the project area.
Southwestern pond turtle	<i>Clemmys marmorata pallida</i>	CSC	Southwestern subspecies occurs along the central coast of California east to the Sierra Nevada and along the southern California coast inland to the Mojave and Sonora Deserts; range overlaps with that of the northwestern pond turtle throughout the Delta and in the Central Valley.	Valley locations with slow-moving waterways. Upland habitat and basking sites must be easily accessible. Mostly aquatic, they move to upland areas for egg laying.	May occur; suitable habitat is present in and adjacent to the project area.
BIRDS					
Swainson's hawk	<i>Buteo swainsoni</i>	ST	Lower Sacramento and San Joaquin Valleys, the Klamath Basin, and Butte Valley. Highest nesting densities occur near Davis and Woodland, Yolo County.	Breeds in riparian areas and in oak savannah. Typically forages in grasslands, or agricultural areas.	May occur; suitable habitat is present in and adjacent to the project area.

Common name	Scientific name	Status ^a	Range	Habitat requirements	Potential for Occurrence
Tricolored blackbird	<i>Agelaius tricolor</i>	CSC	Permanent resident in the Central Valley from Butte County to Kern County. Breeds at scattered coastal locations from Marin County south to San Diego County; and at scattered locations in Lake, Sonoma, and Solano counties. Rare nester in Siskiyou, Modoc, and Lassen counties.	Highly colonial species requiring open water and protected nesting substrate. Often nests in association with riparian habitat. May also nest in blackberry habitat away from water sources.	May occur; suitable habitat is present in and adjacent to the project area.
California black rail	<i>Laterallus jamaicensis coturniculus</i>	ST	Permanent resident in the San Francisco Bay and eastward through the Delta into Sacramento and San Joaquin Counties; small populations in Marin, Santa Cruz, San Luis Obispo, Orange, Riverside, and Imperial counties.	Mainly inhabits salt-marshes bordering larger bays.	Not expected to occur; no suitable habitat in or adjacent to the project area.
Western yellow-billed cuckoo	<i>Coccyzus americanus occidentalis</i>	SE	Nests along the upper Sacramento, lower Feather, south fork of the Kern, Amargosa, Santa Ana, and Colorado rivers.	Nests in mature walnut and almond orchards, but natural habitat is dense cottonwood - willow riparian forest.	Not expected to occur; no suitable habitat in or adjacent to the project area.
White-tailed kite	<i>Elanus leucurus</i>	FP	Lowland areas west of Sierra Nevada from the head of the Sacramento Valley south, including coastal valleys and foothills to western San Diego County at the Mexico border.	Nesting: rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging.	May occur; suitable habitat occurs in and adjacent to the project area.
Bald eagle	<i>Haliaeetus leucocephalus</i>	FT	Nests in Siskiyou, Modoc, Trinity, Shasta, Lassen, Plumas, Butte, Tehama, Lake, and Mendocino counties and in the Lake Tahoe basin. Reintroduced into central coast. Winter range includes the rest of California, except the southeastern deserts, very high altitudes in the Sierra Nevada, and east of the Sierra Nevada south of Mono County.	Coniferous forests within one mile of lakes, reservoirs, rivers, or creeks (nesting and roosting).	May occur in the project area during migration or winter. Suitable nesting habitat does not occur in the project area.
Western burrowing owl	<i>Athene cunicularia hypugaea</i>	CSC	Lowlands throughout California, including the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. Rare along south coast.	Open, dry grasslands, agricultural and range lands, and desert habitats often associated with burrowing animals.	Not expected to occur; no suitable habitat in or adjacent to the project area.

Common name	Scientific name	Status ^a	Range	Habitat requirements	Potential for Occurrence
Cooper's hawk	<i>Accipiter cooperii</i>	CSC	Throughout California except high altitudes in the Sierra Nevada. Winters in the Central Valley, southeastern desert regions, and plains east of the Cascade Range.	Nest-sites mainly in riparian areas.	May occur; suitable habitat is present in and adjacent to the project area.
Double-crested cormorant	<i>Phalacrocorax auritus</i>	CSC	Found along the entire California coast and on inland lakes.	Colonial nester in tall trees along lake margins.	May occur as transient; suitable nesting habitat is not present in the project area.
Mountain plover	<i>Charadrius vauxi</i>	CSC	Does not breed in California; in winter, found in the Central Valley south of Yuba County, along the coast in parts of San Luis Obispo, Santa Barbara, Ventura, and San Diego Counties; parts of Imperial, Riverside, Kern, and Los Angeles Counties.	Grasslands, freshly plowed fields, semi-arid grasslands, and pastures.	May occur as winter transient; suitable wintering habitat present in the project area.
Greater sandhill crane	<i>Grus canadensis tabida</i>	ST	Breeds in Siskiyou, Modoc, Lassen, Plumas, and Sierra Counties. Winters in the Central Valley, southern Imperial County, Lake Havasu National Wildlife Refuge, and the Colorado River Indian Reserve.	Inland wetlands, wet meadows with interspersed emergent marsh. Winter in Central Valley in old corn fields and irrigated pastures.	May occur; foraging habitat present in the project area.
Lewis' woodpecker	<i>Melanerpes lewis</i>	CSC	Breeds locally on eastern slopes of the Coast Ranges and in the Sierra Nevada, Cascade Range, and Klamath and Warner Mountains. Uncommon winter resident in the Central Valley.	Open habitats with scattered trees and snags with cavities, oak savannahs, broken, open deciduous and conifer habitats with brushy understory; prefers oaks in winter; Nests in sycamore, cottonwood, oak, or conifer.	Not expected to occur; no suitable habitat in the project area.

Common name	Scientific name	Status ^a	Range	Habitat requirements	Potential for Occurrence
Nuttall's woodpecker	<i>Picoides nuttallii</i>	FSLC	Occurs throughout the Central Valley, the Coast, Transverse, and Peninsular Ranges, and in lower elevations in the Cascade and Sierra Nevada Ranges.	Low-elevation riparian deciduous and oak habitats; riparian habitat in dead (occasionally live) trunk or limb of willow, sycamore, cottonwood, or alder; rarely in oaks; Requires snags and dead limbs for nesting.	May occur; suitable habitat occurs in and adjacent to the project area.
Bank swallow	<i>Riparia riparia</i>	ST	Occurs along the Sacramento River from Tahoma County to Sacramento County, along the Feather and lower American Rivers, in the Owens Valley; and in the plains east of the Cascade Range in Modoc, Lassen, and northern Siskiyou Counties. Small populations near the coast from San Francisco County to Monterey County.	Colonial nester in vertical banks/cliffs with fine-textured sand soils near rivers. Breeds from April to August.	Not expected to occur; no suitable habitat in or adjacent to the project area.
MAMMALS					
Riparian (San Joaquin Valley) woodrat	<i>Neotoma fuscipes riparia</i>	FE	Historical distribution along the San Joaquin, Stanislaus, and Tuolumne Rivers, and Caswell State Park in San Joaquin, Stanislaus, and Merced Counties; presently limited to San Joaquin County at Caswell State Park and a possible second population near Vernalis.	Riparian areas with dense chaparral, riparian woodland, and mixed coniferous forest with developed understory. Restricted to small remnant patches along the Stanislaus River.	Not expected to occur; the project area is outside the known range.
Riparian brush rabbit	<i>Sylvilagus bachmani riparius</i>	FE, SE	Historical distribution along the San Joaquin, Stanislaus, and Tuolumne Rivers, and Caswell State Park in San Joaquin, Stanislaus, and Merced Counties; presently limited to San Joaquin County at Caswell State Park and a possible second population near Vernalis.	Dense brushy areas of riparian forest. Only extant population found at Caswell Memorial State Park.	Not expected to occur; the project area is outside the known range.

Status

- ^aFE Listed as endangered under the federal Endangered Species Act
- FT Listed as threatened under the federal Endangered Species Act
- FSLC Federal species of local or regional concern or conservation significance
- FP Federally proposed
- SE Listed as endangered under the California Endangered Species Act
- ST Listed as threatened under the California Endangered Species Act
- CSC California species of special concern.

^b Critical habitat is designated for one or more of the selected quadrangles.

The following table summarizes information gathered from a search of the California Natural Diversity Database (CNDDDB 2005), California Native Plant Society (CNPS 2005), and United States Fish and Wildlife Service (USFWS 2005) records regarding sensitive plants and natural communities that have the potential to occur in the vicinity of the project area.

Table E-2. Special-status plant species and sensitive habitat types.

Common Name	Scientific Name	Status ^a	CNPS List ^b	Distribution	Habitat Requirements and Flowering Period	Potential for Occurrence
Delta mudwort	<i>Limosella subulata</i>	---	2	Primarily located in the Delta; Contra Costa, Sacramento, San Joaquin, and Solano counties, and Oregon.	Riparian scrub, brackish and freshwater marsh; usually on mud banks of the Delta in marshy or scrubby riparian associations; often with <i>Lilaepsis masonii</i> ; flowers May–Aug.	Not expected to occur; no suitable habitat present in the project area.
Delta tule pea	<i>Lathyrus jepsonii</i> var <i>jepsonii</i>	---	1B	Central Valley (especially the San Francisco Bay region); Alameda, Contra Costa, Napa, Sacramento, Santa Clara, San Joaquin, and Solano counties.	Brackish and freshwater marshes and swamps; most distribution restricted to the Delta; often found with <i>Typha</i> spp., <i>Aster lentus</i> , <i>Rosa californica</i> , <i>Juncus</i> spp. and <i>Scirpus</i> spp.; usually on edges of marshes and sloughs; flowers May–Sep.	May occur; potentially supporting habitat is present in the project area.
Northern California black walnut	<i>Juglans hindsii</i>	--	1B	Native stands in Contra Costa, Lake, Napa, Sacramento, Solano, and Yolo counties.	Riparian forest and woodland; deep alluvial soil associated with a creek or stream; flowers Apr–May.	May occur; potentially supporting habitat is present in the project area.
Rose-mallow	<i>Hibiscus lasiocarpus</i>	---	2	Within the Delta watershed; Butte, Contra Costa, Colusa, Glenn, Sacramento, San Joaquin, Solano, Sutter, and Yolo counties.	Marshes and swamps; moist, freshwater-soaked river banks and low peat islands in sloughs; flowers Jun–Sep.	May occur; potentially supporting habitat is present in the project area.
Blue skullcap	<i>Scutellaria lateriflora</i>	---	2	Inyo and San Joaquin counties; New Mexico and Oregon states.	Meadows, seeps, marshes, swamps; flowers Jul–Sep.	May occur; potentially supporting habitat is present in the project area.

Common Name	Scientific Name	Status ^a	CNPS List ^b	Distribution	Habitat Requirements and Flowering Period	Potential for Occurrence
Boggs Lake hedge-hyssop	<i>Gratiola heterosepala</i>	SE	1B	Fresno, Lake, Lassen, Madera, Merced, Modoc, Placer, Sacramento, Shasta, Siskiyou, San Joaquin, Solano, Tehama; Oregon state.	Marshes and freshwater swamps, vernal pools; clay soils; semiaquatic; flowers Apr–Aug.	Not expected to occur; no suitable habitat present in the project area.
Bristly sedge	<i>Carex comosa</i>	---	2	Contra Costa, Lake, Mendocino, Sacramento, San Bernardino, Santa Cruz, San Francisco, Shasta, San Joaquin, and Sonoma counties; Idaho, Oregon, Washington and elsewhere.	Coastal prairie, marshes, and swamps (lake margins), valley and foothill grassland; flowers May–Sep.	May occur; potentially supporting habitat is present in the project area.
Dwarf downingia	<i>Downingia pusilla</i>	---	2	Fresno, Merced, Mariposa, Napa, Placer, Sacramento, Solano, Sonoma, Stanislaus, Tehama, Yuba counties and South America.	Valley and foothill grassland, vernal pools; flowers Mar–May.	May occur; potentially supporting habitat is present in the project area.
Eel-grass pondweed	<i>Potamogeton zosteriformis</i>	--	2	Contra Costa, Lake, Lassen, Modoc, and Shasta counties; Idaho, Oregon, Utah, Washington states.	Marshes, swamps; annual herb, aquatic; flowers Jun–July.	Not expected to occur; no suitable habitat present in the project area.
Legenere	<i>Legenere limosa</i>	---	1B	Primarily located in the lower Sacramento Valley, also from north Coast Ranges, northern San Joaquin Valley and the Santa Cruz mountains; Lake, Napa, Placer, Sacramento, Santa Clara, Shasta, San Joaquin, San Mateo, Solano, Sonoma, Stanislaus, Tehama, and Yuba counties.	Found in beds of vernal pools; many historical occurrences are extirpated; flowers Apr–Jun.	Not expected to occur; no suitable habitat present in the project area.
Marsh skullcap	<i>Scutellaria galericulata</i>	---	2	El Dorado, Lassen, Modoc, Nevada, Placer, Plumas, Shasta, Siskiyou, and San Joaquin counties; Oregon state.	Marshes and swamps, meadows and seeps, lower montane coniferous forest; flowers Jun–Sep.	May occur; potentially supporting habitat is present in the project area.

Common Name	Scientific Name	Status ^a	CNPS List ^b	Distribution	Habitat Requirements and Flowering Period	Potential for Occurrence
Mason's lilaeopsis	<i>Lilaeopsis masonii</i>	---	1B	Southern Sacramento Valley, Sacramento–San Joaquin Delta, northeast San Francisco Bay area; Alameda, Contra Costa, Napa, Sacramento, San Joaquin, and Solano counties.	Freshwater and brackish marshes, riparian scrub, tidal zones, in muddy or silty soil formed through river deposition or bank erosion; flowers Apr–Nov.	Not expected to occur; no suitable habitat present in the project area.
Sanford's arrowhead	<i>Sagittaria sanfordii</i>	---	1B	Scattered locations in Central Valley and Coast Ranges; Butte, Del Norte, Fresno, Kern, Merced, Mariposa, Orange, Sacramento, Shasta, San Joaquin, Tehama, and Ventura counties.	Marshes and swamps; in standing or slow-moving freshwater ponds, marshes, and ditches; flowers May–Oct.	Not expected to occur; no suitable habitat present in the project area.
Succulent owl's-clover	<i>Castilleja campestris</i> ssp. <i>succulenta</i>	FT, ST	1B	Fresno, Mader, Merced, mariposa, San Joaquin, and Stanislaus counties.	Vernal Pools, often acidic; grows in areas of San Joaquin county at the base of the Sierra Nevada foothills; flowers Apr–May.	Not expected to occur; no suitable habitat present in the project area.
Suisun marsh aster	<i>Aster lentus</i>	---	1B	Sacramento–San Joaquin Delta, Suisun Marsh, Suisun Bay, and Contra Costa, Napa, Sacramento, San Joaquin, and Solano counties.	Brackish and freshwater marshes and swamps; endemic to the Delta; typically found in tidally-influenced areas; flowers May–Nov.	Not expected to occur; no suitable habitat present in the project area.
Slender orcutt grass	<i>Orcuttia tenuis</i>	FT, SE	1B	Lake, Lassen, Plumas, Sacramento, Shasta, Siskiyou, Tehama counties.	Vernal pools; flowers May–Oct.	Not expected to occur; no suitable habitat present in the project area.

Common Name	Scientific Name	Status ^a	CNPS List ^b	Distribution	Habitat Requirements and Flowering Period	Potential for Occurrence
Coastal and Valley Freshwater Marsh	Holland Classification	--	--	--	Sites permanently flooded by freshwater; prolonged saturation permits accumulation of deep, peaty soils; common in the Sacramento and San Joaquin Valleys in river oxbows and other areas on the floodplain; dominated by perennial, emergent monocots 4–5m tall often forming completely closed canopies; <i>Scirpus</i> spp. and <i>Typha</i> spp. dominate.	--
Great Valley mixed riparian forest	Holland Classification	--	--	--	Broadleaved, winter deciduous trees, forming closed canopies; associated with low- to mid-elevation perennial and intermittent streams; most stands even-aged, reflecting flood-mediated, episodic reproduction.	--
Great Valley Oak Riparian Forest	Holland Classification	--	--	--	Wetlands: restricted to higher parts of floodplains; soils intermittently flooded, seasonally saturated; water chemistry: fresh. Uplands: found along valley bottoms, gentle slopes, and summit valleys; soils alluvial or residual.	--

Common Name	Scientific Name	Status ^a	CNPS List ^b	Distribution	Habitat Requirements and Flowering Period	Potential for Occurrence
Northern Hardpan Vernal Pool	Holland Classification	--	--	--	Habitat seasonally flooded, seasonally saturated; water chemistry: mixo-saline, fresh; pools form after winter rains over areas with hardpans; temperate or sub-polar hydromorphic rooted vegetation.	--
Valley oak woodland	Holland Classification	--	--	--	Uplands, valley bottoms, gentle slopes, summit valleys; soils alluvial or residual; mixed broad-leaved evergreen-cold deciduous woodland; intermittent or open canopy cover, grassy ground layer.	--

^aFT Listed as threatened under the federal Endangered Species Act.
 SE Listed as endangered under the California Endangered Species Act.
 ST Listed as threatened under the California Endangered Species Act.

^bCNPS listing status:
 1B Plants rare, threatened, or endangered in California and elsewhere.
 2 Plants rare, threatened, or endangered in California, but more common elsewhere.

Appendix F
Potential off-site mitigation lands

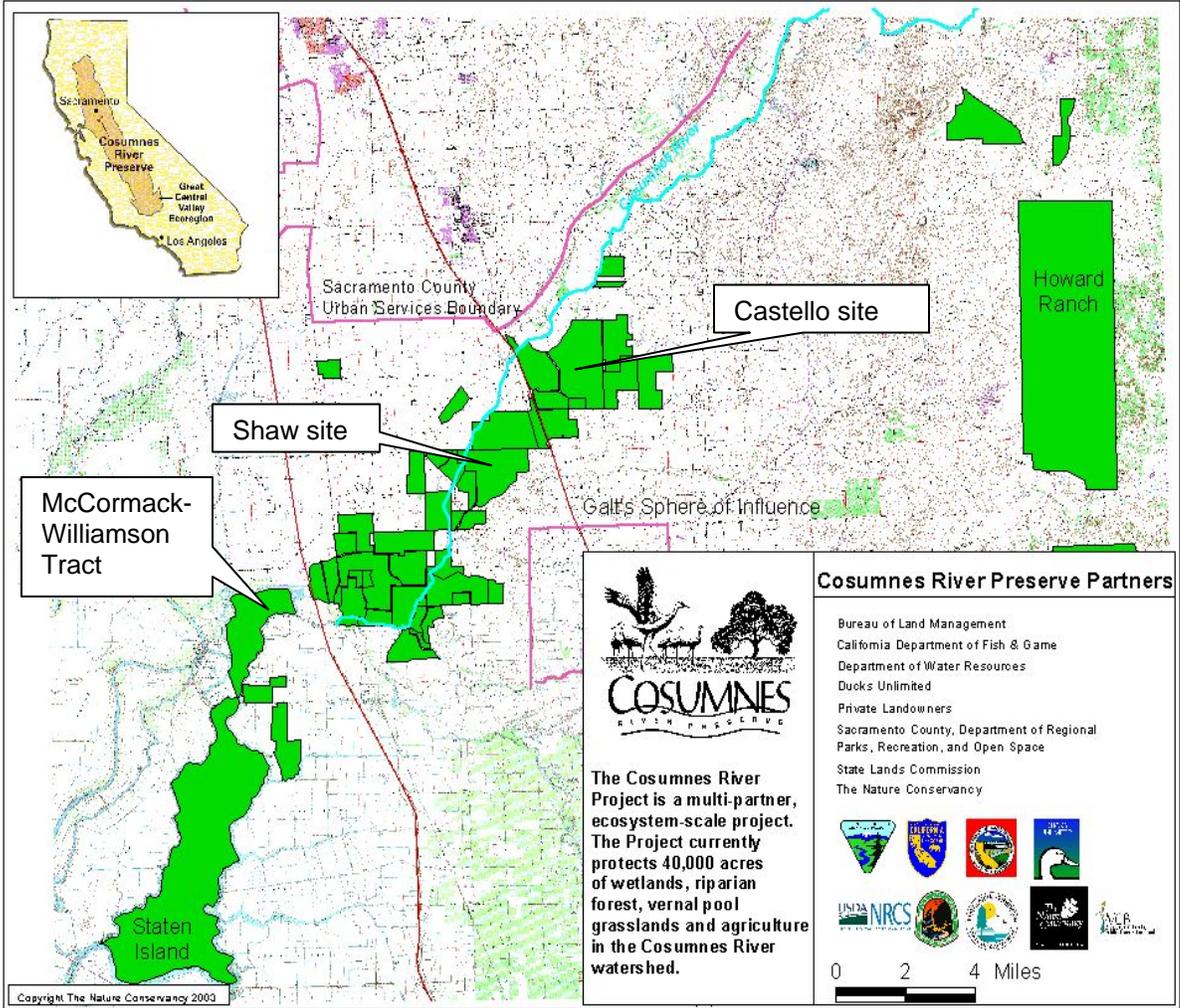


Figure F-1. Potential off-site elderberry riparian restoration sites (Shaw and Castello properties).



Potential elderberry restoration site on Shaw property, adjacent to valley oak riparian forest.



Large elderberry shrub in foreground, potential restoration site in background approximately 300 feet away.



Potential VELB exit holes



Santa Barbara sedge and wild rose understory in valley oak forest

Figure F-2. Potential elderberry restoration site on the Shaw property, Cosumnes River Preserve. March 2007.



Figure F-3. Potential elderberry restoration site on the Castello property adjacent to an existing valley oak riparian forest, Cosumnes River Preserve. March 2007.