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The purpose of this preliminary draft biological assessment is to review the proposed Peyton Slough re-alignment to evaluate to what extent the proposed action may affect species listed as threatened, endangered, or proposed for listing under the federal Endangered Species Act. This preliminary draft biological assessment (BA) is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (16 U.S.C. 1536 (c)).

Rhodia Inc. (Rhodia) operates a sulfuric acid regeneration facility located at 100 Mococo Road in Martinez, California (herein referred to as the "Property"). The Property is comprised of approximately 114 acres immediately east of Interstate 680 on the south shore of the Carquinez Strait, adjacent and the east of the southern end of the Benicia Bridge (Figure 1).

The Property has been in continuous industrial use since the early 1900s and was originally owned by the Mountain Copper Company. Mountain Copper Company operated a copper ore smelter until 1966. Waste by-products from the smelting operation, including cinders and slag, were disposed in piles on the Property. Stauffer Chemical Company purchased the Property from the Mountain Copper Company in 1968 and constructed a sulfuric acid regeneration and manufacturing facility, which has been in operation since 1970. Rhodia currently owns and operates the sulfuric acid regeneration and manufacturing facility.

Peyton Slough (the "existing Slough" shown in Figure 2), particularly the northern segment, has been the subject of several environmental investigations to evaluate metals concentrations in soil and sediment. Copper and zinc have been identified as the primary chemicals of concern (COCs), and are used as indicators of metals contamination at the Site. Based on the results of previous studies conducted in and near the existing Slough, the Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) Bay Protection Toxic Cleanup Program has identified the Slough as one of the "toxic hot spots" within the San Francisco Bay Area (RWQCB, 1997). Subsequently, the RWQCB issued Cleanup Order No. 01-094, under Section 13304 of the California Water Code, that requires Rhodia adopt cleanup requirements for sediment contamination in and adjacent to Peyton Slough (Appendix A).

Rhodia proposes to re-align a segment of the existing Slough in the vicinity of the Property. The re-aligned portion of Peyton Slough (the "Site") is located between Waterfront Road and the Carquinez Strait (the Strait), as shown on Figures 1 and 3. Approximately 5,500 feet of the north-flowing Slough would be re-aligned. The Site has been subdivided into the "north Slough" and the "south Slough," which are separated by a tide gate located approximately 2,350 feet south of the Strait. The central portion of the existing Slough, in the tide gate area, lies within the Rhodia property (Figure 3). The State of California owns both the northern and southern portions of the existing Slough. Property owned by Shore Terminals, LLC borders the east side of the Site.

Additional factors influencing the Peyton Slough marsh system include the multi-agency McNabney Marsh (Shell Marsh) Restoration Project led by the Contra Costa Mosquito and Vector Control District (CCMVCD) and water discharged from the Mt. View Sanitary District (MVSD) Sewage Treatment Plant, shown on Figure 2. A goal of the McNabney Marsh Restoration Project is to return the existing Slough to its original function of providing tidal exchange between the Strait and the McNabney Marsh, located to the south of Waterfront Road. The first phase of the Marsh Restoration Project was the construction of a new tide gate, which is designed to allow the southern flow of salt water. However, the tide gate currently operates to

prevent tidal flow into the McNabney Marsh. The MVSD owns approximately 65 acres of the western end of the McNabney Marsh, located to the south of the Property, south of Waterfront Road and north of I-680. Currently, the facility discharges up to approximately 2 million gallons per day of treated sanitary wastewater effluent into the McNabney Marsh. The remainder of the McNabney Marsh is owned by the East Bay Regional Park District.

1.1 PROPOSED ACTION

The proposed remedial action plan described below is based on the preferred alternative identified in the "Addendum to the Feasibility Study and Conceptual Remedial Action Plan, Rhodia Inc., Peyton Slough, Martinez, California" (URS, 2002a) and the "Remedial Design Report, Rhodia Inc., Peyton Slough, Martinez, California" (URS, 2002b). In summary, the project will consist of two phases: (1) excavating and dredging a new alignment east of the existing Peyton Slough, then rerouting the tidal exchange between the Carquinez Strait and McNabney Marsh via the new alignment, and (2) dewatering, filling, then capping the existing Peyton Slough. Refer to Figure 4 for an illustration of the proposed action. Capping is the placement of an engineered barrier to isolate deeper sediments containing COCs from aquatic and other habitat. A layer of soil will be placed above the cap within which natural habitat may be re-established.

With the preferred alternative, a new, full slough re-alignment will begin at a location approximately 200 feet north of the railroad crossing at Waterfront Road and continue to the Strait. The new alignment will run parallel to and to the east of the existing Slough, breaching the levee that separates the northern and southern sections of the Site. The relocation of the south Slough alignment may require the purchase of land from the adjacent property owner and a land lease from California State Lands Commission is required for the portion of the new alignment north of the levee.

The following major elements or activities are included in the implementation plan:

- Site preparation and tide gate installation
- Removal of AOC materials
- Excavation in the new alignment
- Transition to new alignment
- Dewatering excavated materials
- Capping the existing Slough

The action area will refer to those areas where project work will occur (i.e., Peyton Slough, the tide gate, Peyton Slough No. 1, the re-alignment route, the area of dredging and barge work in the Carquinez Strait, the footprint of construction work on Zinc Hill, the levee, access roads, and the staging area). The affected environment refers to the action area and associated adjacent lands that may be affected by the proposed project (i.e., the action area, wetland and upland habitat adjacent to the action area, the Carquinez Strait adjacent to and downstream of the action area, and the McNabney Marsh). Refer to section 1.2 and all of section 2 for further details regarding specific areas.

1.1.1 Salt Marsh Harvest Mouse Relocation

Prior to initiation of any construction activities, salt marsh harvest mice (*Reithrodontomys raviventris*) (SMHM) will be removed and relocated from the action area. Two methods are being proposed for removal of SMHM from the Site: 1) live-trapping and relocation of mice, or 2) temporary removal of vegetation from the action area prior to initiation of construction (and subsequent revegetation following completion of project activities).

Under option No. 1, SMHM will be live-trapped out of the action area both north and south of the levee immediately prior to construction activities. Live-trapping will be performed by FWS-authorized biologists following FWS-approved protocols. Prior to initiation of live-trapping, a wildlife biologist will conduct a reconnaissance of the Site to establish the trap lines. Trap lines will be established in suitable wetland and upland habitats throughout the designated action area and habitat immediately surrounding the action area.

Each trap line or grid will consist of Sherman live-traps (or other similar live-traps) placed at 20- to 30-foot intervals along each trap line and each trap will be flagged and numbered. Traps will be provisioned with polyester fiber bedding for insulation and a mixture of rolled oats, wild bird seed, and walnut meats as bait.

Traps will be checked within approximately one hour after sunrise each day. Traps will be closed following inspection so that no animals can enter the traps during the day. Traps will be re-opened in the evening beginning approximately one-half hour before sunset.

SMHM will be restricted from re-entering the action area by placing exclusion fencing around the action area. Exclusion fencing will remain until project work is completed. Personnel will be instructed to avoid working outside the fenced areas.

Option No. 2 would also be appropriate mitigation for impacts to SMHM and would avoid disturbance to mice from being trapped and handled. SMHM will be excluded from the action area by removal of their associated habitat.

Prior to construction or any equipment access on the Site, all vegetation within the action area will be removed by hand. Upon removal of vegetation from the action area, it is anticipated that SMHM will relocate to appropriate habitat outside the Site. Exclusion fencing will then be established around the cleared areas. Exclusion fencing will remain until project work is completed. Personnel will be instructed to avoid working outside the fenced areas. After construction work is completed and the site has been cleared of all construction equipment, all the appropriate areas will be revegetated as part of the wetland mitigation plan (URS, 2002c). SMHM will recolonize the action area upon replanting of the vegetation after construction activity has ended.

1.1.2 Site Clearing

An approximate 7-acre staging area and drying pad will be constructed on the upland area within the Rhodia property to the west of the existing Slough, and will be used for equipment staging, access, and staging of excavated sediments and soils (Figure 4). An additional upland area of approximately 2 acres located in the area west of the northern section of the existing Slough may be available for staging and stockpiling soil. This 2-acre area is owned by the California State

Lands Commission, and will require clearing of upland brush, grading and potentially filling to provide a stable pad on which to stage equipment and materials.

1.1.3 Installation of Temporary Slough Crossings

Temporary crossings are necessary to carry the equipment across the existing Slough to access the eastern portions of the marsh. The alternatives include, but are not limited to, either trestle-supported bridges or large-diameter culvert crossings. Both types of crossings would allow for fish passage.

Temporary crossings and other temporary structures placed in the existing Slough will be removed at the appropriate time in order to complete the capping of the existing Slough.

1.1.4 Tide Gate Installation

A new tide gate structure will be constructed at the east end of the existing levee where it abuts Zinc Hill. The tide gate construction will require excavation over a 0.15 acre footprint. Materials to be excavated will include the existing levee material, bay mud, and weathered bedrock. The excavation on the west side of the structure will be supported by a internally braced sheetpile wall.

1.1.5 Temporary Roads

As shown on Figure 4, 30-foot wide temporary access roads will be constructed along the east and west side of the existing Slough for equipment access. The road design consists of a 2 to 4 foot layer of clean fill over geotextile fabric. The roads will be used to support heavy equipment in the marsh during construction of the new alignment, and will have turnouts for trucks every 500 feet, as practicable and feasible

The roads will be constructed by first removing and stockpiling the dredge spoil piles. As the dredge spoil piles are removed, the access roads will be contemporaneously placed. The temporary roads will be used to access the existing Slough for capping and will be removed upon completion of the project in order to create wetland habitat where the dredge spoil piles once existed and restore any other wetland habitat temporarily impacted by the temporary access roads.

A temporary roadway of similar design as described above, or a trestle, will be required in order to excavate the new alignment. The area that this roadway will be placed directly on the new alignment, and therefore, is not included as a temporary loss of wetlands or waters, but rather is included as a permanent loss of wetlands and creation of waters.

1.1.6 AOC Removal

AOC removal includes removal of dredge spoil piles from along both the east and west banks of the existing Slough, and removal of the soil in the "south spread" area. The south spread area is the area south of the levee and between the existing Slough and the proposed new alignment where dredge spoil piles have spread due to erosion. Excavation activities for AOC removal will

be conducted prior to any other excavation activities, and will be implemented using conventional land-based equipment.

Soil and sediments from the existing Slough and the dredge spoil piles are classified as Process Waste from the previous copper smelting operation and are exempt from the classification as a hazardous waste, under federal and state regulations per (40 CFR 261.4(b)(7)(i) and Title 22 66261.4(b)(5)(A)(1), and will be classified as Class B mining waste. The material may be disposed of at a Class I or Class II landfill.

1.1.7 Excavation in the New Alignment

Figure 4 shows the proposed new alignment location. Because the new alignment excavation will be conducted after removal of AOCs, the newly excavated material will be clean.

The new alignment will be excavated to a nominal elevation of -3.5 NGVD from the Carquinez Strait to approximately 200 feet north of Waterfront Road. The design top width of the new channel ranges nominally from 31 to 52 feet, with sidewall slopes of 2H:1V, except in the northern extreme where the sidewall slopes will be 4H:1V due to soft soil. The northern most 400 to 800 feet (in the mouth) of the new alignment will be excavated by widening the existing unnamed slough (Peyton Slough No. 1) located to the east of the existing Slough.

The new alignment will be excavated without introducing flow from either upstream or the Strait, and by leaving a portion of the alignment unexcavated (near the mouth and at the southern end where it connects to the existing Slough) until the site is ready for transition.

Prior to excavation of the new alignment, the following activities will be conducted:

- Placement of cofferdams in tributaries to the existing Slough
- Placement of cutoff walls across paleo-channels that intersect new alignment

1.1.8 Fish Removal in the Existing Slough

Immediately following placement of the cofferdams, fish will be live-captured and removed from the existing Slough. Captured fish will be removed by FWS-approved biologists, identified, and relocated to habitat appropriate to their species and size. Fish capture, holding, and transport will be conducted under FWS-approved permits, protocols, and conditions by authorized biologists using approved equipment.

1.1.9 Transition from Existing Slough to New Alignment

The diversion of flow to the new alignment will require the use of a diversion dam to redirect the flows from the existing Slough into the newly excavated channel for conveyance of flows from upstream of the project area to the Carquinez Strait.

Dredging of the mouth of the new alignment excavation will be completed and the new alignment will be allowed to fill with water prior to completing the diversion. These activities will minimize the interruption of flows to the strait during the transition into the new alignment. In addition, the transition will be implemented during high tide to further reduce impacts of the diversion. Once the transition is completed, the diversion dam across the existing Slough will

remain in place and it will then be used as a cofferdam to facilitate dewatering and capping of the existing Slough.

1.1.10 Dredging of the Mouth of the New Alignment

Currently, the mouth of the new alignment (located in Peyton Slough No. 1) is approximately 25 to 30 feet wide and has a shallow bottom. A sand bar currently exists off the mouth of Peyton Slough No. 1 and will require deepening in order for the new alignment to function properly. Dredging activities are estimated to take two to three days. It will be scheduled to avoid the spawning season of the Sacramento splittail (*Pogonicthys macrolepidotus*), a federally-threatened fish species that has been found in Peyton Slough. The dredging will extend from approximately 225 feet off the mouth in the Strait and into the Peyton Slough No. 1 approximately 400 to 800 feet, or as far as necessary to open the new alignment (Figure 7). Approximately 800 CY of sediment will be removed from the Strait and 1,000 CY from the mouth in order to open the new alignment. The cofferdam placed at the north end of the northern temporary access road will be removed using a barge-mounted crane.

The mouth of the new alignment will be widened and deepened using a barge-based clamshell excavator working from the mouth. If required, a silt curtain or other method may be used to control total suspended sediment (TSS) concentrations during dredging activities. Sediment and soil dredged from the mouth will be placed in a working barge equipped with a barge-mounted crane. Free water will be continuously decanted from the sediments on the working barge. The working barge will transport the dredged material on to the mouth of the existing Slough, where it will be transferred by the barge-based crane into trucks on the temporary access road along the west bank of the existing Slough. The material will be stockpiled in the staging area for further dewatering.

1.1.11 Capping of Existing Slough

Once the flow has been transitioned to the new alignment, fish will be removed and relocated from the existing Slough. The channel will then be dewatered, and the vegetative layer will be removed in order to place the cap. The existing Slough will be capped, using land-based excavators working from the temporary access roads, to provide physical and chemical isolation of the deeper sediments containing copper and zinc from the aquatic and marsh environment.

1.2 SCHEDULE

Because of the complexity of this project, the need to minimize wetland impacts, the size of the AOC, and the sequencing required for quality assurance, this project requires a two-season construction period.

The following assumptions were used in developing this schedule:

- Wetland construction window is July 1 to December 1, based on breeding and spawning seasons of sensitive species.
- Permits must be received at least 5 weeks prior to start of wetland construction to allow for mitigation of sensitive species, and mobilization activities of the contractor.

- Work is sequenced to minimize the potential for cross-contamination between AOCs and the new alignment.
- Construction activities will be completed utilizing a six-day work-week, and 10-hour days in the summer and 8-hour days in the winter.
- The 7-acre staging area is sufficient to store all materials (imported and exported soil), equipment and supplies without delaying construction.
- Access from the Rhodia Property only.
- A suitable source of import bay mud and other imported materials are readily available.
- An operating slough must be functioning continuously throughout the execution of the remedial action. Therefore, the new alignment must be fully operational before the process of closing the existing Slough may begin. *(Note: A bypass pipe that would allow for closing the existing Slough and contemporaneously excavating the new alignment is a potential implementation option. However, early discussions with the RWQCB indicate that a Slough must be continuously in operation. Therefore, Rhodia has not evaluated this option.)*

1.3 ACTION AREA

The action area is located primarily within the reaches of the existing Peyton Slough bordered by Zinc Hill, Waterfront Road, the Rhodia Property and the Carquinez Strait (Figures 1, 2 and 4). In addition, the action area also consists of upland areas in and around Peyton Slough including a levee, portions of Rhodia's property, and an unpaved access road along the base of Zinc Hill.

The existing Slough was originally dredged and channelized in the early twentieth century as part of a mosquito abatement project commissioned by Contra Costa County to facilitate the drainage of Peyton Marsh (JRP, 1997). The existing Slough has since been dredged repeatedly in the past. Dredge spoils were placed along both banks of the Slough in linear piles of unknown thickness. Sections of the piles have been breached by high water flow and have spread into the surrounding marsh land, particularly south of the levee (the spread area). The naturally-occurring slough that used to meander through the marsh still exists in part, intersecting portions of the existing Slough.

A tide gate and levee, located approximately 2,350 feet south of Carquinez Strait, naturally divides the Site into two distinct areas; the north of the levee and south of the levee. The following sections describe the existing features of the action area, including: the north Slough, the tide gate area, the south Slough, Zinc Hill, Peyton Slough No. 1, staging area and Carquinez Strait (Figures 4 and 5).

For additional identification purposes, the marsh land in the Site is divided into three distinct subunits (Figure 2). The area north of the levee will be referred to as the North Peyton Marsh. The area south of the levee and west of the existing Slough is the Rhodia Marsh (formerly called the Rhône-Poulenc Marsh). The South Peyton Marsh (formerly called the Wickland Oil Marsh) is located to the south of the levee and east of the existing Slough. These subunits, along with

the McNabney Marsh and the MVSD marsh property, will be referred to as the "Peyton Slough marsh system."

1.3.1 Peyton Slough North of the Levee

The north Slough is approximately 2,350 feet long and generally 30 to 40 feet wide. The tide fluctuates approximately 6 feet from mean high to mean low tide. At low tide, minimum water depth is approximately 2 feet. Most of the existing Slough embankment slopes range from vertical (due to sloughing) to 3:1. Approximately four tributary sloughs intersect the eastern embankment of the Slough.

Three mosquito abatement ditches are located near the tide gate. The ditches branch off from a tributary of the existing Slough near the tide gates. The northernmost and the southernmost ditches are approximately 6 feet wide where the ditches intersect the temporary bridges and trails. The center ditch is approximately 15 feet wide where it intersects that trail.

The adjacent wetlands are situated on unconsolidated bay mud. Therefore, the action area is virtually inaccessible by vehicle. Only a small portion is accessible by vehicle near the Rhodia settling pond on the eastern side of the tide gates. There are no other access routes to the areas of concern (AOCs) on the eastern embankment, except for narrow channels that can be accessed from a boat in the north Slough.

1.3.2 Tide Gate Area

The approximately 70-feet long by 40-feet wide concrete tide gate structure was reconstructed in 1998. Tide gate structures and a levee have been in place since the early 1900's (JRP, 1997). The embankments in the immediate vicinity of the tide gates are up to 9 feet National Geodetic Vertical Datum (NGVD) and are constructed with rip rap of up to 2 to 3 feet in diameter. The general elevation of the Site differs greatly between the northern side and southern side of the levee.

Vehicle access in the vicinity of the tide gate is from Rhodia's property only. Access to the eastern bank is limited to a roadway across the tide gate. Portions of the marsh immediately north and south of the tide gate are relatively inaccessible to vehicles because these areas have saturated soils composed of fine sediment.

1.3.3 Peyton Slough South of Levee

The south Slough is approximately 3,150 feet long, and averages approximately 40 feet wide. Under the current tide gate function, the influence of tides in the south Slough is minor. The water level varies by approximately ½ foot. The width ranges from less than 10 feet wide at the southern end near the culvert under the railroad embankment to generally approximately 60 feet near the tide gate.

Oxbows from the formerly meandering slough intersect both the east and west banks of the slough in four locations. The slopes of Zinc Hill lie within 150 feet of the east bank.

Currently there is no access by vehicles and equipment except in the vicinity of the tide gate as discussed above. An overgrown vehicle track exists along the base of Zinc Hill, on Shore Terminal's property.

1.3.4 Carquinez Strait

Peyton Slough enters the Carquinez Strait 1,400 feet to the east of the Benicia-Martinez Bridge. Drainage from the Sacramento and San Joaquin rivers flows through the Strait into the San Pablo Bay, the San Francisco Bay, and ultimately into the Pacific Ocean. The shoreline of the Strait at the existing Slough and Peyton Slough No. 1 is a shallow water environment. The substrate in this area is comprised primarily of sand. A sandbar is located off the mouth of Peyton Slough No. 1.

1.3.5 Peyton Slough Number 1

The mouth of Peyton Slough No. 1 is located approximately 600 feet to the east of the mouth of the existing Slough. Peyton Slough No. 1 is approximately 2,000 feet long in its entirety. The mouth of Peyton Slough No. 1, where it enters into the Carquinez Strait, is approximately 25 to 30 feet wide and has a shallow bottom. It is less than 10 feet wide at the location where the new alignment will enter into the tributary channel. Within the action area, the east and west embankments are intersected by approximately four small tributaries.

1.3.6 Zinc Hill

Zinc Hill is a steep hill, rising approximately 200 feet above the marsh plain, located southeast of the tide gate. It contains grassland habitat that has a history of grazing, but is less ruderal than the some of the more disturbed uplands in the Site (Figure 5). Approximately 0. 15 acres of Zinc Hill will be impacted by the re-location of the tide gate structure and subsequent re-sloping of the hill.

1.3.7 Staging Area

Rhodia's property would provide adequate space for staging construction equipment, stockpiling excavated materials, and access to the Site. The unpaved access road on the southeastern edge of the Site along the base of Zinc Hill would also be used for access, primarily serving long-haul trucking traffic that may need to access the Site. This road would remain once construction activities are complete. A 7-acre staging area and drying pad will be constructed on the upland area within the Property to the west of the existing Slough (Figures 4 and 5). Currently the area is not in use. Part of this area had previously been used as an evaporation pond for groundwater pumped from dredge spoil areas on the Property. Due to contamination of heavy metals, the RWQCB required the evaporation ponds to be closed under the Toxic Pits Cleanup Act of 1984. Rhodia removed contaminated sludges and liquids, reconstructed the area with clean fill, and closed the pond in November 1995 (Rhône-Poulenc, 1995).

A settling pond, three retention basins, and several ponded depressions are located within the Site (Figure 5). The settling pond is located near the tide gate (Figure 5). Three unvegetated

retention basins that are part of Rhodia's stormwater management or water treatment operations are located west of the existing Slough (Figure 5).

The affected environment includes Peyton Slough, Peyton Slough No. 1, tidal wetland, seasonal wetland, the Carquinez Strait, mosquito abatement ditches, retention basins, ponded depressions, disturbed unvegetated areas, unpaved roads, disturbed non-native grassland, and grasslands at Zinc Hill (Figure 5). Appendix B lists plant species observed in the Site during rare plant surveys in November 2001 and wetland delineation site visits in January 2002.

Two types of wetlands are located within the action area: tidal wetlands in the North Peyton Marsh and seasonal wetlands (including the ponded depressions) in the Rhodia Marsh, South Peyton Marsh, and staging area. Seasonal wetlands south of the levee were historically tidally influenced; however, their hydrology has been altered by installation and operation of the tide gates.

2.1 PEYTON SLOUGH NORTH OF THE LEVEE

Bulrush (*Scirpus acutus*) and narrow-leaved cattail (*Typha angustifolia*) make up the dominant vegetation that forms a relatively narrow band immediately adjacent to the top of the banks of the north Slough and other tributary channels and sloughs in the Site. The tidal wetland in the North Peyton Marsh varies somewhat in species composition and dominance from area to area, and includes the following dominant species: narrow-leaved cattail, alkali bulrush (*Scirpus robustus*), three-square (*Scirpus americanus*), bulrush, pickleweed (*Salicornia virginica*), common reed (*Phragmites australis*), peppergrass (*Lepidium latifolium*), western goldenrod (*Euthamia occidentalis*), saltgrass (*Distichlis spicata*) and saltmarsh dodder (*Cuscusta salina* var. *major*). The dominant vegetation along the shoreline of the Strait in the Site is bulrush and common reed. Other species that occur in the tidal wetland near the north Slough also occur along the shoreline. The channel becomes inundated due to the low embankments, and the high tide line extends as far as 20 feet beyond the margins of the channel.

Narrow-leaved cattail and bulrush grow in a narrow band approximately 1-4 feet wide along the mosquito abatement ditches. Western goldenrod, alkali bulrush, and jaumea (*Jaumea carnosa*) grow along the banks of the ditches. In some areas, wetland vegetation is sparse and upland vegetation such as coyote brush (*Baccharis pilularis consanguinea*) and peppergrass grows close to the banks.

2.2 TIDE GATE AREA

As currently operated, the tide gates allow fresh water to discharge from south Slough to north Slough. The gates prevent the inflow of water from the Strait to the south Slough. This gate structure was installed in 1998. Bay water has been restricted from flowing south through the tide gates and entering into the south Peyton Slough area and McNabney Marsh since the early 1900's (JRP, 1997)

2.3 PEYTON SLOUGH SOUTH OF THE LEVEE

Under the current tide gate function, the influence by tides in the south Slough is minor. The former channels are low, marshy areas. A brackish-water seasonal marsh in the Rhodia Marsh lies adjacent to the west bank of the south Slough to the south of the property fence line. Slightly

higher areas adjacent to and including Zinc Hill in the Shore Terminal Marsh are grazed by cattle.

The dominant vegetation that forms a relatively narrow band immediately adjacent to the top of the banks consists of California bulrush (*Scirpus californicus*), narrow-leaved cattail and three-square. Other subdominant species that occur along the south Slough include common reed, Baltic rush (*Juncus balticus*), and tall flatsedge (*Cyperus eragrostis*). California bulrush and narrow-leaved cattail are the dominant species along the banks of the tributaries of the south Slough. The seasonal wetland in the Site that extends east and west of the south Slough varies somewhat in species composition and dominance from area to area, and includes the following dominant species: saltgrass, fat hen (*Atriplex triangularis*), Baltic rush, pickleweed, and alkali heath (*Frankenia salina*).

2.4 CARQUINEZ STRAIT

Water flow from the Sacramento and San Joaquin rivers through the Strait varies seasonally with rain runoff during the winter and snowmelt runoff in the late spring and early summer. The volume and velocity of the flow fluctuates in response to changes in runoff.

Fluctuations in river flows result in cyclical trends in salinity measurements within the Strait. Within a given year, the salinity is usually lowest in the spring during the period of greatest freshwater outflow, and highest in the late summer and early fall. The magnitude and duration of freshwater outflow determines the locations and severity of the salinity gradient as it moves downstream with increased flow and upstream as outflows diminish.

During a normal water runoff year, the mixing zone, or the interface where freshwater and saltwater mix, is located in the Strait during April and moves upstream to approximately Chipps Island in eastern Suisun Bay in August. In wet years, the mixing zone may extend west into the San Pablo Bay in April, and in dry years the zone may extend eastward upstream of Suisun Bay (Morton, 1995). Therefore, the existing Slough, as it enters the Strait may enter into either brackish water or saltwater, depending upon the season and the water runoff of that year.

2.5 PEYTON SLOUGH NUMBER 1

The tidal wetland in the Site north of the tide gate along the new alignment is relatively homogeneous and lacks plant species diversity. Data on species occurrence and cover along the new alignment was collected within a 10-foot radius around some of the survey stations to characterize vegetation that will be impacted by the construction of the new alignment. Most of the stations in this northern area are predominantly vegetated by three-square. Several survey locations that are adjacent to a channel are dominated by narrow-leaved cattail or bulrush. Other species observed in a 10-foot radius around the stations were pickleweed, peppergrass, Baltic rush, jaumea, western goldenrod, saltmarsh dodder, and saltgrass.

The seasonal wetland in the Site along the new alignment south of the tide gate is relatively homogeneous and lacks plant diversity. Species composition and dominance in this southern section is different from the tidal wetlands north of the tide gate, as the tide gate prevents tidal inflows into the southern marsh. Most of the survey stations along the new alignment in the southern area are dominated by saltgrass and several stations are dominated by fat hen. Other

species observed in a 10-foot radius around the stations were pickleweed, alkali heath, prickly lettuce (*Lactuca serriola*), Italian ryegrass (*Lolium multiflorum*), rush (*Juncus* sp.), narrow-leaved cattail, and alkali bulrush.

2.6 UPLAND AREAS

Uplands in the Site consist of dredge piles along Peyton Slough, ruderal grasslands, unpaved roads, retention basins, ponded depressions, disturbed non-native grasslands, and grasslands on Zinc Hill.

2.6.1 Dredge Spoil Piles

The upland dredge spoil piles are located adjacent to Peyton Slough at a higher elevation than the marsh plain (Figure 5). These piles north of the tide gate are dominated by dense stands of native coyote brush, with a few native toyon (*Heteromeles arbutifolia*). Native marsh baccharis (*Baccharis douglasii*) occurs at the ecotone between the piles and the marsh plain. The tops of some of the piles are dominated by grasses and include ruderal herbs. Most of the dredge spoil piles south of the tide gate are primarily unvegetated, but some of them are vegetated with grasses and ruderal herbs.

2.6.2 Staging Area

The staging and stockpiling areas in the Site would be located on a large upland area west of the existing Slough adjacent to a plastic-lined stormwater retention pond. The staging and stockpile areas consist of unpaved roads, several bare areas with gravel, and disturbed grasslands that are dominated by non-native grasses and include a few areas with fennel (*Foeniculum vulgare*) and coyote brush.

Areas shown in Figure 5 as ponded depressions are areas where ponding was observed on January 31, 2002, but that are not maintained as stormwater collection or water treatment basins. All of these ponded depressions are unvegetated, but if they are left undisturbed they could develop seasonal wetland vegetation.

The largest ponded depression in the Site is located in the staging area, on the filled and capped area that was formerly an evaporation pond (Figure 5). On January 31, 2002, approximately half of this area was ponded. This area is not maintained for the purpose of collecting stormwater, but it currently retains water because it subsided after it was capped.

2.6.3 Zinc Hill

Industrial use of the surrounding area and summer grazing within the marsh located at the toe of Zinc Hill (in the South Peyton Marsh) has altered the native grassland habitat on the hill. However, some native species do remain. The hill is dominated by grasses and contains some native vegetation such as soap plant (*Chlorogalum pomeridianum* var. *pomeridianum*) and naked buckwheat (*Eriogonum nudum*), which were observed on the western slope of Zinc Hill near the levee (URS 2002c).

2.7 McNABNEY MARSH

The McNabney Marsh complex is located south of Waterfront Road and northeast of I-680. It is bordered on the east and southeast by a steep natural hill that is predominantly grasslands. Shell Oil Spill Litigation Settlement Trustees Committee purchased the land for long-term restoration and enhancement of the deteriorated wetlands habitat following an oil spill in the area in 1988. The hydrology of the marsh is controlled primarily by the tide gates located on the Rhodia property. As the tide gates currently do not allow bay water to flow from the Carquinez Strait south into the marsh complex, the historic tidal influence is absent from the marsh hydrology. Primary water influx into the marsh is from the MVSD facility and from seasonal rainwater.

The marsh is dominated by fresh to brackish marsh species surrounding the ponded areas and halophytes in bands at slightly higher elevations (Hanson, 2001). Salt marsh species such as salt grass and pickleweed are remnants in areas where soil salts have accumulated. Cattails, an invasive native plant in California, have dramatically increased in the marsh since earlier surveys in 1993 and 1994 (Hanson, 2001). Hanson (2001) attributes the increase in cattails to lower elevations becoming submerged with water, creating a large pond.

The proposed action may have potential to affect plant and animal species which are temporarily or permanently located in or near the Site. Some animal species may use the Peyton Slough marsh system for temporary activities such as resting, foraging, roosting, and breeding. Other animal and all plant species, which are less mobile and more highly dependent upon the specific habitats found in the marsh, may be permanent residents in or near the Site. The following discussion is intended to identify those plant and animal species of federal and state concern which have potential to occur in or near the Site. Additional information will be presented based upon local records of siting for the these species within the region surrounding the Site (based upon a California Natural Diversity Data Base (CNDDB) search of the Vine Hill USGS 7.5 min Quadrangle, November 5, 2001 and January 2, 2002); analysis of documented habitat requirements for these species; literature review of species accounts and surveys in and around the Site; and field surveys conducted for the proposed action.

Consultation with the U.S. Fish and Wildlife Service (FWS) involved a written request to Harry Mossman of the FWS for a species list for plant and animal species which may have potential to occur in the Vine Hill USGS 7.5 min Quadrangle. A letter of response from the FWS, dated January 9, 2002, was received which listed, "Endangered and Threatened Species that May Occur in or be Affected by Projects in the Vine Hill Quad." A total of 71 animal and three plant species have been identified as species which are federally or state listed as endangered, threatened, proposed for delisting, proposed for listing, candidate species, or species of concern potentially occurring within the Site (see Appendix C). Of those species, 21 animal and one plant species are federally listed as endangered or threatened, proposed for delisting, proposed for listing, or candidates. The list also identifies critical habitat for 4 animal species which are federally listed as endangered or threatened, or candidates.

Although the principal purpose of this BA is to address those species which are federally listed as threatened or endangered, plants and animals proposed for listing, proposed for delisting, and candidates for listing will also be included in the discussion. These species will be included, in accordance with FWS policy, as they may become federally listed as endangered or threatened before the end of the proposed action.

Table 1 lists those federally-listed species identified by the FWS as having potential to be affected by the proposed action. Species accounts have been summarized by federal, state, and California Native Plant Society (CNPS) status; habitat requirements; and potential to occur in or near the action area. Based upon the species review process listed above, it has been the finding of the U.S. Army Corps of Engineers (USACE) that the proposed action will have potential to affect 11 animal and one plant species listed as either threatened or endangered, proposed for delisting, or candidates for listing.

3.1 SPECIES UNLIKELY TO OCCUR IN OR NEAR THE PROJECT SITE

The following species, although indicated as having potential to occur within the Vine Hill USGS 7.5 min. Quadrangle area, are not expected to occur in and around the action area. There are no local records of siting for the these species within the area surrounding the Site (CNDDB, 2002). Literature review of surveys in and around the Site do not identify current or historical presence of these species. In some cases, known literature and survey information may not be available for a species of interest. In addition, field surveys conducted for the proposed action

did not identify presence of these species. Finally, for all species listed, analysis of documented habitat requirements for these species indicates that there is no potential habitat in and around the Site.

3.1.1 Invertebrates

- *Branchinecta lynchi*
  vernal pool fairy shrimp
- *Desmocerus californicus dimorphus*
  valley elderberry longhorn beetle
- *Elaphrus viridis*
  delta green ground beetle
- *Syncaris pacifica*
  California freshwater shrimp

3.1.2 Amphibians

- *Rana aurora draytonii*
  California red-legged frog

3.1.3 Reptiles

- *Masticophis lateralis euryxanthus*
  Alameda whipsnake
- *Thamnophis gigas*
  giant garter snake

3.1.4 Birds

- *Branta canadensis leucopareia*
  Aleutian Canada goose
- *Charadrius montanus*
  mountain plover

3.1.5 Mammals

- *Neotoma fuscipes riparia*
  riparian (San Joaquin Valley) woodrat

3.2 FEDERALLY-LISTED ANIMAL SPECIES WITH POTENTIAL TO OCCUR IN OR NEAR THE PROJECT SITE

It has been the finding of the USACE that the proposed action will have potential to affect 11 animal and one plant species listed as either threatened, endangered, proposed for delisting, or candidate status. The following species have been determined to have potential to occur in or near the Site based upon review of available data. Information reviewed includes a CNDDB search for local records of sitings for the these species within the region surrounding the Site (CNDDB, 2001 and 2002) (Figure 6); analysis of documented habitat requirements for these

species; literature review of surveys in and around the Site; and field surveys conducted for the proposed remedial action. Documented species occurrences and habitat component requirements found in or near the Site will be presented for each species. Also discussed are life history factors that may potentially be directly or indirectly affected by the proposed action.

3.2.1 Callippe Silverspot Butterly

The Callippe silverspot butterfly (*Speyeria callippe callippe*) is designated as a federally endangered species. It is found on open hillsides supporting wild pansy (*Viola pedunculata*), its larval host plant. On the San Francisco peninsula, this butterfly is now only known from San Bruno Mountain (approximately 10 miles south of San Francisco). In the East Bay, it was known from Richmond in the north to the Castro Valley in Alameda County. The only remaining population of this butterfly in Alameda County occurs in an undisclosed city park (UCB, 2002).

There are no local records for the Callippe silverspot butterfly occurring in or near the Site (CNDDB, 2002). Urbanization, grazing, and agricultural activities surrounding the site have significantly altered much of the habitat which potentially supports this species' host plant. Non-native grassland is not likely to support this butterfly. There may be potential habitat present near the Site, located on the Zinc Hill, although the disturbed and grazed vegetation of the hill is unlikely to support the wild pansy (Morton, 1995). A survey was conducted in and around the Zinc Hill area in late June and early July 1989 and 1990 and no Callippe silverspot butterflies were identified (Morton, 1995). Based upon known distribution and habitat requirements, it is determined to be of low potential that the species would occur in or near the Site.

3.2.2 Delta Smelt

The delta smelt (*Hyposmesus transpacificus*) is designated as a federally threatened species and a state threatened species. It is endemic to Suisun Bay upstream of San Francisco Bay through the Delta Estuary in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties, California. It is a euryhaline species, but for a large part of its life span it is associated with the freshwater edge of the mixing zone (saltwater-freshwater interface). In the San Francisco Bay area, the mixing zone has been estimated, during a normal water runoff year, to be in the Strait during April and to move upstream to approximately Chipps Island in eastern Suisun Bay in August. During spawning activities, the smelt prefers freshwater habitats. Delta smelt spawn from December to June in side channels and sloughs in the middle reaches of the Delta. Spawning has been documented in the lower Sacramento and San Joaquin rivers and the Georgiana Slough, and in sloughs of the Suisun Marsh. A significant portion of spawning appears to occur in the northern and western Delta (Goals Project, 2000). Adhesive, demersal eggs attach on submerged and inshore plants, primarily in sandy and hard-bottom substrates (Wang, 1986). Newly hatched larvae drift downstream to the freshwater/saltwater interface in nearshore and channel areas. Downstream distribution of adult and juvenile delta smelt appears to be generally limited to western Suisun Bay, although populations do occur in San Pablo Bay and the Napa River (Goals Project, 2000). The delta smelt is generally a pelagic species, filter feeding within the open waters of the San Francisco Estuary system (Wang, 1986). Breeding habitat for the delta smelt,

designated as federally threatened critical habitat, does not occur within the Site, as delta smelt spawn in freshwater habitats relative to the salinity of the existing Slough.

Delta smelt were not captured during surveys conducted within the action area of the existing Slough between May 1986 and April 1987 (Hagar & Demgen, 1987). Fish sampling of the Peyton Slough in the McNabney Marsh area, located south of Waterfront Road, did not result in captures of delta smelt during the three-year sampling period from the fall of 1998 through the summer of 2001 (McGinnis & Koehler, 2001). However, the McNabney Marsh segment of Peyton Slough must be accessed through several flow restrictions. This segment of the Slough is initially entered from the Strait by passing through the tide gates located in the Rhodia property. Currently, freshwater from the McNabney Marsh flows north through the gates. Southward flow of bay water is restricted from passing through the gates except during minimal episodic flushes of debris from the tidal gate flaps (Malamud-Roam, 2002, pers. comm.). Further upstream, the Slough channel is constricted at the southern property border by a culvert which directs the water under the railroad embankment and Waterfront Road, and into the McNabney Marsh.

Based upon documented habitat requirements, there is potential foraging and refuge habitat for adults and juveniles within the Site. Therefore, the species may occur in the existing Slough, although it has not been observed to date.

3.2.3 Steelhead

The steelhead – Central Valley, California Environmentally Significant Unit (ESU), (*Oncorhynchus mykiss*) is designated as a federally threatened species. Critical habitat for Central Valley steelhead is designated as federally threatened. Because steelhead are an anadromous species, the National Marine Fisheries Service (NMFS) takes jurisdiction over the protection and management of these species. Although the species is addressed here, the proposed project will undergo informal consultation with NMFS as part of the permit process.

NMFS policy stipulates that a salmon population (or group of populations) will be considered "distinct" for purposes of the ESA if it represents an ESU of the biological species. An ESU is defined as a population that 1) is substantially reproductively isolated from conspecific populations and 2) represents an important component of the evolutionary legacy of the species (Meyers *et al*, 1998).

One component of reproductive isolation between species is the ecoregion. Ecoregions are based on biotic and environmental factors such as climate, physiography, water, soils, hydrology, and potential natural communities, and natural processes for cycling plant biomass and nutrients (e.g. succession, productivity, fire regimes). The Central Valley ecoregion runs NW to SE for 430 miles in central California, paralleling the Sierra Nevada Range to the east and the coastal ranges to the west (averaging 75 miles apart), and stopping abruptly at the Tehachapi Range in the south. The Sacramento and San Joaquin rivers flow from opposite ends and join around the middle of the valley to form the extensive delta system that flows into San Francisco Bay. Desert grasslands occur only in the southern end of the valley because of increasing aridity. The valley is ringed by oak woodlands and chaparral of the California Interior Chaparral and Woodland ecoregion.

Salmon ESU's are also differentiated by temporal "runs", or modes in the migration period from the ocean to freshwater. Runs are identified based upon when adults enter freshwater to begin their spawning migration. Seasonal run also differ in the species' maturation at initiation of migration, thermal and hydrologic regimes of spawning sites, and in the time of spawning.

Steelhead spend most of their adult life in the open ocean. The Central Valley steelhead ESU migrate upstream through the Strait from the ocean between August and May to spawn in freshwater streams. Spawning occurs between December and April, with most spawning activity occurring between January and March. Steelhead remain in freshwater for one to four years before they out-migrate through the Strait into the open ocean during spring and early summer (Goals Project, 2000). There are no local records for the Central Valley ESU steelhead occurring in the Site (CNDDB, 2002). Steelhead were not captured during surveys conducted within the action area of the existing Slough between May 1986 and April 1987 (Hagar & Demgen, 1987). Sampling of the Peyton Slough in the McNabney Marsh area, located south of Waterfront Road, did not result in captures of steelhead during the three-year sampling period from the fall of 1998 through the summer of 2001 (McGinnis & Koehler, 2001). Due to water flow restrictions as discussed above, this does not indicate that this species would not occur within the existing Slough north of Waterfront Road.

Steelhead have the potential to be migrating through the Strait between August through June. Although previous sampling has not captured this species in the existing Slough, there is a low potential that steelhead migrating through the Carquinez Strait may enter the existing Slough channel. Critical habitat for steelhead is located in the Site, as it is defined, in part, as, "all waters from Chipps Island westward to Carquinez Bridge" (CFR, 2000).

3.2.4 Chinook Salmon Winter-Run, Spring-Run and Fall/Late Fall-Run

Chinook salmon (*Oncorhynchus tshawystscha*) are found in freshwater streams and the open ocean. Because the Chinook salmon is an anadromous species, the National Marine Fisheries Service (NMFS) takes jurisdiction over the protection and management of the species. Although the species is addressed here, the proposed project will undergo informal consultation with NMFS as part of the permit process.

There are three distinct runs of Chinook salmon that are found in the Carquinez Strait at different times of the year. NMFS has defined each distinct run as an ESU. Each ESU travels between spawning grounds in the Sacramento and San Joaquin rivers and the ocean. The races are primarily differentiated by the timing of upstream migration. ESUs to be discussed below include: Sacramento River winter-run, Central Valley spring-run, and Central Valley fall/late fall-run.

The Sacramento River winter-run Chinook salmon is designated as a federally endangered and state endangered species. Critical habitat for the ESU is designated as federally endangered. Winter-run Chinook migrate upstream through the Strait from the Pacific Ocean from December through July to spawn in freshwater tributaries of the Sacramento River. Migration numbers peak in March. Spawning takes place from late April through early August with peaks in early June. Juveniles remain in the river for nearly a year before moving out to sea the following November through May (Goals Project, 2000).

The Central Valley spring-run Chinook salmon is designated as a federally threatened and state threatened species. Critical habitat for the ESU is designated as federally threatened. The spring-run historically outnumbered all other runs of Chinook salmon in the Sacramento-San Joaquin system. Adult spring-run Chinook traditionally migrate upstream through the Strait from the ocean from March to July to spawn in freshwater. Spawning takes place in late August through late October (Goals Project 2000). Spring-run smolts start heading out to sea between November and June.

The Central Valley fall/late fall-run Chinook is a candidate for designation as a federally threatened species and a state species of special concern. Critical habitat for the ESU is designated as federal candidate for listing as threatened. Fall-run Chinook migrate upstream from the ocean to the Sacramento and San Joaquin rivers from June through December, peaking in September through October. Fall-run Chinook spawn from late September through December. Juveniles remain in the river for nearly a year before moving out to sea the following March through July. The late fall-run Chinook salmon migrate upstream from the ocean to the Sacramento and San Joaquin rivers from October through April, with numbers peaking in December. Spawning occurs in January through April. Juveniles remain in the river for nearly a year before moving out to sea the following October through May. Therefore, fall/late fall-run Chinook salmon spawning runs can be expected to occur from June through April. Spawning activity can be expected to occur from September through April. Juvenile out-migration can be expected to occur between October through July (Goals Project, 2000).

A single Chinook salmon was captured in the action area of the existing Slough during sampling between May 1986 and April 1987 (Hagar & Demgen, 1987). Fish sampling of the Peyton Slough in the McNabney Marsh area, located south of Waterfront Road, resulted in captures of two Chinook salmon smolts during the three-year sampling period from the fall of 1998 through the summer of 2001. These two individuals are believed to have accidentally wandered into the existing Slough during their migration downstream through the Strait (McGinnis, 2001, pers. comm.). In each trapping occurrence, the fish were smolts, indicating that they were migrating downstream from rearing grounds towards the ocean. They were not adult Chinooks migrating upstream with the potential of spawning in the Peyton Slough. These captures are the only known records of Chinook salmon in the Peyton Slough.

Historic spawning activities are not expected to have occurred within the Peyton Slough marsh system because the tide gates (in place since the early to mid 1900's) have blocked access to potential spawning habitat (JRP, 1997). Potential salmonid spawning habitat does not exist in the McNabney Marsh, as there are no gravel beds for redd building. In addition, there is insufficient water flow and the dissolved oxygen levels in the water are extremely low, at times reaching anaerobic conditions (McGinnis & Koehler, 2001).

Based upon available information, there is potential that salmon migrating through the Carquinez Strait may enter the existing Slough, however, it is not expected that they would enter the existing Slough for spawning activities, as spawning occurs in upstream freshwater habitats.Chinook salmon have a potential to be migrating upstream through the Strait during the entire year. The species have a potential to be migrating downstream through the Strait from October through July. Critical habitat for Chinook salmon is located in the Site, as it is defined,

in part, as, "all waters from Chipps Island westward to Carquinez Bridge" (CFR, 1993 and 2000).

3.2.5 Sacramento Splittail

The Sacramento splittail is designated as a federally threatened species and a state species of special concern. Splittails are endemic to the Central Valley, where they were once widely distributed in lakes and rivers (Harlow, 1998). They can now be found in backwater sloughs of the Sacramento-San Joaquin Delta and Suisun Marsh. Adults migrate into freshwater from November through May prior to spawning (Harlow, 1998). Spawning occurs from January through July with a typical peak from February through June. Splittails spawn in freshwater on submerged vegetation in shallow, inundated floodplain habitats (Goals Project, 2000). Splittails are benthic foragers that feed extensively on opossum shrimp (*Neomysis mercedis*) (CDFG, 2001a). *Neomysis mercedis* is found throughout the Delta but is most abundant in the mixing zone. In addition, detrital material typically makes up a high percentage of the splittails' stomach contents. Splittail will also feed opportunistically on earthworms, clams, insect larvae, and other invertebrates.

Sacramento splittail have been captured in the Peyton Slough within the action area north of the tide gate between May 1986 and April 1987 (Hagar & Demgen, 1987). Fish sampling of the Peyton Slough in the McNabney Marsh area, located south of Waterfront road, did not result in captures of splittails during the three-year sampling period from the fall of 1998 through the summer of 2001 (McGinnis & Koehler, 2001). Due to water flow restrictions as discussed above, this does not indicate that this species would not occur within the existing Slough north of Waterfront Road. Based upon available information, the species does appear to enter the existing Slough north of the tidegate.

3.2.6 Bald Eagle

The bald eagle (*Haliaeetus leucocephalus*) is designated as federally proposed for delisting and a state endangered species, in addition to being a California Department of Fish and Game (CDFG) fully protected species. It winters throughout most of California at lakes, reservoirs, river systems, and some rangelands and coastal wetlands on protected cliffs and ledges. Nests are normally built in the upper canopy of large trees, usually conifers, although it also nests on bridges and buildings in urban areas (CDFG, 2001a). Although there are no local records for the bald eagle occurring in this area (CNDDB, 2002), the Site may potentially provide winter foraging habitat. Suitable breeding and roosting habitat does not occur within the Site.

3.2.7 California Clapper Rail

The California clapper rail (*Rallus longirostris obsoletus*) is designated as a federally endangered species and a CDFG fully protected species. It is found in tidal salt marshes near tidal sloughs. The clapper rail breeding season may begin in February with pair bonding and nest construction. The end of the breeding season, typically the end of August, is associated with the time when eggs laid during re-nesting attempts have hatched and young are mobile (Harlow, 1998). Peyton

Marsh is described in the Recovery Plan as an Essential Habitat Area supporting the clapper rail (Harlow, 1998).

Literature review indicates that the California clapper rail was "apparently unknown from Suisun Bay and the entire delta area above Carquinez Strait" (Moffitt, 1941). Gill (1979) found that "the Clapper Rail is absent from Suisun Marsh…" More recent records indicate the presence of birds in the southern Suisun Bay marshlands since the late 1970s and that a viable population may have established itself in the "Point Edith marshes" (Collins *et al.*, 1994). Within this area, the marshlands between Pacheco Creek and Hastings Slough (USGS Vine Hill 7.5 min Quad) provide the most suitable clapper rail habitat (Evens, 2001). There is some suggestion that Suisun Bay populations may be present in some years and not in others (Albertson & Evens, 2000). Coverage of these marshes has been sporadic, therefore knowledge of occupancy by clapper rails is partial. Evens (2000) has identified clapper rails at Pacheco Creek, approximately 1.5 miles east of Peyton Slough. The intertidal area between Pacheco Creek and Concord Naval Weapons Station (approximately 3.5 miles east of Peyton Slough) contains the largest extent of tidal marshland along the south shoreline of Suisun Bay and apparently has been used by clapper rails, at least intermittently, since the late 1970s. A substantial population apparently occupied the Point Edith marsh area in the 1990s and is assumed to be extant, still (Evens, 2001).

The Mount Diablo Audubon Society conducted surveys in the North Peyton Marsh during 1992 and 1993. These surveys failed to detect the presence of the clapper rail (Harlow, 1998).

Clapper rail surveys were conducted in the Peyton Slough marsh region on March 22, April 4, and May 4 of 2001 (Evens, 2001) (see Appendix D). Tapes of clapper rail vocalizations were broadcast from stations and trained observers listened for responses. Additional site visits on May 23 and June 9 consisted of low-tide searches for tracks along watercourses in the North Peyton Marsh region. No clapper rails were detected, and clapper rails did not appear to be utilizing the Slough bed or banks in the 2001 breeding season according to Evens (2001). Evens (2001) further states that "The marshland within 1000 feet east of Peyton Slough was also apparently devoid of rails. Coverage of the eastern half of the marsh to the east was less thorough (though adequate), and to the best of our knowledge, no clapper rails were utilizing that central slough system. If rails do utilize this marsh area in the future, this central slough system provides the best habitat and is the most likely to be utilized."

3.2.8 California Least Tern

The California least tern (*Sterna antillarum* (=*albifrons*) *browni*) is designated as a federally endangered species and a Migratory Nongame Bird of Management Concern (MNBMC), a state endangered, and CDFG fully protected species. It is a migratory species in California, usually arriving at nest territories in Northern California in early May and usually departing by mid-October. Breeding colonies are located in abandoned salt ponds and along estuary shores. Least terns nest on barren to sparely vegetated sites usually associated with sandy to gravelly substrate. In the San Francisco Bay area, least terns most commonly nest on flat, artificial terrain such as bay fill sites and abandoned salt ponds. Sites colonized by nesting least terns are relatively free of human or predatory disturbance. The former Alameda Naval Air Station and the Pittsburg PG&E plant are the only known Bay Area nesting sites still producing fledglings. Post breeding

birds disperse to calm water foraging areas where fish are abundant. Several foraging sites are located at South Bay 'intake' salt ponds. Prey taken in California includes anchovy (*Engraulis mordax*), silversides (*Atherinop*s sp.), and shiner surfperch (*Cymatogaster aggregata*) (Zeiner et al., 1990). Although there are no local records for the least tern occurring in or near the Site (CNDDB, 2002), there is suitable foraging habitat in the Carquinez Strait. Foraging would not occur in the existing Slough, as fish prey are not found in the channel (Hagar & Demgen, 1987). However, as the only documented Bay Area nesting sites are located over 10 and 20 miles from the Site, there is low potential for the species to be foraging in the Site. Suitable breeding and roosting habitat does not occur within the Site.

3.2.9 Salt Marsh Harvest Mouse

The salt marsh harvest mouse is designated as a federally endangered species, a state endangered species, and a CDFG fully protected species. It is found in pickleweed (*Salicornia virginica*) salt marsh habitat. Site vegetation characterization during November 2001 and January 2002 identified patches of pickleweed in the North Peyton Marsh that are of marginal density to provide suitable habitat for populations of SMHM. During small mammal field sampling conducted in October 1994, small resident populations of SMHM were found in the Rhodia Marsh in narrow bands of pickleweed along I-680 up to 500 feet north of Waterfront Road, and along I-680 in the McNabney Marsh, 1000 feet south of Waterfront Road (Woodward-Clyde, 1995) (Appendix E). Trap lines in the Rhodia Marsh, where SMHM were captured in 1994, are located approximately 300 feet south of the staging area and 700 feet west of the action area alongside the existing Slough. Upon consultation with Don Hankins of the U.S. Fish and Wildlife Service via email on October 25, 2001, URS Corp. was advised to assume presence of SMHM in the Site (Hankins, 2001, pers. comm.).

3.3 FEDERALLY-LISTED PLANT SPECIES WITH POTENTIAL TO OCCUR IN OR NEAR THE PROJECT SITE

Plant surveys were conducted by URS biologists within suitable habitat areas found near the existing Slough and survey stations on a transect along the new alignment in November 2001 and January 2002. A list of plant species observed can be found in Appendix B.

3.3.1 Soft Bird's-Beak

Soft bird's-beak (*Cordylanthus mollis* spp. *mollis*) is designated as a federally endangered species and a state species with rare status. It is a California Native Plant Society (CNPS) species of rare or endangered status in California. It is found in coastal salt marshes at elevations of 0 to 3 meters. The species occupies the upland fringe of brackish marshes in pickleweed-dominated plains. The plant blooms from July through November (CNPS, 2001). A CNDDB search identified no recent local records for the species occurring in or near the Site (CNDDB, 2001). The species was identified in "salt marshes near Martinez" in 1881. However, it was since determined that no suitable habitat remained in the region during a survey in 1986. In addition, field surveys conducted in marshes to the east and west of Martinez in 1991 and 1993 did not find evidence of the plant (CNDDB, 2001). Previous surveys conducted within the

action area during the summer through fall of 1989 (Morton, 1995) did not find presence of the species. Plant surveys were conducted within suitable habitat areas found near the existing Slough and around stations on a transect along the new alignment in November 2001 and January 2002, and presence of soft bird's-beak was not detected (Demgen, 2002, pers. comm.). However, the surveys were conducted after the blooming period of the species, and therefore detection potential was limited. Upon characterization of the habitat in and near the Site, it was determined that there is potential for the species may occur in or near the Site (Demgen, 2002, pers. comm.).

Impacts to some local species are unavoidable in the process of remediating Peyton Slough. However, the principal goal of the remedial action is to create a healthier aquatic and wetland system. The impacts to wetlands and non-wetland waters have been minimized. A net loss of 1.69 acres of waters is proposed and between a net gain of 0.5 acre to a net loss of 1.64 acres of wetland would result from the project. As the design details are solidified the wetland loss or gain will be clarified.

The long-term effect of the new alignment is expected to be positive for the Peyton Slough marsh system, as this work contributes to the long-term restoration work planned for the Peyton, Rhodia, South Peyton, and McNabney marshes. The proposed restoration work is intended to enhance the function and productivity of the Peyton Slough and marsh system by encouraging the return of muted tidal flow water regimes, redevelopment of desired coastal salt marsh vegetation, and increased health of associated plant and animal populations. Species-specific impacts and benefits to listed and proposed plant and animal species will be discussed in greater detail below.

In summary, by establishing a new alignment located outside of the identified AOC, the proposed project would:

- Reduce the risk of exposure to humans and other animals and plants to contaminants;
- Restore the function of Peyton Slough as a conduit of muted tidal waters to upstream marshes (the Rhodia, South Peyton, and McNabney marshes), which would, in turn, promote the establishment of native tidal wetland plant communities south of the levee; and,
- Benefit animal species which use the tidal wetlands as a result of the enhanced quality of the restored habitat.

4.1 THREATENED OR ENDANGERED WILDLIFE SPECIES

4.1.1 Callippe Silverspot Butterfly

The callippe silverspot butterfly has low potential for presence in the Site and no known historical sitings of the species have occurred in or near the action area. Although no wild pansies, the host plant for the silverspot butterfly, have been identified in the Site, the Zinc Hill area immediately to the east of the South Peyton Marsh may have potential habitat for the plant. Potential impacts to the species might occur indirectly due to disturbance of the grassland habitat on the hill. The cut proposed along a portion of Zinc Hill to place the tide gate structure in the proposed location would impact a small area of grassland (approximately 0.15 acre). Surveys for the wild pansy in the action area of Zinc Hill will be conducted during its flowering period, from February through April. If present, the population size of the plants on the hill will be determined and surveys for the butterfly larvae will be conducted during the appropriate time period. In the event that wild pansies are identified in the action area of Zinc Hill, suitable mitigation measures (which will be discussed in Section 5) will be taken. Therefore, potential impacts to the species will occur only in the event that host plants are identified within the action area of Zinc Hill. These potential impacts are expected to be insignificant to the species, as

direct impacts to the butterfly are unlikely to occur, and mitigation measures will be taken to replace any affected host plants in the area. In conclusion, it is expected that the Peyton Slough remediation activities may affect but are **not likely to adversely affect** the Callippe silverspot.

4.1.2 Delta Smelt

Delta smelt forage in the Strait and therefore may be potentially affected by excavation activities at the mouth of the new alignment and along the shoreline of the Strait and capping activities at the mouth of the existing Slough. Impacts could result from equipment use within the water column that would result in a temporary increase in turbidity levels at the mouth of the existing Slough or the mouth of the new alignment. Excavation at the mouth of the new alignment and along the shoreline of the Strait will be conducted using barge-based equipment. Dredging in the mouth of the new alignment and in the Strait will take 2 to 3 days. These activities would temporarily increase turbidity in Peyton Slough No. 1 and the waters of the Carquinez Strait immediately adjacent to the Site. However, impacts to water quality from the proposed construction activities will be minimized by the measures included in the 401 Water Quality Certification, which must be obtained prior to initiation of any project activities. Furthermore, the contractor must submit a Construction Storm Water Pollution Prevention Plan (SWPPP) to RWQCB which will include erosion control measures to avoid impacts to water quality. In addition, thewidth of the Strait is approximately 1 mile across at the location of Peyton Slough. Therefore, it is unlikely that delta smelt would be impacted by short-term increases in turbidity because an insignificant portion of foraging habitat and distribution corridor would be affected and the effects would be temporary.

Construction activities on the marsh plain north of the levee may also cause a turbidity increase in the water column during a spring tide event (which occurs once or twice per month). A fraction of this material will likely re-settle on the marsh plain while the rest would most likely enter the Strait. However, the amount of sediment that is drawn into the Strait during a spring tide event is unlikely to be significantly higher than ambient conditions. Currently, the shallow waters within and adjacent to the Site often experience episodes of high turbidity due to wind, low tides, and the mixing of the shallow water column. As stated above, the contractor must submit a SWPPP which will include erosion control measures to avoid impacts to water quality.

There is minimal potential for the fish to enter the existing Slough for breeding purposes, as the delta smelt prefers less brackish water for breeding and egg-laying. The species is also unlikely to enter the existing Slough for foraging and for seeking refuge, as it is generally a pelagic species. Previous sampling efforts (between May 1986 and April 1987, and between fall 1998 and summer 2001) have not captured delta smelt within the existing Slough. Potential impacts to delta smelt from capping activities will be minimized by removing fish from the existing Slough prior to dewatering and relocating captured fish to adjacent suitable habitat.

In conclusion, the project is **not likely to adversely affect** delta smelt because dredging work at the mouth of both channels would take approximately 2 to 3 days, would occur in two small, localized areas adjacent to the shoreline (i.e., not blocking passage through the Strait), and would occur outside the spawning season.

4.1.3 Steelhead

Steelhead migrate through the Strait and therefore may potentially be affected by excavation activities at the mouth of the new alignment and along the shoreline of the Strait and capping activities at the mouth of the existing Slough. As discussed previously, impacts could result from equipment use within the water column that would result in a temporary (2 to 3 days) increase in turbidity levels at the mouth of the existing Slough, the mouth of the new alignment, and along the shoreline of the Strait. However, the provisions in the 401 Water Quality Certification and the erosion control measures outlined in the SWPPP will reduce potential impacts to water quality. Furthermore, the width of the Strait at the Site affords passing fish a large area to avoid any temporary increases in turbidity. Thus, the short term impacts of excavation and dredging activities are not expected to be significant to the species.

As discussed previously, construction activities may generate sediment in the water column during spring tides during the months of construction. However, this impact is unlikely to be significantly higher than ambient conditions, and erosion control measures would be followed as designed in the contractor's SWPPP.

There is minimal potential for steelhead to enter the existing Slough during migration, as the existing Slough is not a channel for steelhead migration and spawning activities. Historic spawning activities are not expected to have occurred within the Peyton Slough marsh system because the tide gates (in place since the early to mid 1900's) have blocked access to potential spawning habitat. Previous sampling efforts (between May 1986 and April 1987, and between fall 1998 and summer 2001) have not captured steelhead within the existing Slough. Potential impacts to steelhead from capping activities will be minimized by removing fish from the existing Slough prior to dewatering and relocating captured fish to adjacent suitable habitat. Similar impacts may occur to fish as they are removed from Peyton Slough No. 1 prior to dredging.

In conclusion, the project is **not likely to adversely affect** steelhead because dredging work at the mouth of both channels would take approximately 2 to 3 days, and would occur in two small, localized areas adjacent to the shoreline (i.e., not blocking passage through the Strait).

4.1.4 Chinook Salmon Winter-Run, Spring-Run and Fall/Late Fall-Run

Winter-run, spring-run, and fall/late fall-run Chinook salmon migrate through the Strait and therefore may potentially be affected by excavation activities at the mouth of the new alignment and capping activities at the mouth of the existing Slough. As discussed previously, impacts could result from equipment use within the water column that would result in a temporary increase in turbidity levels at the mouth of the existing Slough, the mouth of the new alignment, and along the shoreline of the Strait. Spring-run Chinook may be impacted by short-term increases in turbidity because the species migrates upstream through the Strait between March through July and downstream between November through March. Fall-run Chinook may be impacted by short-term increases in turbidity because the species migrates upstream through the Strait between June through December and downstream between March through July. Late fall-run Chinook may be impacted by short-term increases in turbidity because the species migrates upstream through the Strait between October through April and downstream between October through July (Goals Project, 2000). Therefore, upstream migration activities will overlap the

construction window (July – November) during the months of July through November and downstream migration may occur during the construction months of July, October and November. As noted previously in Section 3.2.4, Chinook captured in the existing Slough were smolts migrating downstream. The construction window would therefore impact only the very early and late onset of downstream migration, at times when fewer individuals are likely to be moving through the area.

Although Chinook have a low potential for occurrence within the existing Slough, the provisions in the 401 Water Quality Certification and the erosion control measures outlined in the SWPPP will reduce potential impacts to water quality. Impacts from dredging activities would be short-term and temporary (2 to 3 days). Furthermore, the width of the Strait at the Site affords migrating fish a large area to avoid any temporary increases in turbidity. Thus, the short term impacts of excavation and dredging activities are not expected to be significant to the species.

As discussed previously, construction activities may generate sediment in the water column during spring tides during the months of construction. However, this impact is unlikely to be significantly higher than ambient conditions, and erosion control measures would be followed as designed in the contractor's SWPPP.

There is minimal potential for Chinook salmon to enter the existing Slough during migration, as the existing Slough is not a channel for salmon migration and spawning activities. Historic spawning activities are not expected to have occurred within the Peyton Slough marsh system because the tide gates (in place since the early to mid 1900's) have blocked access to potential spawning habitat. During previous sampling activities (between May 1986 and April 1987, and between fall 1998 and summer 2001), no adult and only three Chinook smolts have been captured. These smolts were probably wandering from their outward migration and inadvertently entered the existing Slough channel. Potential impacts to Chinook from capping and dewatering will be minimized by removing fish from the existing Slough prior to dewatering and relocating captured fish to adjacent, suitable habitat. Although fish that may enter the existing Slough will be trapped and relocated, there is potential for stress and mortality during the damming, fish trapping and transfer, and draining of the existing Slough.

In conclusion, the project is **not likely to adversely affect** Chinook because dredging and excavation work at the mouth of both channels would take approximately 2 to 3 days, would occur in two small, localized areas adjacent to the shoreline (i.e., not blocking passage through the Strait), and fish will be removed and relocated prior to dewatering and capping of the existing Slough.

4.1.5 Critical Habitat for Steelhead and Chinook Salmon

The action area is located within designated critical habitat for the Central Valley Steelhead, Sacramento River winter-run Chinook salmon, Central Valley spring-run Chinook salmon, and Central Valley fall\late fall-run Chinook salmon (CFR, 1993, 2000). Critical habitat for the species includes, "all waters from Chipps Island westward to Carquinez Bridge". Dredging activity at the mouth of Peyton Slough No. 1 and along the shoreline in the Carquinez Strait may impact critical habitat for the species.

An important physical component of critical habitat includes, "access from the Pacific Ocean to appropriate spawning areas...". Construction activities within the action area, including dredging at the mouth of the new alignment, will not impede migration routes to and from salmon spawning sites. The width of the Strait at the Site is approximately 1 mile across. Therefore, minor dredging activities along the shoreline are not expected to restrict salmonid movement.

Dredging may potentially effect critical habitat by degrading water quality. However, small scale dredging projects (identified as being typically 100,000 cubic yards (cy) or less) are thought to have minor impacts (CFR, 1993). The proposed project has been estimated to dredge no more than 2,000 cubic yards (see figure 7). An estimated 800 cy will be removed from the Strait and 1,000 cy will be removed from the mouth of the new alignment. The material to be dredged from the Strait will be sand, which would not create a sediment plume significant enough to adversely effect fish in the Strait. In addition, the proposed project will have a 401 Water Quality Certification, and all terms and conditions will be implemented to minimize erosion impacts.

In conclusion, the proposed project is **not likely to adversely affect** critical habitat for Central Valley steelhead, Sacramento River winter-run Chinook salmon, and the Central Valley spring-run Chinook salmon and Central Valley fall/late fall-run Chinook salmon because appropriate erosion control measures will be taken to minimize sediment run-off into the water column, the proposed volume to be dredged is considered to have minor impacts on water quality conditions, and the dredging activities would only occur for 2 to 3 days.

4.1.6 Sacramento Splittail

Sacramento splittail migrate through the Strait and therefore may potentially be affected by excavation activities at the mouth of the new alignment and capping activities at the mouth of the existing Slough. Impacts could result from equipment use within the water column that would result in a temporary increase in turbidity levels at the mouth of the existing Slough and the mouth of the new alignment. Excavation at the mouth of the new alignment and along the shoreline in the Strait will be conducted using barge-based equipment. These activities would temporarily increase turbidity in Peyton Slough No. 1 and the waters of the Strait immediately adjacent to the Site. The construction window was established to avoid construction activities during the migration and breeding season of the Sacramento splittail, which is known to occur in the existing Slough. However, it is unlikely that splittail would be impacted by short-term increases in turbidity because the species is not likely to be found in the action area during construction (July – November). Dredging activities will be short-term and temporary, lasting for only 2 to 3 days.

As discussed previously, construction activities may generate sediment in the water column during spring tides during the months of construction. However, this impact is unlikely to be significantly higher than ambient conditions, and erosion control measures would be followed as designed in the contractor's SWPPP.

There is minimal potential for splittail to enter the existing Slough for spawning activities, as the species prefers fresher water than conditions present in the existing Slough. Historic spawning activities are not expected to have occurred within the Peyton Slough marsh system because the tide gates (in place since the early to mid 1900's) have blocked access to potential spawning

habitat. Sacramento splittail enter the existing Slough to feed and seek refuge. Potential impacts to splittail from capping and dewatering will be minimized by removing fish from the existing Slough prior to dewatering and relocating captured fish to adjacent suitable habitat. Although fish that may enter the existing Slough will be trapped and relocated, there is potential for stress and mortality during the damming, fish capture and transfer, and draining of the existing Slough.

In conclusion, the project is not likely to have short term adverse effects to splittail because dredging work at the mouth of both channels would take approximately 2 to 3 days, would occur in two small, localized areas adjacent to the shoreline (i.e., not blocking passage through the Strait), would occur outside the spawning and migration season, and fish will be removed and relocated prior to dewatering and capping of the existing Slough. The long-term effect of the full re-alignment is **likely to benefit** the species, as it contributes to the long-term restoration work planned for the Peyton Slough marsh system. The proposed restoration work is intended to enhance the function and productivity of the marsh system by encouraging the return of muted tidal flow water regimes, redevelopment of desired coastal salt marsh vegetation, and increased health of associated animal populations, including prey species for the splittail.

4.1.7 Bald Eagle

The bald eagle has low potential for presence in the Site. Potential presence would be limited to foraging activities, as suitable breeding and roosting habitat does not occur on the Site. There are no local records of sittings for this species within the region surrounding the Site (CNDDB, 2002). There is a low potential for the bald eagle to use the Site for foraging and there are no records of such use. Therefore, the project will have **no effect** on the bald eagle.

4.1.8 California Clapper Rail

There is potential habitat for the California clapper rail within the marshland surrounding the Site; however, surveys conducted in the spring of 2001 did not identify the presence of clapper rails. Previous surveys in 1992 and 1993 also failed to detect presence of the species. As no individuals have been detected in or near the Site, negative impacts are not expected to occur during remediation activities. The long-term effect of the full re-alignment is expected to be positive for the clapper rail, as it contributes to the long-term restoration work planned for the Peyton Marsh. The proposed restoration work is intended to enhance the function and productivity of the Peyton Slough and marsh system by encouraging the return of muted tidal flow water regimes and redevelopment of desired coastal salt marsh vegetation, including cord grass, which will have the potential of providing better quality habitat for clapper rail use. The project will have **no effect** on the California clapper rail and over the long term, it will improve tidal channel habitat in the North Peyton Marsh.

4.1.9 California Least Tern

The California least tern has low potential for presence in the Site. Potential presence would be limited to foraging activities, as suitable breeding and roosting habitat does not occur on the Site. There are no local records of siting for this species within the region surrounding the Site (CNDDB, 2002). There is low potential for the California least tern to use the Site for foraging

activities because the tidal channels are quite small. Therefore, the project is expected to have **no effect** on the California least tern.

4.1.10 Salt Marsh Harvest Mouse

The salt marsh harvest mouse (SMHM) was detected in 1994 within the Rhodia Marsh, at a distance of over 300 feet outside of the action area. Although surveys for the SMHM were not conducted for the baseline biological assessment of the Site, previous consultation with the FWS has directed the USACE to assume presence of the species. Two methods are being proposed for removal of SMHM from the Site: 1) live-trapping and relocation of mice, or 2) temporary removal of vegetation from the action area prior to initiation of construction (and subsequent revegetation following completion of project activities).

Under option No. 1, live-trapping will be performed by FWS-authorized biologists following FWS-approved protocols. Prior to initiation of live-trapping, a wildlife biologist will conduct a reconnaissance of the Site to establish the trap lines. Trap lines will be established in suitable wetland and upland habitats throughout the designated action area and habitat immediately surrounding the action area.

SMHM will be restricted from re-entering the action area by placing exclusion fencing around the action area. Exclusion fencing will remain until project work is completed. Personnel will be instructed to avoid working outside the fenced areas.

Option No. 2 would also be appropriate mitigation for impacts to SMHM and would avoid disturbance to mice from being trapped and handled. SMHM will be excluded from the action area by removal of their associated habitat. Upon removal of vegetation from the action area, it is anticipated that SMHM will relocate to appropriate habitat outside the Site. SMHM will recolonize the action area upon replanting of the vegetation after construction activity has ended. After construction work is completed and the site has been cleared of all construction equipment, all the appropriate areas will be revegetated as part of the wetland mitigation plan (URS, 2002c).

However, live-trapping and/or vegetation removal may not remove all SMHM from the action area. Any mice that may have escaped the removal effort could be lost during construction activities. Trapping and relocation of the SMHM may potentially cause stress to individuals. Short-term habitat loss will occur during assembly of temporary roads and excavation of the new channel alignment. However, disturbed wetland surfaces will be revegetated at the completion of construction activities. In addition, pickleweed, the preferred habitat of the SMHM, produces higher biomass in sites where diurnal inundation occurs during high tides and salinity levels are moderated (Brenchley-Jackson, 1992). As a result of increased tidal influence, growth of pickleweed and therefore SMHM habitat will be enhanced.

In conclusion, the SMHM is **likely to be adversely affected** by the proposed remediation project as mortality to individuals may occur. However, the long term impacts of the proposed project are likely to benefit the SMHM over the long term because species habitat is expected to be enhanced and there may be a net gain in suitable habitat.

4.2 THREATENED OR ENDANGERED PLANT SPECIES

4.2.1 Soft Bird's-Beak

Soft bird's-beak (*Cordylanthus mollis* spp. *mollis*) was not identified on the Site during surveys in the late fall of 2001 and summer of 1989. However, there is potential habitat for the species on the Site. Plant surveys conducted in 2001 may have occurred after the end of the blooming season, which would render the species less detectable. In addition, soft bird's beak often grows in a vegetation community dominated by pickleweed and there is very little pickleweed on the site. The project is **not likely to adversely affect** soft bird's beak.

4.3 CUMULATIVE IMPACTS

The long-term effect of the new alignment is expected to be positive for the Peyton Slough marsh system, as this work contributes to the long-term restoration work planned by the multi-agency McNabney Marsh Management Advisory Committee. Upon closure of the existing Slough and authorization from the RWQCB, the new alignment south of the levee will function on a muted tidal cycle, thereby bringing the Peyton Slough marsh system closer to its original tidal salt marsh hydrology regime. The proposed restoration work is intended to enhance the function and productivity of the marsh system by encouraging the return of muted tidal flow, redevelopment of desired coastal salt and brackish marsh vegetation, and increased health of associated plant and animal populations.

5.1 AVOIDANCE AND MINIMIZATION MEASURES

The proposed project includes a wetland mitigation plan compensate for impacts. The plan begins by avoiding and minimizing impacts to wetlands and non-wetland waters of the U.S. For example, impacts to habitat alongside the new alignment will be minimized to the extent possible by using the new alignment itself as the temporary roadway and then excavating the fill out in the process of creating the slough channel. For the full description of avoidance, minimization and mitigation of wetland and water impacts refer to the wetland mitigation plan (URS, 2002c).

The following is a summary of the avoidance and minimization actions discussed in Section 4.

Callippe Silverspot Butterfly: Field surveys will be conducted for the wild pansy, host plant of the Callippe silverspot butterfly, in the action area of Zinc Hill. If found, plants will be either fenced, transplanted, or propagated by seeds or cuttings and reestablished at another location on the hill. Plants will not be disturbed if butterfly larva are present. Plants found within the Site will be protected from construction activities with exclusion fencing and flagging or will be relocated. Personnel will be instructed to avoid exclusion areas.

Delta Smelt: Barge-based impacts will be minimized to the extent possible by restricting the duration and location of barge work. Dredging activities are scheduled to last for 2 to 3 days in the mouth of the new alignment and along the shoreline of the Carquinez Strait. Appropriate measures will be taken during barge-based dredging to minimize water quality impacts. All other slough dredging will occur behind cofferdams. Fish behind the cofferdams will be removed and relocated by FWS-authorized biological monitors to appropriate adjacent habitat using agency-approved protocols. Work will be scheduled outside the delta smelt spawning season.

Steelhead, Chinook Salmon: Barge-based impacts will be minimized to the extent possible by restricting the duration and location of barge work. Dredging activities are scheduled to last for 2 to 3 days in the mouth of the new alignment and along the shoreline of the Carquinez Strait. Appropriate measures will be taken during barge-based dredging to minimize water quality impacts. All other slough dredging and excavation will occur behind cofferdams. Fish behind the cofferdams will be removed and relocated by FWS-approved biological monitors to appropriate adjacent habitat using agency-approved protocols.

Sacramento Splittail: Barge-based impacts will be minimized to the extent possible by restricting the duration and location of barge work. Dredging activities are scheduled to last for 2 to 3 days in the mouth of the new alignment and along the shoreline of the Carquinez Strait. Appropriate measures will be taken during barge-based dredging to minimize water quality impacts. All other slough dredging and excavation will occur behind cofferdams. Fish behind the cofferdams will be removed and relocated by FWS-approved biological monitors to appropriate adjacent habitat using agency-approved protocols. Work will be scheduled outside the season when fish migrate through the Strait and outside of the spawning season. To avoid potential impacts to Sacramento splittail, blocking the water flow of the existing Slough (for subsequent dewatering) will not be initiated between March and May, as adult splittail move into freshwater to spawn during these months.

Salt Marsh Harvest Mouse: Immediately prior to construction activities, salt marsh harvest mice will be removed from the action area. Removal methods to be discussed with the FWS include either : 1) live-trapping out of areas with suitable habitat and relocation to appropriate adjacent habitat, or 2) temporary removal of associated vegetation from the action area, thereby causing the mice to relocate to adjacent habitats. Prior to initiation of SMHM removal, a standard protocol will be adopted according to FWS-approved protocols. All live-trapping will be conducted by FWS-authorized biologists.

During all phases of the proposed project, the following terms and conditions will be implemented to minimize impacts to the habitat:

- For the duration of the proposed project, all mechanized equipment in the wetland will use a vegetable-based hydraulic equipment oil to prevent the incidental release of petroleum-based hydraulic oil.
- All construction activities, including fueling and maintenance, will occur during daylight hours. Refueling will occur outside the wetland areas.
- All construction personnel will be restricted to the immediate work area. A pre-construction meeting will be held prior to project initiation for all people directly involved with project implementation. The conditions determined by they FWS and condition of other regulatory agency approvals will be reviewed and discussed. In addition, the sensitivity of the project area and penalties for unauthorized take of listed species will be discussed
- A FWS-approved spill prevention plan will be developed with contingency measures for petroleum products prior to the initiation of project construction.

5.2 COMPENSATION MEASURES

Temporary habitat losses will be compensated by restoring and enhancing habitat in the project area and adjacent areas. Impacts resulting from temporary losses will be mitigated by enhancing the wetlands adjacent to the margins of the new alignment, along the temporary roadways adjacent to the existing Slough, on new habitat formed by removal of dredge spoil piles, and on the new habitat created by capping the existing Slough. The degraded habitat in the northern section of the South Peyton Marsh (the spread area) will be enhanced by planting wetland species. In addition, upland species will also be planted (where appropriate).

The proposed project also involves a number of enhancement features that, when combined with the mitigation plan, would increase the long-term viability of the marsh system. Disturbed upland areas, or areas converted to upland, will be hydroseeded with a mixture of native grasses to retard erosion. The new alignment south of the levee will be along the toe of Zinc Hill. Trees and shrubs will be planted at the base of the hill to shade the channel. Hill soils should be less saline than the subsided marsh plain and should support woody vegetation. In addition, native grasses will be planted on all disturbed surfaces adjacent to the edges of the wetland to improve cover in areas potentially used as high tide refugia by salt marsh harvest mice and black rails.

The proposed remediation activities in the Peyton Slough are expected to provide a long-term benefit to the slough and the entire Peyton Slough marsh system, including associated plants and animals. The engineered cap will function to isolate and contain deeper sediments in the existing Slough, reduce the mobility and the toxicity of the capped sediments, and eliminate exposure through direct contact by humans and other animals and plants.

Overall, short-term effects of the remediation action on the Site may potentially cause stress and mortality of certain species due to construction activities. Those activities include installation of temporary roads; dredging and excavation of the new alignment; sediment runoff during spring tide events; damming, fish removal and relocation, and draining of the existing Slough; trapping and relocation of small mammals; capping and filling of the existing Slough; and relocation of the tide gate structure alongside Zinc Hill. Short-term habitat loss will occur during construction of temporary roads, excavation of the new alignment, and relocation of the tide gates. However, the long-term effect of the full re-alignment is expected to be positive for the marsh system and associated tidal marsh plant and animal species, as this work contributes to the long-term restoration of the Peyton Slough marsh system. Upon completion of the remediation of the existing Slough, the new alignment will be fully tidal north of the tide gates and muted tidal action will be restored south of the tide gates. Introduction of diurnal flushing of marsh lands south of the levee is expected to enhance the degraded tidal marsh vegetation observed in the Site. Plant and animal species discussed in this BA are likely to benefit, as this vegetation enhancement will potentially provide them better quality habitat.

In conclusion, the project will have **no effect** on the bald eagle, California least tern, or the California clapper rail. The habitat is both of low quality for the species' foraging needs, and, based upon known species' distribution, these birds are not expected to be found within the Site during construction activities.

The project may affect but is **not likely to adversely effect** the Callippe silverspot butterfly, delta smelt, Steelhead, Chinook salmon (winter-run, spring-run, and fall/late fall-run), and soft bird's-beak.

- The Callippe silverspot butterfly is not expected to occur within the Site. The project footprint in suitable habitat is small relative to total habitat available on Zinc Hill. In addition, habitat mitigation measures are expected to minimize any potential impacts to the butterfly's host plant.
- As the delta smelt is a pelagic species and smelt have not historically been captured within the existing Slough, the restoration work is not expected to impact the species. Fish removal and transfer is expected to minimize potential adverse impacts to any animals inadvertently remaining in the existing Slough prior to capping and filling.
- Steelhead are not expected to be adversely affected by the proposed remedial action as they do not use the existing Slough for feeding, refuge, or breeding purposes and they have not previously been captured within the existing Slough. Avoidance measures will be incorporated, such as using cofferdams to block fish from entering the existing Slough. Fish removal and transfer is expected to minimize potential adverse impacts to any animals inadvertently remaining in the existing Slough prior to capping and filling. Fish capture, handling, and relocation will only be conducted by

authorized biologists. In addition, appropriate measures will be used during dredging of the new alignment and along the shoreline of the Carquinez Strait and during construction activities on the marsh plain to minimize water quality impacts.

- Although three Chinook salmon smolts were captured within the existing Slough, the species does not generally use the existing Slough for feeding, refuge, or breeding purposes. Fish removal and transfer is expected to minimize potential adverse impacts to any animals inadvertently remaining in the existing Slough prior to capping and filling. Potential freshwater habitat in the McNabney Marsh has been blocked from entry since the early 1900's. The two Chinook smolts captured in the marsh were found following storm events, when the tide gates had been opened due to high water flows (McGinnis, 2001, pers. comm.). Suitable salmonid spawning and egg-laying habitat is not found in Peyton Slough. Although Chinook migration will overlap the construction window, impacts at the mouth of the existing Slough and the new alignment are not likely to adversely affect the species as Chinook have a low potential for occurrence within the existing Slough, and appropriate measures will be used during dredging of the new alignment and along the shoreline of the Carquinez Strait and during construction activities on the marsh plain to minimize water quality impacts.
- Soft bird's-beak has potential to occur on the Site; however, no plants were identified in prior surveys. Any plants found within the action area will be fenced, relocated, or new seedlings will be planted following the end of construction.

The remedial action is **likely to adversely effect** salt marsh harvest mice over the short term due to short-term loss of habitat and potential mortality of individuals from construction activities and equipment. However, impacts will be mitigated over the long term by trapping out mice prior to construction activities. The long term impacts of the Peyton Slough restoration project are likely to benefit the species as the work is part of a habitat restoration goal that would enhance coastal salt marsh habitat used by SMHM.

It is **likely to benefit** the Sacramento splittail and California clapper rail over the long term, as remediation work within Peyton Slough should enhance the tidal marsh hydrology, which would, in turn, enhance habitat for these species. In addition, the wetland mitigation plan, which includes vegetation restoration, would further enhance habitat quality. Fish removal and transfer is expected to minimize potential adverse impacts to any animals inadvertently remaining in the existing Slough prior to capping and filling. Splittail spawning is not likely to be impacted as potential freshwater habitat in the McNabney Marsh has been blocked from entry since the early 1900's. Furthermore, appropriate measures will be used during dredging of the new alignment and along the shoreline of the Carquinez Strait and during construction activities on the marsh plain to minimize water quality impacts.

Albertson, J. and J. Evens. 2000. California clapper rail: draft species narrative. *In:* Chapter 7, San Francisco Bay Estuary Goals Project.

Brenchley-Jackson, J. 1992. Factors controlling the vegetation dynamics of *Spartina foliosa* and *Salicornia virginica* in California's coastal wetlands. Ph.D. Dissertation, University of California, Davis.

CDFG. 1988. California's Wildlife, Volume II: Birds. Sacramento. 731 pp

CDFG (California Department of Fish and Game). 2001a. Habitat Conservation Planning Branch web site, December 2001. http://www.dfg.ca.gov/hcpb/species/t_e_spp/tespp.shtml

CDFG. 2001b. California Department of Fish and Game, California Natural Diversity Data Base (CNDDB): Wildlife and Habitat Analysis Branch. Special Animals, July 2001.

CDFG. July 2001c. California Department of Fish and Game, CNDDB: Special vascular plants, bryophytes, and lichens list. Biannual publication, Mimeo. 141 pp.

CFR 1993. Designated critical habitat: Sacramento River winter-run Chinook salmon. 920783-3085. June 16, 1993.

CFR (Code of Federal Regulations), 2000. Designated critical habitat for 19 ESU's of salmon and steelhead in Washington, Oregon, Idaho, and California. 990128036-0025-02. February 16, 2000.

CNDDB (California Natural Diversity Data Base). 2001. RAREFIND search report for the Vine Hill quadrangle. November 5, 2001.

CNDDB. 2002. RAREFIND search report for the Vine Hill quadrangle. January 2, 2002.

CNPS (California Native Plant Society). 2001. Inventory of rare and endangered plants of California (sixth edition). Rare Plant Scientific Advisory Committee, David P. Tibor, Convening Editor. Sacramento, CA. 388 pp.

CSU (California State University). 2001. Endangered Species Recovery Program web site, December 2001. http://arnica.csustan.edu/esrpp/eslist.htm

Collins, J., J. Evens, and B. Grewell. 1994. A synoptic survey of the distribution and abundance of the California clapper rail, *Rallus longirostris obsoletus*, in the northern reaches of the San Francisco estuary during the 1992 and 1993 breeding season. Technical Report to California Department of Fish and Game. 22pp

Evens, J. 2000. Clapper rail surveys at Pacheco Creek, Contra Costa County. Memorandum to Vicki Reynolds, Wetlands Field Biologist. April 11, 2000.

Evens, J. 2001. Rhodia-Martinez Peyton Slough Project: Evaluation of Peyton Slough tidal marshlands for use by California clapper rails (*Rallus longirostris obsoletu*s), with notes on other Species of Concern. Letter to Chris Vais, URS Corporation Americas. June 11, 2001.

Gill, R. 1979. Status and distribution of the California clapper rail (*Rallus longirostris obsoletus*). California Department of Fish and Game. 65(1):36:49.

Goals Project. 2000. Baylands Ecosystem Species and Community Profiles: Life histories and environmental requirements of key plants, fish, and wildlife. Prepared by the San Francisco

Bay Area Wetlands Ecosystem Goals Project. P.R. Olofson, editor. San Francisco Bay Regional Water Quality Control Board, Oakland, California.

Hagar, J. & F. Demgen. 1987. Biological survey of Peyton Slough and two reference sloughs for the Mt. View Sanitary District Wetlands Enhancement Program. December 1987.

Hanson, L. A. 2001. Peyton Slough marsh complex vegetation survey, Final Report. Prepared for the Contra Costa Mosquito and Vector Control District and the McNabney Marsh Management Committee, by Laura Hanson of Hanson and Associates. December 18, 2001.

Harlow, D. 1998. Proposed Shell Marsh Restoration Project, Contra Costa County: U.S. Fish and Wildlife Service Biological Opinion. Letter to Calvin Fong, U.S. Army Corps of Engineers. July 1, 1998.

JRP. 1997. Inventory and evaluation of the Peyton Marsh drainage system, Contra Costa County, California. JRP Historical Consulting Services

McGinnis, S. 1984. Freshwater Fishes of California. University of California Press. 316 pp

McGinnis, S. & J. Koehler. 2001. The use of several restored, partially restored, and highly modified tidal marshes in the San Francisco Bay Estuary by native and introduced fishes. Prepared as part of the CalFed Cooperative Agreement between the California State University, Hayward Foundation and the U.S. Fish and Wildlife Service, Agreement # 114209J018. California State University, Hayward. September 1, 2001.

Moffitt, J. 1941. Notes on the food of the California clapper rail. Condor. 43:270-273.

Morton, C. 1995. Benicia-Martinez Bridge Project Natural Environment Study and Biological Assessment. Prepared for California Department of Transportation. December 1, 1995.

Rhône-Poulenc. 1995. Report of final closure of Evaporation Pond No. 2, Rhône-Poulenc, Martinez, California. International Technology Corporation. November 1995.

RWQCB (Regional Water Quality Control Board). 1997. Draft policy for implementation of toxics standards for inland waters, enclosed bays and estuaries of California (Phase 1 of the Inland Surface Waters Plan and Enclosed Bays and Estuaries Plan) and functional equivalent document. September 11, 1997.

UCB (University of California, Berkeley). 2002. Essig Museum of Entomology internet site: http://www.mip.berkeley.edu/essig/endins/elaphrus.htm

URS Corporation (URS). 2002a. Addendum to the Feasibility Study and Conceptual Remedial Action Plan, Rhodia, Inc., Peyton Slough, Martinez, California. URS Corporation. January 2002.

URS. 2002b. Remediation Design Report, Rhodia, Inc., Peyton Slough, Martinez, California. URS Corporation. March 2002.

URS. 2002c. Delineation of Wetlands and Non-wetland Waters of the U.S., Rhodia Martinez Peyton Slough Remediation Project. February, 2002.

Wang, J. 1986. Fishes of the Sacramento-San Joaquin Estuary and adjacent waters, California: A guide to the early life histories. University of California, Technical Report 9 (FS/B10-4ATR 86-9).

Woodward-Clyde Consultants. 1995. Peyton Slough wetlands evaluation report. Prepared for: Shell Oil Spill Litigation Trustee Committee. June 1995.

Zeiner, D.C., W.F. Laudenslayer, K.E. Mayer, and M. White. 1990. California's Wildlife. Volume II: Birds and Volume III: Mammals. California Statewide Wildlife Habitat Relationships System. California Department of Fish and Game. Sacramento, CA.

Personal Communications

Demgen, F. 2002. Personal Communication, re: Habitat quality in the Site. January, February, 2002.

Hankins, D. 2001. Personal Communication, re: Presence of Salt Marsh Harvest Mice at Peyton Slough. E-mail, October 25, 2001.

Malamud-Roam, K. 2002. Personal Communication, re: Tide gates in the Rhodia Property. January 2, 2002.

McGinnis, S. 2001. Personal Communication, re: McNabney Marsh fish sampling. November 10, 2001.

Cholodenko, Laura, Biologist, URS Corporation
Demgen, Francesca, Project Manager, URS Corporation
Evens, Jules, Principal, Avocet Research Associates
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Table 1

SPECIAL STATUS SPECIES WITH POTENTIAL TO BE AFFECTED BY THE PROPOSED ACTION

Species Name	Status[1]			Associated Habitats	Potential to Occur in the Action Area
	Federal	State	CNPS		
Invertebrates					
Branchinecta lynchi vernal pool fairy shrimp	T	none	NA	Vernal pools and other seasonally ponded depressions.	No habitat
Desmocerus californicus dimorphus valley elderberry longhorn beetle	T	none	NA	Elderberry shrubs, especially those with stems greater than one inch diameter.	No habitat
Elaphrus viridis delta green ground beetle	T	none	NA	Vernal pools and adjacent grasslands	No habitat
Speyeria callippe callippe callippe silverspot butterfly	E	none	NA	Open hillsides supporting wild pansy (*Viola pedunculata*), its larval host plant. On the San Francisco peninsula, this butterfly is now only known from San Bruno Mountain (approximately 10 miles south of San Francisco). In the East Bay, it was known from Richmond in the north to the Castro Valley in Alameda County (Morton, 1995).	Low
Syncaris pacifica California freshwater shrimp	E	E	NA	Pool areas of low-elevation, low-gradient freshwater streams, in undercut banks, overhanging woody debris, or overhanging vegetation (CDFG, 2001a).	No habitat
Fish					
Hyposmesus transpacificus delta smelt	T	T	NA	Euryhaline species, but for a large part of its life span, it is associated with the freshwater edge of the mixing zone (saltwater-freshwater interface). Spawning habitats are side channels and sloughs in the middle reaches of the Delta (Wang, 1986) . Spawn in shallow freshwater from December through July (Goals Project, 2000).	No spawning habitat; Low for foraging habitat
Critical habitat for delta smelt (*Hyposmesus transpacificus*)	T	none	NA	Adults and yearlings are found in the freshwater edge of the mixing zone (saltwater-freshwater interface). Spawning habitats are side channels and sloughs in the middle reaches of the Delta (Wang, 1986).	Low

Species Name	Status[1]			Associated Habitats	Potential to Occur in the Action Area
	Federal	State	CNPS		
Oncorhynchus mykiss steelhead - Central Valley, California ESU	T	none	NA	Most of its adult life is in the open ocean. Migrate upstream through the Carquinez Strait from August through May and downstream from spawning grounds during spring and early summer (Goals Project, 2000).	Low
Critical habitat for Central Valley steelhead (*Oncorhynchus mykiss*)	T	none	NA	Spawning habitats are upper reaches of freshwater streams. Migration habitat comprised of route between spawning streams and open ocean. Migrate upstream through the Carquinez Strait between December and July and downstream from spawning grounds from November through May (Goals Project, 2000).	High
Oncorhynchus tshawystscha Sacramento River winter-run Chinook salmon	E	E	NA	Freshwater streams and open ocean. Migrates upstream through the Carquinez Strait from December through July and migrates downstream from spawning grounds from November through May into estuaries and the open ocean (Goals Project, 2000).	Medium
Critical habitat for Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawystscha*)	E	none	NA	Spawning habitats are upper reaches of freshwater streams. Migration habitat comprised of route between spawning streams and open ocean. Migrate upstream through the Carquinez Strait between December and July and downstream from spawning grounds from November through May.	High
Oncorhynchus tshawystscha Central Valley spring-run Chinook salmon	T	T	NA	Freshwater streams and open ocean. Migrate upstream through the Carquinez Strait from March through July and downstream from spawning grounds from November through June (Goals Project, 2000).	Medium
Critical habitat for Central Valley spring-run Chinook salmon (*Oncorhynchus tshawystscha*)	T	none	NA	Spawning habitats are upper reaches of freshwater streams. Migration habitat comprised of route between spawning streams and open ocean. Migrate upstream through the Carquinez Strait between March and July and downstream from spawning grounds from November through June (Goals Project, 2000).	High
Oncorhynchus tshawystscha Central Valley fall/late fall-run Chinook salmon	Ca	SC	NA	Freshwater streams and open ocean. Migrate upstream through the Carquinez Strait from June through April and downstream from spawning grounds from October through May (Goals Project, 2000).	Medium

Species Name	Status[1]			Associated Habitats	Potential to Occur in the Action Area
	Federal	State	CNPS		
Critical habitat for Central Valley fall/late fall-run Chinook salmon (*Oncorhynchus tshawystscha*)	Ca	none	NA	Spawning habitats are upper reaches of freshwater streams. Migration habitat comprised of route between spawning streams and open ocean. Migrate upstream through the Carquinez Strait from June through April and downstream from spawning grounds from October through May.	High
Pogonicthys macrolepidotus Sacramento splittail	T	SC	NA	Euryhaline species, but prefer freshwater. Primarily found in backwater sloughs of the Sacramento-San Joaquin Delta and Suisun Marsh. Upstream spawning migration occurs from November through May into freshwater habitats (Goals Project, 2000).	High
Amphibians					
Rana aurora draytonii California red-legged frog	T	SC Pr	NA	Dense, shrubby riparian vegetation associated with deep (≥ 0.7 m), still or slow-moving water (CDFG, 2001a).	No habitat
Reptiles					
Masticophis lateralis euryxanthus Alameda whipsnake	T	Pr	NA	Valley-foothill riparian habitats, valley-foothill hardwoods, and hardwood-conifer.	No habitat
Thamnophis gigas giant garter snake	T	T Pr	NA	Freshwater marshes, low gradient streams, drainage canals, and irrigation ditches.	No habitat
Birds					
Branta canadensis leucopareia Aleutian Canada goose	D	none	NA	Lacustrine, fresh emergent wetlands and moist grasslands, croplands, pastures, and meadows (CDFG, 1988).	No habitat
Charadrius montanus mountain plover	PT MNBMC	SC	NA	High plains and semi-desert regions. Forages on alkaline flats, plowed ground, grazed pasture, and dry short grass prairie. Does not nest in California (CSU, 2001).	No habitat
Falco peregrinus anatum American peregrine falcon	D MNBMC	F Pr	NA	Breeds mostly in woodland, forest, and coastal habitats on protected cliffs and ledges. Also nests on bridges and buildings in urban areas. Riparian areas and coastal and inland wetlands are important habitats yearlong, especially in nonbreeding seasons (CDFG, 2001a).	Low
Haliaeetus leucocephalus	PD	E	NA	Winters throughout most of California at lakes, reservoirs, river	Low

Species Name	Status[1]			Associated Habitats	Potential to Occur in the Action Area
	Federal	State	CNPS		
bald eagle		F Pr		systems, and some rangelands and coastal wetlands on protected cliffs and ledges. Also nests on bridges and buildings in urban areas. Nests are normally built in the upper canopy of large trees, usually conifers (CDFG, 2001a).	
Rallus longirostris obsoletus California clapper rail	E	F Pr	NA	Tidal salt marshes near tidal sloughs.	Low
Sterna antillarum (=*albifrons*) *browni* California least tern	E MNBMC	E F Pr	NA	Migratory in CA, usually arriving at breeding territory in mid-May. Breeding colonies located in abandoned salt ponds and along estuarine shores (CDFG, 1988a)	Low
Mammals					
Neotoma fuscipes riparia riparian (San Joaquin Valley) woodrat	E	SC	NA	Areas supporting brush, preferably with an overstory of trees.	No habitat
Reithrodontomys raviventris salt marsh harvest mouse	E	E F Pr	NA	Pickleweed (*Salicornia virginica*) salt marsh.	High
Plants					
Cordylanthus mollis spp. *mollis* soft bird's-beak	E	Rare S1.1	1B	Coastal salt marshes; elevation 0-3 meters. Blooms July - November (CNPS, 2001).	Medium

[1] California Department of Fish and Game. 2001b. Wildlife and Habitat Data Analysis Branch, California Natural Diversity Data Base, Special Animals. July 2001.
California Department of Fish and Game, Natural Diversity Data Base. July 2001c. Special vascular plants, bryophytes, and lichens list. Biannual publication, Mimeo. 141 pp.
E – Endangered
T – Threatened
PE – Proposed for listing as Endangered
PT – Proposed for listing as Threatened
Ca – Candidate for listing
SC – Species of Concern
MNBMC – Migratory Nongame Birds of Management Concern
D – Delisted
PD – Proposed for Delisting
Pr – CDFG Protected
F Pr – CDFG Fully Protected
California Native Plant Society
S1.1 – Very Threatened and less than 6 environmental occurrences (EOs) OR less than 1,000 individuals OR less than 2,000 acres
1B – Rare or Endangered in California and elsewhere

Appendix A
RWQCB Letter Request
Under Section 13267 of the California Water Code

Appendix A
RWQCB Letter Request
Under Section 13267 of the California Water Code

Appendix B
Plant Species In The Project Site

Plant Species Observed in the Peyton Slough Project Area.
(Site Visit: November 2001 and January 2002)

Scientific Name	Common Name	Native/ Non-native	Wetland Indicator Status[1]
Achillea millefolium	yarrow	native	FACU
Artemisia californica	California sagebrush	native	NL
Asparagus officinalis ssp. *officinalis*	asparagus-fern	non-native	FACU
Atriplex semibaccata	Australian saltbush	non-native	FAC
Atriplex triangularis	fat hen	native	FACW
Avena sp.	wild oats	non-native	NL
Baccharis pilularis	coyote bush	native	NL
Baccharis douglasii	marsh baccharis	native	OBL
Brassica nigra	black mustard	non-native	NL
Bromus diandrus	rip gut brome	non-native	NL
Bromus madritensis ssp. *rubens*	red brome	non-native	NI
Carduus pycnocephalus	Italian thistle	non-native	NL
Carpobrotus sp.	ice plant	non-native	NL
Centaurea solstitialis	yellow star-thistle	non-native	NL
Chenopodium sp.	goosefoot	non-native or native	ranges from UPL to FACW
Chlorogalum pomeridianum var. *pomeridianum*	soap plant	native	NL
Cortaderia jubata	pampas grass	non-native	NL
Cotula coronopifolia	brass-buttons	non-native	FACW+
Cuscuta salina var. *major*	saltmarsh dodder	native	NL
Cynara cardunculus	cardoon	non-native	NL
Cynodon dactylon	Bermuda grass	non-native	FAC
Cyperus eragrostis	tall flat sedge	native	FACW
Distichlis spicata	saltgrass	native	FACW
Eriogonum nudum	naked buckwheat	native	NL
Eschscholzia californica	California poppy	native	NL
Eucalyptus sp.	eucalyptus	non-native	NL
Euthamia occidentalis	Western goldenrod	native	OBL

Scientific Name	Common Name	Native/ Non-native	Wetland Indicator Status[1]
Foeniculum vulgare	sweet fennel	non-native	FACU
Frankenia salina	alkali heath	native	FACW+
Geranium molle	crane's bill Geranium	non-native	NL
Grindelia stricta var. *angustifolia*	marsh gum plant	native	FACW
Heteromeles arbutifolia	toyon	native	NL
Heterotheca grandiflora	telegraph weed	native	NL
Hirschfeldia incana	short pod mustard	non-native	NL
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley	non-native	FAC
Jaumea carnosa	jaumea	native	OBL
Juncus balticus	Baltic rush	native	OBL
Juncus sp.	rush	non-native or native	ranges from FAC to OBL
Lactuca serriola	prickly lettuce	non-native	FAC
Lepidium latifolium	peppergrass	non-native	FACW
Lemna minor	common duckweed	native	OBL
Leymus triticoides	creeping wild-rye	native	FAC+
Lolium multiflorum	Italian ryegrass	non-native	FAC*
Lotus corniculatus	bird's foot trefoil	non-native	FAC
Lupnius sp.	lupine	native	FACW or NL
Malva sp.	mallow	non-native	NL
Malvella leprosa	alkali mallow	native	FAC*
Parapholis incurva	sickle grass	non-native	OBL
Paspalum distichum	knot grass	native	OBL
Phragmites australis	common reed	native	FACW
Picris echioides	bristly ox-tongue	non-native	FAC*
Plantago lanceolata	English plantain	non-native	FAC-
Polypogon monspeliensis	rabbitsfoot grass	non-native	FACW+
Raphanus sativus	wild radish	non-native	NL
Rumex crispus	curly dock	non-native	FACW-
Salicornia virginica	pickleweed	native	OBL
Salsola tragus	Russian thistle	non-native	FACU+
Scirpus acutus	bulrush	native	OBL
Scirpus americanus	three-square	native	OBL

Scientific Name	Common Name	Native/ Non-native	Wetland Indicator Status[1]
Scirpus californicus	California bulrush	native	OBL
Scirpus cernuus	low club rush	native	OBL
Scirpus robustus	alkali bulrush	native	OBL
Solanum sp.	nightshade		NL, NI*, ranges from FACU to FAC
Sonchus oleraceus	common sow-thistle	non-native	NI*
Spergularia sp.	sand-spurrey	non-native or native	FAC-, FAC+, or OBL
Triglochin maritima	seaside arrow-grass	native	OBL
Triglochin striata	three-ribbed arrow-grass	native	OBL
Typha angustifolia	narrow-leaved cattail	native	OBL
Vicia sp.	vetch	native or non-native	NL, NI, or FACU

Notes:

[1] **Wetland Indicator Status (Reed 1988)**

OBL (obligate wetland plants have an estimated probability >99% to occur in wetlands)
FACW (facultative wetland plants have an estimated probability of 67-99% to occur in wetlands)
FAC (facultative plants have an estimated probability of 34-66% to occur in wetlands)
FACU (facultative upland plants have an estimated probability of 1-33% to occur in wetlands)
NI (no indicator; insufficient information to determine a status)
NL (not listed; assumed to be an upland species)
UPL (upland plants that have an estimated probability of <1% of occurring in wetlands)
***** Indicates a tentative status assignment
\+ Indicates a greater tendency to occur in wetlands
\- Indicates a lesser tendency to occur in wetlands

Appendix C
U.S. Fish And Wildlife Service Species List

Appendix C
U.S. Fish And Wildlife Service Species List

Appendix D
California Clapper Rail Site Investigation Report

Appendix E
Salt Marsh Harvest Mouse Trapping

Appendix E
Salt Marsh Harvest Mouse Trapping